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POLICY BRIEF

Potential of Integrated Agro-Food Parks for Rural Industrialization and Economic Transformation in Developing Countries

UNIDO, AUGUST 2022

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For reference and citation, please use:

United Nations Industrial Development Organization, 2022. Policy Brief: The Potential of Integrated Agro-Food Parks for Rural Industrialization and Economic Transformation in Developing Countries. UNIDO, Vienna.

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ABBREVIATIONS

APH	Agroprocessing hub
ATVET	Agricultural technical and vocational education and training
CAAP	Common African Agro-Parks
CC	Collection centre
COMESA	Common Market for Eastern and Southern Africa
ECA	(United Nations) Economic Commission for Africa
FAO	(United Nations) Food and Agriculture Organization
GDP	Gross domestic product
IAFP	Integrated agro-food parks
ICT	Information and communication technology
RTC	Rural transformation centre
SDGs	Sustainable development goals
UNIDO	United Nations Industrial Development Organization
UNTAD	United Nations Conference on Trade and Development

CONTENTS

EXECUTIVE SUMMARY

Global agricultural supply chains are changing rapidly, yet developing countries still lag behind in terms of agricultural output and other key productivity measures. Achieving the Sustainable Development Goals, including Goal 1 on no poverty, Goal 2 on zero hunger, and Goal 8 on decent work and economic growth, will require the transformation of the agribusiness sector in developing countries, to deal with problems of inadequate infrastructure, poor connectivity and integration of farmers with supply chains, and to respond to changing consumer demand created by an increasing global population and a shift in consumption behaviour.

Integrated agro-food parks (IAFPs) are proving a successful model to develop a robust agribusiness sector and tackle the sustainable economic transformation challenges facing many developing countries today.

The primary objective of IAFPs is to create investment opportunities in agribusiness. This is facilitated through increased scale and lower costs, stronger supply chain linkages and higher quality produce, by clustering firms through the provision of infrastructure and agribusiness-related services.

IAFPs have the potential to have a transformative impact by promoting innovation, contributing to climate-smart agricultural production, processing and marketing, while further integrating rural producers in regional and global supply chains, thus supporting rural development.

This policy brief focuses on the potential of IAFPs to elicit such change. It comprises the seven sections listed below.

SECTION 1: briefly introduces the **global context** of agribusiness development.

SECTION 2: highlights the **critical role of agribusiness** as a stepping stone to a robust manufacturing sector, with the infrastructure and skills to drive structural transformation and lift millions from poverty.

SECTION 3: outlines the **challenges facing the agrifood sector**, including underdeveloped agricultural value chains, high post-harvest losses, fragmented landholdings, limited common infrastructure, the absence of specialized industrial infrastructure, slow agro-mechanization uptake and technology adoption, the absence of educational institutions to keep pace with agricultural skills development demand, limited finance in rural areas, and institutional and policy-related inefficiencies.

SECTION 4: describes **the IAFP model**, including its three main components: the agroprocessing hub, the rural transformation centres and the collection centres. Surrounded by a catchment area, together these components make up the IAFP. The section also outlines the objectives of IAFPs, including their primary objective of creating investment opportunities in agribusiness. The section also outlines the sub-objectives to achieve this: provision of infrastructure and utilities and related shared services; integration of the supply chain to allow for efficient flow of produce from farmers to industry and market; provision of a platform for industry-agricultural interaction and trade facilitation year-round; provision of market information to traders and exporters; transfer of technologies of agriculture and agroprocessing; and measure to maximize resource efficiency across value chains and enable industrial symbiosis.

The section also summarizes **the benefits of IAFPs**, including: providing decent employment opportunities for the growing rural population; reducing rural-urban migration; improving agribusiness competitiveness; reducing post-harvest losses; promoting environmental sustainability in food systems; improving extension services with private sector participation; and disseminating innovation and technology transfer.

SECTION 5: briefly outlines **the growing interest in industrial parks** and related area based development approach. This is seen in the inclusion of industrial parks in regional and country development planning documents, and also in an increase in investment in the agribusiness sector.

