

# An Overview of Challenges that Negatively Affect Agriculture Performance in Sub-Sahara Africa: Synthesis Study

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**Abstract:** It is appropriate to entrust the agricultural sector with the role of contributing much more significantly to the transformation of the Sub-Saharan African country's economy. This is largely due to the significance of food security to all of the region's economies, the fact that the majority of its residents still live in rural areas, where they are often poor, food insecure, and unemployed, and the fact that agriculture in the region does have the natural resource potential to significantly contribute to economic development and transformation by promoting links between income and employment within individual countries and within the region. Whatever the case, the agriculture industry is receiving unique policy adjustments, sustainable innovation, and investments. Governments need to invest significant resources in agricultural research in their budgets and ensure that every dollar is used effectively for the proper goals to demonstrate their commitment to changing the way agriculture is conducted on the continent. Africa continues to have some of the poorest smallholder farmers in the entire globe. Without contemporary agricultural technologies, enough investment, and a distribution system that is still poorly suited for reaching markets, it is difficult for them to reach their full potential. Nonetheless, this review study highlights a number of closely related strands of economic literature or schools of thought on challenges faced by agriculture in Sub-Sahara Africa.

**Keywords**— Contract, Economic, Farmers, Income, Poverty, Transaction, Smallholder

## 1. INTRODUCTION

Africa may exert major upward pressure on global food prices in the future decades due to its rapid population expansion and rising import demand for grains and oil seeds (Barrett, 2021). If African governments can successfully promote agricultural productivity growth (Hussein & Suttie, 2016), the region's growing reliance on food imports could also present significant prospects for employment expansion in import-substituting local production and marketing (Jayne et al., 2017).

There are three approaches to improve agricultural output: (i) better utilise the current capacity; (ii) using more inputs; and (iii) using innovative methods to increase each input's productivity or raise the total product curve. Changes to contractual agreements, infrastructure and support service expenditure levels, and pricing strategies for inputs and outputs may all be necessary to address these issues (Batt, 2016). Since the middle of the 1980s, numerous African economies have implemented economic reform initiatives in an effort to bring about these reforms (Mills, 2018), though with varying degrees of success (May, 2018).

The current state of agriculture in SSA, within the context of the region's political and economic conditions, natural resource situation, and demographic structure, given its role in addressing the challenge of eradicating hunger and improving food security. It acknowledges how megatrends and policies have influenced the growth of the agriculture industry. Megatrends include the changing demographics, the emergence of the middle class in Africa (Ngoma et al., 2021), the expansion of access to new information and

communication technology, rapid urbanization, and the resulting changes in food demand. This is accompanied by the modernization of food systems at the downstream level (Jayne et al., 2017), a major movement in the labour force away from agriculture, and growing interest worldwide in the available farmland in Africa, which is bolstered by the sharp increase in agricultural commodity prices and policies around it (Jayne et al., 2017).

### 2.1. Main Technical and Institutional Challenges Faced by Smallholder Farmers African Countries

Millions of Africans are born, grow up, and pass away in poverty and malnutrition. The majority of these unfortunate people reside in rural areas and rely heavily on agriculture, either directly or indirectly, for their livelihoods (Organization, 2018). Despite the fact that in some regions of the world, agricultural expansion has been a key factor in reducing poverty (Diao et al., 2019), much of Africa has experienced dismal agricultural growth over the past 40 years or so, with poor or even negative per capita growth. Because policymakers have disregarded agriculture, this situation has not developed. Using new technologies and imported inputs, sustainable intensification is a widely accepted goal for agricultural growth in Africa.

However, the poor rural areas that need them the most are frequently hindered by a daunting set of generic problems that frequently reinforce one another (Addison et al., 2019). Despite the fact that the local economy is heavily dependent on agriculture both directly and indirectly, these issues include inadequate roads and telecommunications (Broadberry & Gardner, 2019), poor human health, a lack of a well-

developed and diversified monetary economy, and small markets for agricultural inputs, outputs, and financing.

