

# Business Case

## The Economic Viability of Agroecology



Critics of agroecology often question the economic viability of agroecological farming practices and, by extension, of businesses engaged in the production, distribution, or sales of agroecological produce. They argue that agroecology results in low yields, unquantified costs and risks, and thus lower profits<sup>1,2</sup>.

Current evidence, however, points to the contrary; agroecological farming is economically viable and can be more profitable than conventional farming practices. Furthermore, agroecological practices can strengthen the resilience of agricultural businesses, fostering long-term, sustainable profitability.

### 1. The Economic Viability of Agroecology

We define economic viability as a state where agricultural businesses are both profitable – considering yields, prices and productivity – and resilient. To analyse the economic viability of agroecology, we use four dimensions: Agricultural yields (mostly measured as agricultural production output per hectare) have been at the centre of the agricultural policy debate<sup>3,4,5,31</sup>. The value of the agricultural output, as the prices received per unit produces, is key to understand the revenues of an agricultural business. Revenues, in turn, need to be considered in context of the costs of production (e.g. land and labour), to give an idea of the total productivity as the ratio between agricultural input and output.



Figure 1: A conceptual framework of the economic viability of agroecology

Together, yields, prices and productivity are the key drivers of the profitability of any agricultural business. In addition, agricultural businesses aim to achieve a stable economic viability in the long-term. Long-term profitability highly depends on resilience, which requires a sustainable use of natural resources that form the very basis of agricultural production<sup>3,6-8</sup>. An overview of the conceptual framework of the economic viability of agroecology is presented in Figure 1.

### 2. Review of Evidence of the Economic Viability of Agroecology

In the following, we present and discuss the literature and evidence on the four dimensions yields, prices, productivity and resilience in more detail.

#### 2.1. Yields

##### Evidence

Comparative studies on different farming systems show that agroecological farming practices have the potential to sustainably increase yields, though these benefits may only manifest after a certain transition time. For example, a meta-analysis on studies from a diverse set of countries found that yields were 16% greater, on average, for agroecological practices as compared to conventional practices<sup>7</sup>. Similar findings are shown in meta-analyses on conservation agricultural practices, such as reduced tillage and mulching, which are often used as part of agroecological practices. For example, a large meta-analysis on studies from South Asia showed that conservation agriculture increases yields by 5.8%, on average, though yield

gains are even higher in maize and wheat-based farming systems<sup>9</sup>. When comparing yields in conventional and agroecological systems, a distinction between short-term and long-term differences is important. In conventional farming systems, short-term yield gains can result in long-term yield losses across the agricultural landscape, for example, due to soil degradation or loss of biodiversity. In contrast, agroecological approaches aim to sustainably manage the natural resource base, which can result in higher yield gain over time<sup>10,11</sup>. Empirical evidence on differences in short-term and long-term yields is provided in a meta-analysis on conservation agriculture in Sub-Saharan Africa, which found that yield advantages in conservation agriculture may be small at first but gradually increase<sup>12</sup>. Similar findings are shown in a meta-analysis on agroecological practices<sup>13</sup>, which finds that increased diversity strongly correlates with more stable production and, therefore, long-term and livelihood resilience (see also section “Resilience”). In addition to the time dimension, also the choice of the baseline for comparisons and the metrics chosen to estimate yields, for example, single-crop yields versus more comprehensive metrics for “yield” (such as the land equivalent ratio, LER), are important determinants for the findings.

### **Success Factors**

Key success factors to sustainably increasing yields in agroecological farming is the in ‘depth knowledge of cropping systems and ecology<sup>2,3,6,14,15</sup> required to diversify agricultural production (e.g. multiple cropping and crop rotation)<sup>16</sup>. Therefore, investing in improving and retaining human capital, i.e. the skills, knowledge and experience of employees of agroecological businesses, is critical (see for example, the SEKEM showcase). Long-term commitment and planning horizons together with beneficial work conditions are hence crucial to optimize agroecological production and sustainably increasing yields.

### **Barriers**

A key challenge is building the kind of detailed in-depth and context specific knowledge and expertise of agricultural practices needed. When these factors are lacking, agroecological approaches cannot compete effectively with conventional farming systems and its ready to use packages of seed, fertilizer, and pesticide. In addition, key stakeholders, including many policymakers and investors, still tend to focus on short-term gains to achieve rapid financial results. The resulting business environment presents significant barriers for agroecological businesses to attract investment and growth<sup>8</sup>. In Europe, for example, policies have traditionally pushed for agriculture at large scale with a focus on maximizing single crop yields, using more synthetic inputs and requiring more financial investment<sup>2,17</sup>. These policies are slowly changing by increasingly taking into account social and environmental sustainability<sup>17-19</sup>.

## **2.2. Prices**

### **Evidence**

Agroecological practices can fetch higher prices per unit produced when appropriate market linkages are established. agroecology was found to increase the net-income of smallholder households by 14% in India, by between 26% and 49% in Brazil, and by 49% in Senegal, on average<sup>8</sup>. The authors attributed these effects to differences in sales prices<sup>8</sup>. A study from France, using a simulation model, concludes that agroecological farmers have a better medium-term economic results than conventional farms, on average<sup>21</sup>.