SECTION 6: looks at ingredients for the **successful implementation of an IAFP programme**. These include: integration of IAFP initiatives as part of a country's long-term development vision; strong public sector support from planning to implementation to create an enabling environment for private sector investment; an inclusive stakeholder consultation process and IAFP management set-up; and the incorporation of sustainable food systems practices along value chains linked to the IAFP.

SECTION 7: sets out the **conclusions** drawn.

1 FAST-CHANGING GLOBAL CONTEXT FOR AGRICULTURAL DEVELOPMENT

Agribusinesses must adapt to a rapidly shifting context for the demand and supply of food, and also to the nature of agricultural production. There is an urgent, overarching need to tackle climate change – which is linked to agricultural production in complex ways, both through the contribution of the sector, and the significant threats that it poses to the sector – with a need to ensure the alignment of agriculture with environmental sustainability goals. At the same time, agricultural practices are increasingly geared towards more efficient regional and global agricultural value chains, with greater opportunities for trade and investment.

New technologies, including agriculture-focused information and communications technology (ICT) and the digitization of the supply chain, are transforming food systems and offering new opportunities to improve policy.

With a growing population and limited natural resources, agribusinesses are racing to increase productivity, with mounting attention given to innovation to help find a way to sustainably feed a growing population.

The global population is growing rapidly and expected to reach 8.5 billion by the end of this decade. A lack of opportunity in rural areas is leading to ever-increasing numbers of young people migrating to cities and across borders in search of a better life. The sustained high level of rural to urban migration means that by 2030 the proportion of urban dwellers is expected to reach 60 per cent. Alongside economic growth, such demographic shifts bring significant changes in consumption patterns, at a time when food prices are rapidly increasing.

2 IMPORTANCE OF AGRO-INDUSTRIALIZATION FOR GROWTH AND SUSTAINABLE DEVELOPMENT

Agro-industrialization has a pivotal role to play in the growth of developing countries and countries with economies in transition, through fostering the broader industrialization required to meet the Sustainable Development Goals, in particular Goal 1 on no poverty, Goal 2 on zero hunger, Goal 3 on good health and well-being, Goal 8 on decent work and economic growth, Goal 9 on industry, innovation and infrastructure, Goal 12 on responsible consumption and production, Goal 13 on climate action, and Goal 17 on partnerships for the Goals. The 2030 Agenda for Sustainable Development recognizes the importance of inclusive and sustainable industrialization in meeting urgent development challenges.

Source: UNIDO

FIGURE 1: Agro-industrialization fosters the broader industrialization required to meet the Sustainable Development Goals, in particular SDGs 1, 2, 3, 8, 12, 13 and 17, in developing countries and countries with economies in transition

Historically, no country or region in the world has achieved a decent standard of living for its citizens without a robust industrial sector. With many developing countries or countries with economies in transition characterized by a large agricultural share in the gross domestic product (GDP) and employment, agro-industries provide a critical stepping-stone to industrialization. Agro-industries produce economic activities that enable emerging economies to expand their manufacturing potential and industrial output. The growth of agro-industries is essential for skilled and semi-skilled employment creation, absorbing surplus labour from agriculture. This is of particular importance, given the urbanization trends under way in developing countries.