Thin markets are a result of and a contributing factor in a business environment that is typically marked by low information (on prices, new technologies, and other potential market players)(Mills, 2018), weak contract enforcement, high risks (in terms of production and prices, but also in terms of access to inputs and markets, as well as in terms of enforcing contracts), and high transaction costs (as buyers and sellers protect themselves against risks of a transaction failing by searching for and screening potential suppliers or buyers and their goods and services, then negotiating and contracting with them, and monitoring and enforcing their adherence to the contract)(Broadberry & Gardner, 2019). Nested within these general challenges facing poor rural areas are a set of issues specific to agriculture and, in particular, to small-scale farming (and farm labor). Particular challenges to small-scale farmers include:

- The absence of markets due to low local purchasing power and limited access to international markets as a result of trade distortions (such as rich-country agriculture subsidies);
- Production and sales cycles that are lengthy by the standards of other small firms (causing substantial seasonality in labour utilization, cash flow, food supply, prices, and dangers; and impacting entire towns' economies)(Anderson & Martin, 2021);
- High returns to timely labour during times of peak labour demand; as a result, it is frequently advantageous for poor farmers to augment their own family labour with hired help if they have the resources(Adu-Baffour et al., 2019), even though they may subsequently seek to hire their own labour out;
- Small-scale individual input purchases that have high transaction costs in settings where markets are underdeveloped and risky, despite the fact that farmers' needs for inputs are increasing due to technological advancement and population pressure on the land;
- Farmers who, due to poverty, fail to devote enough time to their own land during labour peaks, forfeiting valuable increases in their harvest;
- Technical decisions involving abrupt changes in crop types and technologies, with prices and performance thresholds above (or below) which some activities are (or are not) profitable or viable(Gwebu & Matthews, 2018), and these thresholds determining whether a sizable number of farmers demand or supply specific services and/or goods;
- Use of significant portions of output for subsistence, generating welfare but not cash, so that sales of outputs frequently fail to fully cover purchased input and labour costs;
- Need for seasonal financing of farmers' input purchases, raising questions about how such purchases can be financed and how the risks of such finance for poor farmers can be mitigated(Schaffer & Ray, 2020);

- Land tenure agreements that have an impact on farmers' capacity for borrowing, growth, or exit with a lump sum through land-market transactions, as well as those agreements that have an impact on incentives for land improvement.

Additionally, there are unique off-farm difficulties in creating input supply networks. Farmers buy important inputs, like fertilizer, in relatively small-time frames. Their unsure input requirements depend on their ability to finance purchases as well as their evaluation of input profitability (influenced by relative input and product prices as well as by how the season's weather and insect behaviour develop).

In addition to these general problems of smallholder agriculture, substantial numbers of poor farmers in Africa face problems that are unique to their circumstances:

- Poor animal and plant healthcare systems that worsen the effects of problems brought on by trypanosomiasis, foot and mouth disease, East Coast fever, Newcastle disease, maize striga, rust in legumes, and the like (problems frequently brought on by specific spirochetes);
- Human health issues, including but not limited to the HIV/AIDS pandemic and other crippling diseases (such as malaria and other insect- and waterborne diseases)(GH, 2019);
- Heterogeneous patterns of population density, with the result that rural markets are small and fragmented (hence the demand for agricultural products, whether from food processors or consumers directly, is also weak and fragmented); relative scarcity of water, both for human basic needs and for direct production in irrigation agriculture (the latter exacerbated by the low level of investment in irrigation infrastructure);
- Additional challenges experienced by women as a result of discrimination in access to financial services and other means of production(Kim & O'Brien, 2018), as well as their low degree of de facto and de jure rights to land and other resources(Isaga, 2018);
- Negative repercussions of a history of successive colonial exploitation, Cold War superpower influence, and (particularly in Southern Africa) disruption brought on by the apartheid state in South Africa(Adar, 2018; Adigun, n.d.; Butts & Thomas, 2019; Dallywater et al., 2019);
- Environmental deterioration that results in salinization, soil erosion, loss of water catchment regions, and soil nutrient depletion, among other things(Kajoba, 2008);
- Fragile and weak states frequently brought on by the specific kind of development aid provided by rich nations;