### **Success Factors**

A key success factor to increase revenues in agroecological businesses is access to markets that reward agroecologically produced crops. In price-differentiated markets, sales of agroecological produce can result in higher revenues<sup>5,22-24,31</sup>. In this regard, linking producers with consumers is critical, and for larger agroecological businesses, establishing direct marketing channels can facilitate building trust and loyalty

among consumers, which can result in price premiums (see EOSTA and the Big Carrots showcases as examples)<sup>5,23</sup>. Digital solutions can facilitate the efficient matching of producers, traders and consumers (see for example Premium Hortus’s web and mobile platform)<sup>25</sup>.

### **Barriers**

When agroecological businesses lack access to premium markets, as is often the case in segmented local markets of middle- and low-income countries, increased prices and revenues are difficult to realize. Furthermore, “agroecology”, unlike “organic”, is not an established (though costly) label that is easily understood by consumers, which may potentially limit access to premium markets. Agroecological businesses face a challenge to create demand for their products by building awareness of agroecological production and by increasing trust in the benefits of agroecological produce. It may take time for agroecological businesses to build interest and trust that results in a loyal customer base, which emphasizes, again, the need to secure long-term investments. Additionally, agroecological businesses can deliver wider economic benefits (e.g. jobs and employment), as well as environmental and social benefits (positive externalities), while conventional practices often come with substantial costs, which are not accounted for in their pricing (negative externalities). Realizing a relative increase of prices per unit sold in agroecology can be increased when positive externalities are remunerated, and negative externalities accounted for in prices.

## **2.3. Productivity**

### **Evidence**

Current evidence suggests that agroecology increases agricultural productivity (i.e. the ratio between agricultural production input and output), yet more research is needed to capture context-specific differences and drivers of productivity advantages. Among the few studies to consider the productivity of agroecology, a three-country study found that smallholder-farming households practicing agroecology had higher productivity: 17% in Senegal, 32% in India, and between 26% and 48% in two different regions of Brazil<sup>8</sup>. The study reports that the main productivity benefits of agroecology are in the reduction of external input use (and their respective costs), which outweigh increased labour costs (that also have positive societal and economic effects). Increased farm profitability (i.e. contrasting total revenues and farm investment) in agroecology is also supported in a meta-analysis, which reports increased profitability associated with agroecological practices in a majority of studies analyzed<sup>7</sup>. Possibly as a result of these gains, financial reserves of farmers practicing agroecology increased. Likewise, a meta-analysis from South Asia shows that conservation agriculture practices, often used in agroecology, increased net-returns by between 15.7% (rice) and 33.8% (wheat)<sup>9</sup>.

### **Success Factors**

Similar to increasing yields in agroecological systems, building human capacity (e.g. skills, knowledge), labour and investing with a long-term perspective are key success factors to sustainably increasing productivity in agroecological and other sustainable farming systems<sup>2,3</sup>. Building market knowledge, to understand the demand for agroecological produce, can support agricultural businesses to make informed investment and production decisions<sup>20</sup>. Additionally, as the productivity benefits of agroecology increase over time, and as an initial investment is needed, there is a need for agroecological businesses to build a solid and long-term capital structure (see for example the showcase on Adapta Sertão).

### **Barriers**

When aiming to assess and increase productivity in agroecology, a key barrier is the uneven playing field between agroecological and conventional practices. Specifically, in many countries, preferential rules

apply for purchasing agricultural inputs, such as machinery, seeds, or fertilizers, which artificially lower the costs of conventionally produced crops as compared to crops from agroecological production. In agroecology, a big part of the production costs pertains to labour costs, which are rarely subsidized. Hence, agroecology benefits little from regulatory incentives and payments that drive costs down in conventional agriculture. For productivity to further increase in agroecological farming systems, these structural barriers need to be addressed.

## 2.4. Resilience

### Evidence

To be economically viable in the long-term, any agricultural businesses needs to be resilient to external shocks, including shocks from climatic change. The resilience in agricultural production can be fostered through re-designing agroecological systems through agroecology<sup>4,7,11,26,27</sup>. A diverse multi-cropping design, which is a key element of agroecological principles, can serve as a cushion over losses in selected crops, e.g. due to pests and diseases<sup>1,8,11,14,17,28</sup>. Having a diversity of crops and plants fosters ecosystem services like pollination and natural pest control, which decreases vulnerability to shocks<sup>3,6,7,29,31</sup>. Moreover, nutrient recycling in agroecology can help reducing dependence on external inputs and their volatile prices<sup>10,15,25,26</sup>. A recent study by FAO, FIBL and Biovision, demonstrated the benefits of agroecology as a resilience strategy<sup>13</sup>.