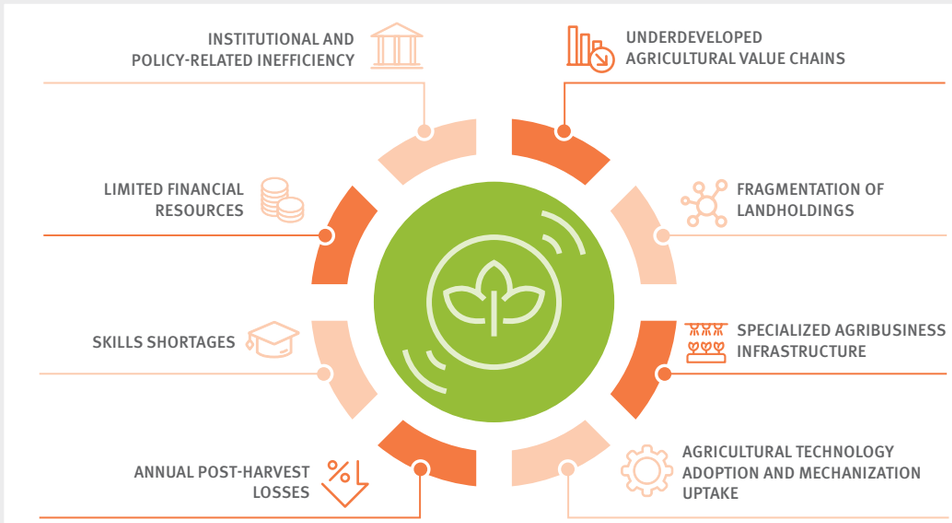
Industrialization generates economies of scale in national output, increases household income with stable manufacturing jobs, and expands consumption, setting economies on a virtuous growth cycle.

National efforts to increase manufacturing and spur rural development require well designed strategies and policies. These strategies comprise a wide variety of approaches and instruments, depending on the level of industrial development and the overall economic context for which they are designed. IAFPs are the starting point and provide a potential highly effective tool in the long-term process of economic structural transformation.

3 CHALLENGES OF AGRO-INDUSTRIALIZATION AND RURAL TRANSFORMATION

Feeding a rapidly growing global population requires a system-wide shift in agriculture and agribusiness. Agriculture is the most important economic sector and greatest source of employment in many countries, in particular in Africa and Asia.[1] It contributes up to 23 per cent the GDP of Africa and provides work for nearly 60 per cent of the economically active population in sub-Saharan Africa.[2] The food-processing and beverages subsector accounts for more than 50 per cent of total manufacturing value added in low and middle-income countries.[3] Food and agricultural products constitute the largest share of Africa's exports, accounting for between $35 billion and $40 billion a year. Paradoxically, several developing countries are both net agricultural importers and net food importers. The continent's food and agricultural imports amount to between $45 billion and $50 billion a year.[4]

In many developing countries, in particular in sub-Saharan Africa, a robust agro-industrial sector with the potential to lift millions from poverty and increase global food supply chains has not emerged. Some of the leading challenges to the emergence of a strong agro-industrial sector in developing countries are described below.



Source: UNIDO

FIGURE 2: Relevant leading challenges to the emergence of a strong agro-industrial sector in developing countries

1) Max Roser, "Employment in agriculture", Our World In Data, 2013. Available at https://ourworldindata.org/employment-in-agriculture

2) Gillian Pais, Kartik Jayaram and Arend van Wamelen, "Safeguarding Africa's food systems through and beyond the crisis", *McKinsey & Company*, 5 June 2020. Available at https://www.mckinsey.com/featured-insights/middle-east-and-africa/safeguarding-africas-food-systems-through-and-beyond-the-crisis.

3) African Development Bank Group, "Africa's agricultural transformation: identifying priority areas and overcoming challenges", *Africa Economic Brief*, vol. 8, No. 3, (2017).

4) Gillian Pais, Kartik Jayaram and Arend van Wamelen, "Safeguarding Africa's food systems through and beyond the crisis".

UNDERDEVELOPED AGRICULTURAL VALUE CHAINS

Underdeveloped agricultural value chains limit agricultural efficiency and growth even where competitive advantages exist. Large numbers of smallholder farmers scattered over vast areas together with supply-driven agricultural practices lead to collection inefficiencies, a proliferation of traders, high post-harvest losses and higher prices. Farmers produce inconsistent quantities and qualities and this affects their efficiency and ability to compete in regional and international markets. Limited means of communication leave farmers with little knowledge of buyer expectations and insufficient incentive to produce high-quality products. As a consequence, agroprocessors are unable to procure locally the appropriate quantity and quality of raw materials. Lack of scale creates high overhead and transaction costs, and agricultural and agribusiness services, such as eco-friendly waste recycling and disposal, cannot be efficiently provided to widely dispersed firms lacking a critical mass.