Just as problems in input supply and financial service delivery to small-scale subsistence farmers in poor rural areas of Africa are mutually reinforcing(USAID, 2019), so they can

also have negative effects on output market development: without greater use of purchased inputs and seasonal finance, farmers' marketed surpluses will be relatively small (in terms of both individual and aggregate transactions), leading to higher transaction costs and risks for output buyers (IMF, 2015).

## 2.2. Why Market Exchange in Africa is Much More Costly for Smallholder Farmers

In general, neither the market liberalisation policies that came after the post-independence period's state-led policies nor the continent's agricultural development strategies have been successful. While many programmes have not been adopted, have only been partially implemented, or have been implemented very poorly, those that have frequently failed to produce long-term advantages. As a result, there is increasing criticism of the market liberalisation strategies implemented in numerous African nations over the past 20 years, and there is also increasing pressure on governments and international organisations to do more for agriculture, do it differently, and do it quickly. Demands for greater government investment in agricultural development imply a more active role for the state, but this conflicts with both the prevalent market liberalisation paradigm and the generally dismal record of past state-led growth in Africa. Search costs are high because of the large number of participants (no printed catalogs, no phone listings, yellow pages, or the like).

1. Due to the difficulty in enforcing contracts, the majority of transactions are modest and cash-based, with few and highly individualised credit agreements.
2. Due to the inconsistent quality of goods and services, traders opt to check the products' quality before each transaction.
3. There are very few, if any, regulatory standards that make it easy to verify quality.
4. Lack of product quality transparency makes it challenging to discern between legitimate producers and fly-by-night businesses offering subpar goods. The lack of adequate personal identification methods contributes to the transparency issue, which also affects customer selection.

Actors then face significant (sometimes prohibitive) costs for acquiring information and enforcing property rights, especially those with less financial, social, or political clout. These expenses restrict access to existing markets as well as market growth. As a result of these conditions:

- a. Covariance of risk and high costs of behaviour monitoring to guard against moral hazard and adverse selection cause insurance markets to fail.
- b. Lack of collateral, problems with loan recovery, insufficient diversification of local economies, and inability to ensure borrowers are all factors that contribute to the failure of credit markets and prevent the creation of a long-term model for rural financial services.

- c. Limited surpluses (due to a shortage of financing) and the ensuing disincentives for private trade result in weak output markets.

These failing or weak markets, therefore, hinder economic and technical advancement. Thin marketplaces, poor coordination, high transaction costs and hazards, and high unit costs for infrastructure development are all consequences of low levels of economic activity. A low-level equilibrium trap might readily develop from this. A stagnating rural economy, restrictions, and a lack of investment incentives all reinforce one another in this trap.

## 3. Closely Related Strands of Economic Literature as Part of Challenges in Agriculture Production

- A. **The economics of imperfect information;** the major deference is that transactions are risky and unclear since there isn't complete information readily available (Desmarais-Tremblay, 2019). Information is incomplete and asymmetrical in that sellers have more knowledge than buyers about the characteristics of the supply of the goods they are offering for sale as well as its availability, while buyers have more knowledge than sellers about the nature of the demand for those goods as well as their capacity and intentions to pay for them. Then, in order to lower the risks of transaction failure, buyers and sellers, respectively, must search for and collect information about products and sellers, as well as about demand and buyers. However, finding information through seeking and receiving it costs money and is a significant source of transaction costs. These difficulties will vary with; the qualities of the transacting parties (such as their authority, wealth, risk aversion, and access to knowledge); The nature of the product or service being exchanged; The institutions controlling the transaction; The nature and extent of investments in the transaction.
- B. **Moral hazard and agency theory;** *moral hazard* refers to the risk that results from a change in conduct caused by an expectation of compensation for a negative outcome. A contract itself has the power to alter how one-party acts toward the other in the relationship (Cowden et al., 2020). For instance, crop insurance encourages farmers to rely on cash gain from the insurance proceeds of the lost crop rather than investing in the prevention of crop failure. Incomplete insurance will develop to counteract such incentives, but at the expense of imprecise risk-sharing. As another example, a farmer with insurance may not have much incentive to lower risk while the insurance firm gains (Panda & Leepsa, 2017). In many situations that are crucial to agriculture, such as non-point source pollution management insurance markets and credit contracting, issues of incomplete information occur (Stevens & Thevaranjan, 2010).