### Success Factors

Although agroecology enhances resilience, any agricultural business, including agroecological businesses, are to some extent vulnerable to external shocks, yield, and price crashes. However, agroecological businesses can become less vulnerable to external shocks through reduced dependency on external inputs. A key success strategy for agroecological businesses is to build adequate financial capital and other reserves (e.g., including safe grain reserves<sup>13</sup>) to withstand periods of decreased revenues, while maintaining operations and retaining the investment made in building human capital. A sound capital basis is therefore critical. Agroecology, however, can offer a unique return to risk profile as compared to other investment opportunities, which allows investors to diversify their portfolio and thereby hedge against long-run risks (see showcases on SEKEM and BNP Paribas S.A. for examples).

### Barriers

A key challenge is the prevailing policy environment that punishes rather than remunerates investments in the long-term resilience of farming systems. Agroecological businesses can be supported by facilitating access of agricultural enterprises to long-term funding opportunities, and by novel regulatory incentives that focus on long-term gains. However, agroecological businesses, in contrast to many large and well-connected actors in the food system, have limited policy influence to bring about such favourable policy changes.

## 3. Success Factors and Barriers for Upscaling Agroecology

Current evidence shows that agroecology is an economically viable farming system and therefore a worthwhile business option. In the SWOT analysis (Strengths, Opportunities, Weaknesses, Threats) below, we outline several success factors and challenges that might help or hinder agroecological businesses, policy makers and other actors in reaping the economic benefits of agroecology. These reveal possible entry points for actors looking to strengthen the economic viability of their own agroecological initiatives.

Strengths	Weaknesses
<p><b>Enhanced resilience:</b> In the long-term, agroecology is more resilient to climatic shocks, extreme weather events, as well as pests and diseases.</p> <p><b>Long-term sustainability:</b> Agroecology supports long-term sustainability as it maintains the natural resource base of agricultural production.</p> <p><b>Strong human capital and knowledge:</b> As agroecology is knowledge-intensive, it is important for agroecological businesses to have low staff turnover, for instance by ensuring attractive working conditions.</p> <p><b>Integrated markets:</b> Realizing price premiums for agroecological produce requires access to well-functioning markets. Sustainable business models can benefit by establishing direct links between consumers and producers, for example via digital solutions.</p> <p><b>Customer loyalty:</b> A solid and loyal customer basis is key to sustainably increase revenues and profitability.</p>	<p><b>Insufficient capital:</b> Lack of capital at the outset may constrain agroecological business abilities to invest and grow.</p> <p><b>Lack of market power:</b> In many cases, agroecological businesses face an uneven playing field as compared to other agricultural businesses. Political incentives for agroecological businesses are often lacking.</p> <p><b>Transition period:</b> It takes time for the full yield, productivity, and revenue benefits of agroecology to materialize. Agroecological businesses hence need to establish their planning with a long-term perspective.</p>
Opportunities	Threats
<p><b>Increased demand:</b> An increasing demand for sustainable and healthy produce is a key opportunity for agroecological business, yet the sustainability benefits of agroecology need to be clearly communicated.</p> <p><b>Growing impact investments:</b> Investors seeking to attain social, economic and environmental impacts are one opportunity for agroecological business to establish robust and long-term financing.</p> <p><b>Global commitments:</b> Support for agroecology and sustainable food systems is growing in global policy commitments and strategies, such as the Agenda 2030, The Paris Agreement (UNFCCC), and the Biodiversity targets (CBD), which can foster public and policy support for agroecological farming and businesses.</p>	<p><b>Limited access to investment and credits:</b> The access of agroecological business to investment and credits may continue to be constrained if impact investments remain comparatively small, and access to credits is difficult in the absence of suitable collateral.</p> <p><b>Unfavourable policies:</b> Although the policy environment is somewhat improving for agroecological businesses, policies are likely to remain unfavourable and put agroecology at a disadvantage.</p> <p><b>Structural bias towards conventional farming:</b> Existing policies and market structures favour large-scale enterprises, which predominantly practice conventional farming.</p>

## 4. Conclusion and Key Messages

The evidence discussed in this section shows that agroecological farming is economically viable and can be more profitable than conventional farming practices. To conclude, find below four key messages that should be considered when building economically viable agroecological business models.

**Profitability:** Growing evidence suggests that agroecology is profitable - in terms of yields, prices and productivity - and resilient. This objects the widely held notion that agroecological businesses are not lucrative and presents agroecology as an economically viable business option.

**Human capital and knowledge:** While agroecological approaches can lower input costs, they make farming practices more knowledge intensive. agroecology thus requires investing in human capital. Furthermore, creating an informed customer base and establishing close links between consumers and producers is key.

**Investment:** For agroecology to unfold its full potential of improving long-term revenues and strengthening the resilience of agricultural value chains, it needs to be matched by sustainable, long-term investment models that seek to deliver social, economic, and environmental value.

**Policy Environment:** Agricultural policies need to be transformed to create an enabling policy environment that does not favor intensive food production but provides regulatory incentives and subsidies for sustainable farming practices. Agroecological businesses may benefit from forming strong networks and coalitions to advocate for policy changes and communicate their social, economic and environmental benefits to the broader public.

## 5. Literature

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