FRAGMENTATION OF LANDHOLDINGS

Fragmentation of landholdings occurs as a result of a growing rural population that has limited opportunities for off-farm employment. Fragmentation decreases per capita income and leads to disguised unemployment in the agriculture and agribusiness sectors in rural areas of developing countries. Fragmentation and low per capita productivity lead to high aggregation costs of surplus production to meet the scale required by industries.

SPECIALIZED AGRIBUSINESS INFRASTRUCTURE

Many developing countries lack specialized agribusiness infrastructure, including cold storage units, quarantine facilities, quality control laboratories, quality certification centres, raw material storage, and controlled and modified atmospheric storage. Environment-related infrastructure such as sewage and effluent treatment plants are not available for small and medium-sized enterprises. The absence of shared infrastructure, combined with limited utilities and business development services, increases initial investment costs and keeps the barrier to entry high. For those businesses that do get off the ground, the context entails higher operational costs and higher unit prices, leaving them less competitive at the regional and global levels and less able to expand.

AGRICULTURAL TECHNOLOGY ADOPTION AND MECHANIZATION UPTAKE

Agricultural technology adoption and mechanization uptake is slow as a result of four main factors: availability is often limited in developing countries; access to hard currency or lines of credit to purchase quality inputs and technologies is difficult; distribution mechanisms are often poorly developed or absent; and utilization is low as the knowledge and skills to make the best use of inputs and technologies is often absent or underdeveloped. Public extension services that could play a role in the supply of quality agricultural inputs and services are often ineffective or have limited capacity. Strategies for the intensification of food production often require agricultural inputs of the right quality and quantity. This emphasizes the role of extension services and farmers' cooperatives in the supply and uptake of appropriate inputs and technologies.

ANNUAL POST-HARVEST LOSSES

Annual post-harvest losses account for approximately 30 per cent of food produced for human consumption; fruit and vegetable losses are estimated at 50 per cent or more. Losses occur at every stage of the value chain and have significant economic and environmental impacts. Poor quality inputs and limited use of agronomical best practices increase losses at the farm level, while further losses occur through inefficient processing technologies and practices, insufficient packaging, poor storage and inadequate logistics.

SKILLS SHORTAGES

Skills shortages in many developing countries affect the ability to make use of new agricultural technologies and services. The agricultural sector continues to employ a significant proportion of the workforce, but most knowledge is gained through the intergenerational transfer of skills. The vast majority of workers in the agricultural sector are without adequate vocational training and education to support the adoption of new technologies and services or to shift seamlessly to employment in the agro-industrial sector. Formal agricultural technical and vocational education and training (ATVET) has only recently begun to emerge in many developing countries. This means that there is a shortage of qualified trainers, curricula, and infrastructure for practical agricultural learning. The majority of ATVET institutions lack access to the latest knowledge and technology, while instructors and extension workers lack technical skills, knowledge and pedagogy to effectively deliver training courses to farmers. Much of the global research and development into improved agricultural technology and practices does not reach poor rural farmers in developing countries. Moreover, agriculture is seen by many, especially youth, as a livelihood option of last resort, making it difficult to recruit young people for ATVET programmes.[5]

LIMITED FINANCIAL RESOURCES

Limited financial resources mean that smallholders, especially women and youth, are unable to expand agricultural activities (through the purchase of equipment and inputs, infrastructure maintenance, transport of products to markets, and others). Farmers' access to rural financial services is constrained by socio-cultural, economic, legal and educational barriers. The presence of formal financial institutions (such as banks or microfinance institutions) is limited in rural areas, and existing financial services intended for rural communities rarely benefit farmers, partly because of collateral requirements. The lack of financial institutions leaves farmers and agribusinesses unable to access savings, insurance and credit products. Moreover, many of the rural poor wanting to borrow from a bank or microfinance organization lack the experience and skills necessary to process loans, while the social stigma attached to loans also constrains access to financial resources. On the supply side, the presence of system-wide risk characterizing agricultural activities, lack of general understanding of the sector and limited financial infrastructure (for such purposes as tracking the identity of clients or monitoring outcomes) constrains the provision of financial services in rural areas.[6]

INSTITUTIONAL AND POLICY-RELATED INEFFICIENCY

Institutional and policy-related inefficiency has a direct impact on the emergence of a strong agribusiness sector. Agribusiness or even park-specific policies, including regulations and implementation road maps, provide frameworks for the development of the sector. Such documents are often not available. Institutions are often under-equipped to develop policy and oversee its implementation, and face a wide range of barriers, including gaps in financial and human resources, difficulty coordinating across implementing agencies, and interference from interest groups.