C. **Transaction-costs economics;** the general hypothesis of transaction-cost economics (TCE) is that institutions are transaction cost–reducing arrangements that may change and evolve with changes in the nature and sources of transaction costs(Kloyer et al., 2019). The term “transaction costs” (the term is attributed to Arrow) expanded on this concept in his paper “The Problem of Social Cost”. His realization that the costs of making agreements, changing them, and putting them into effect limit the potential benefits of commerce laid the groundwork for measuring organizations and governance in terms of transaction costs(Kloyer et al., 2019). Therefore, in a world with transaction costs, a comparison of the costs of trading under each organizational type will determine its relative advantages. Determinants of transaction costs and of transaction cost–reducing governance structures: the specificity of assets involved, the uncertainties surrounding the transaction, and the frequency of that transaction(Crum, 2019). These three variables are notoriously challenging to measure, and virtually all empirical work avoids attempting to quantify transaction costs directly in favour of reduced-form models where transaction costs are presumptively minimized. However, that transaction costs rise as asset specificity, level of uncertainty, and frequency of transactions decrease.

D. **Property rights;** property rights are an essential institution that controls who has access to resources and how(Shittu et al., 2018). Property rights are "the claims, entitlements, and related obligations among people about the use and disposal of a scarce resource," or "the capacity to call upon the collective to stand behind one's claim to a benefit stream". The first documented rules on property rights treat the expectation of use or profit as a form of payment from the very beginning(Ouattara & Standaert, 2020). A collection of rights is typically referred to as property rights. These rights include:

- a. Use rights (usufruct): controlling the use of the property;
- b. Extraction rights: the right to capture the benefits from the property through, for example, mining or agriculture;
- c. Transfer rights: the right to sell or lease the property to someone else; the property through, for example, mining or agriculture;
- d. Exclusion rights: the right to exclude someone from the property;
- e. Encumbrance rights: the right to use the property as security or for other purposes.

There are various essential components to these rights, even though precise definitions can vary. In the first place, property rights are fundamentally social relations: they are not about the relationship between a person and a thing (the object of property), but rather about the relationships

between people with regard to a thing, or more specifically, with regard to the benefit stream that is produced. Property rights are useless unless they are upheld by others. As a result, everyone has a responsibility to respect their property rights. They are typically linked to certain obligations for the right holder to take specified actions to protect their access to the resource.

The effectiveness of individual property rights can also be severely hampered in developing nations by factors like insecurity, high transaction costs, poor, partial, and arbitrary enforcement of rights, lack of infrastructure, and more, particularly if those rights lack the support of custom and a general sense of fairness. A shift toward improved regulation of the commons, such as through efficient use of rights management or yield-enhancing investments. Individual rights vs regulated common property would likely be determined by distributional, environmental, and technological issues, as well as transaction and enforcement costs.

E. **Incomplete-contracts theory;** along with property rights, incomplete contract theory also includes them (ICT). ICT of the business blends the rigour of agency theory with the insights of TCE regarding the significance of bounded rationality and contracting costs(Fukuda, 2019). In order to address the problems that arise when contracts are insufficient, this theory concentrates on how various organisational structures transfer property rights. It offers a foundation for categorising various organisational structures according to who owns and controls critical assets.

When thinking about incomplete contracts, four factors are very important: (1) ownership, (2) firm borders, (3) securities, and (4) power distribution. The first two discuss property rights and the importance of asset ownership (both physical and human). In general, ownership is important because it gives you the upper hand when contracts aren't complete(Erikson & Knockaert, 2021). Additionally, ownership permits residual control (i.e., the authority to determine how an asset will be used outside the scope of a specific contract) and the appropriation of residual income (that is, entrepreneurial profit).

ICT assumes that asset ownership affects the parties' motivations to invest because it is impossible to draught full contingent contracts for relationship-specific investments(Palia & Porter, 2007), which raises the possibility of opportunistic behaviour and ex post renegotiation of the trade advantages. Underinvestment results from this hold-up risk(Betz & Pond, 2019). The hold-up issue might be partially resolved by redistributing asset ownership across the trading parties.

F. **Theory of Collective Action;** people engage in collective action when they decide to take collaborative action and achieve a goal that affects their interests or well-

being(Bridoux & Stoelhorst, 2022). Interdependence among the participants, which means that one person's contributions or efforts affect those of other participants, produces no wider benefits, and makes everyone worse off if each person acts to maximize their own narrow self-interests, is a characteristic of collective-action problems(Struben et al., 2020). The production of public goods (and other products and services that are used collectively) through the cooperation of two or more persons and the effect of externalities on group behaviour are the focus of the economic theory of collective action. Although there are numerous situations where individuals would benefit from cooperation, collective action does not always occur. The free-rider dilemma, which refers to inequities between contributions to the effort and the distribution of gains from the provision of public or community goods, is a common source of issues(Gram et al., 2019).

By involving pooled decisions inside a group, collective action differs from other coordination systems. In hierarchies (like corporations), decisions are delegated and people function according to their own independent judgments. Building on this observation, that the success of collective action depends on two sets of factors:

1. Characteristics of the people concerned:
  - ✓ the size of the group,
  - ✓ The extent of heterogeneity in the group,5 and
  - ✓ Social capital in the group (specifically, the tradition of cooperation in other areas) and
2. Characteristics of the environment that bear on the enforcement costs of a collective scheme:
  - ✓ Technical characteristics (including the physical attributes of the resource and its location),
  - ✓ Economic characteristics (especially market conditions), and
  - ✓ Political characteristics (the role played by state institutions).

Transaction Cost Economics (TCE) also offers a helpful tool for evaluating collective strategies by analyzing market power and monitoring and enforcement expenses.

#### 4. Most Important Aspects from Agriculture/Rural Development

##### a) Bounded Rationality

Uncertainty and the risk of a failed transaction are both influenced by bounded rationality (the inability to use all available information) and opportunism (which can result in unpredictable and potentially harmful behaviour by transaction partners). A third source of uncertainty and risk of failure for actors is the environment, which can be quite unexpected and varied (climate, yields, disease and pest attacks, and prices, for example) (Ramazzotti, 2018). This kind of uncertainty is frequently referred to as substantive uncertainty, whereas

procedural uncertainty is the term for ambiguity resulting from constrained rationality. These three types of uncertainty interact because it is frequently more difficult to restrain opportunism due to substantive and procedural uncertainties (for example, crop buyers can give farmers poor prices for their produce under the pretext that central market prices are very low, when this may not be the case).

##### b) Asset Specificity

Transaction Cost Economics considers the most critical dimension of a transaction to be the degree of asset specificity involved. Physical specificity and human specificity are the two most significant types of asset specificity. Physical specificity happens, for instance, when a packinghouse makes an investment in packaging machinery made to satisfy the unique needs (such as pack size or labelling requirements) of a certain supermarket consumer. It might not be possible to provide a different buyer using the same packaging machinery if the supermarket later decides not to buy from that packinghouse(Desmarais-Tremblay, 2019). Asset specificity can be conceptualized as having two dimensions:

- i. *Asset fixity measures the costs of leaving a specific business. Asset fixity can also be conceptualised in terms of the price reduction that would need to be made in order to sell the asset.*
- ii. *Transaction specificity is the degree to which the success of a particular transaction or contract depends on the use value of the asset (such as the supermarket contract in the examples above).*

Asset specificity is the requirement that an asset has no other use outside the contractual relationship to which it is specific and that there is no market for the sale of the asset in the event that the contractual relationship fails. Even though slightly weaker versions of these conditions apply, investing still entails a certain level of risk: Asset fixity measures the costs of leaving a specific business. Asset fixity can also be conceptualized in terms of the price reduction that would need to be made in order to sell the asset. Transaction specificity is the degree to which the success of a particular transaction or contract depends on the use value of the asset (such as the supermarket contract in the examples above).

and

Asset specificity as an investment in an asset that cannot be quickly or inexpensively converted to a different application. This is the product of thin markets. Because there is no demand for the asset's use outside of the transaction that

justifies the investment, there are few prospects for converting it to another use. Therefore, many assets that in a more developed economy could be easily converted to new uses can be underdeveloped rural economies with low levels of economic activity and small marketplaces. Examples could be investments in general storage facilities, fertilizers, and other agricultural inputs (for input or produce traders). Small

players in atomistic markets are less likely to find it worthwhile to participate in activities in these supply chains due to the resulting increased importance of asset specificity in agricultural supply networks (Batteau, 2022). However, outside of traditional export agricultural supply networks, these rural economies typically lack big businesses that can coordinate supply chains, and hybrid contractual arrangements are frequently sluggish to establish, limited in scope, and fragile.

A weak institutional framework might exacerbate the tendency for narrow markets to elevate asset specificity in underdeveloped rural economies and demand a higher role for hybrid and hierarchical (as opposed to market) contractual forms.

#### c) Private Goods

Private goods have a high level of subtractibility as well as high levels of excludability (thanks to private property rights) (Slaev, 2020). There is nothing left over once a private commodity (or service) has been consumed by the current consumer. Food, apparel, and consumer products are a few examples (Luo & Kaul, 2019).

#### d) Toll Goods

Toll products, also known as club goods, have low subtractibility and high excludability (people can be excluded by paying tolls or membership fees) (Ramazzotti, 2018). Roads and other services with high fixed costs compared to low variable costs and low use compared to capacity are examples. In general, subtractibility rises as utilization does.

#### e) Public Goods

Public goods yield nonsubtractive benefits that can be enjoyed jointly by many people who are hard to exclude from obtaining these benefits (Batteau, 2022). Examples include enjoyment and use of general environmental services, such as clean air, and institutional services, such as law and order. Public goods (Research & Development, roads, schools etc.) investments in these may not be provided by the private sector. It might not be able to reap the full rewards since it would be impossible or prohibitively expensive to exclude people who do not pay for the services (Kadirov, 2018). The availability of another customer may not be impacted by the usage of one consumer. As a result, consumers do not express their desire to pay for the commodity or service, and a market is not created.

#### f) Merit Goods

Merit goods are ones that have elements of private goods but also produce additional, non-excludable positive externalities. Services like education and health care are two examples (Kohn, 2020). These offer individuals immediate, excludable, and subtractable benefits, but when people use them, society as a whole also benefits (by raising the productivity of labor) (Desmarais-Tremblay, 2019).

#### g) Common Pool resources

Resources in the common pool have a low degree of excludability, yet using them depletes them. Natural fisheries and public lands used for grazing, hunting, or the extraction of other natural resources are a few examples (Ramazzotti, 2018).

## 5. CONCLUSION

Fortunately, African governments are becoming more aware of and responsive to the issues threatening agriculture on the continent. More emphasis is being placed on development funding for sustainable agricultural projects, and policies and strategies to attract private sector investment are also being put in place. However, if the issues listed above are to be successfully overcome, significant players on the continent must take concrete action. The aim is for there to be enough food in Africa to export excess amounts in order to increase income.

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