5) Trent Brown and Shyamal Majumdar, "Agricultural TVET in developing economies: challenges and possibilities", *UNEVOC Network* discussion paper, 2020. Available at https://unevoc.unesco.org/pub/discussion_paper_agricultural_tvet.pdf

6) Claudia Ruiz, "How can finance influence productivity of agricultural firms?", *World Bank blog*, 13 January 2014. Available at https://blogs.worldbank.org/allaboutfinance/how-can-finance-influence-productivity-agricultural-firms.

4 INTEGRATED AGRO-FOOD PARKS: CONCEPTS, OBJECTIVES AND BENEFITS

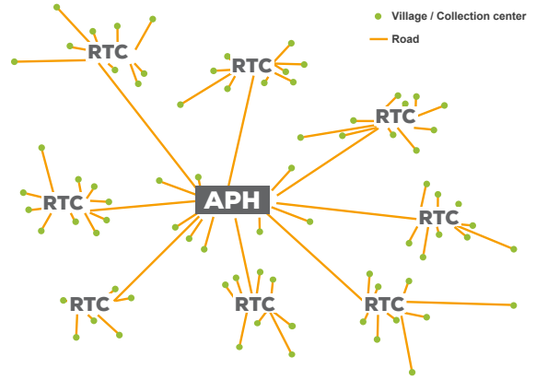
4.1 DEFINING THE IAFP MODEL

The integrated agro-food park, a form of industrial park, is increasingly viewed around the world today as a tool to support the growth of a robust agro-industrial sector. The United Nations Industrial Development Organization (UNIDO) defines IAFPs as an agribusiness development corridor integrating value chain actors with high-quality infrastructure, utilities, logistics and specialized facilities and services to create economies of scale for sustainable market-driven agribusiness development and rural transformation. IAFPs also seek to generate spillover and multiplier effects in surrounding rural populations (UNIDO, 2019). IAFPs typically comprise three distinct yet integrated components, as set out below.[7]

1 Agroprocessing hubs

Agroprocessing hubs (APHs) are the first such component. At the heart of the IAFP, APHs are centrally managed clusters of agro-industrial and allied firms grouped to gain economies of scale and positive externalities by sharing utilities, common and specialized infrastructure, and taking advantage of opportunities for bulk purchasing and selling, and also business services.

Multiple functions take place in APHs, such as final processing, storage, packaging, marketing and distribution.[8] The APHs house purpose-built shared facilities to enable processors and distributors to operate in the same location, thus reducing transaction costs and sharing services for increased productivity and competitiveness. APHs are supported by adequate infrastructure, logistics and specialized facilities and services required for agro-industrial activities (including electricity, water, cold chain facilities, laboratory and certification services, business services, ICT and waste treatment, among others).



Source: Authors' own elaboration

FIGURE 3: Spatial relationship between agroprocessing hubs, rural transformation centres and collection centres

7) The concept of IAFP is sometimes mistakenly used interchangeably with APH. In practice, however, the IAFP model comprises three integrated components

8) Agroprocessing activities may be demarcated into three main categories based on the level of technology used: primary agroprocessing (such as washing, cleaning, grading and labelling); secondary agroprocessing (such as milling grain, grinding groundnuts, pressing oil and pressing juice); and advanced agroprocessing (such as product transformation, baking and extractive activities).

2 Rural transformation centres

The second component is the rural transformation centre. Each APH is served by a network of such centres, which link producers to the agro-industries at APHs. Each centre comprises a physical complex of facilities that serves as an aggregation point where agricultural produce from farming communities or collection centres is collected, sorted, stored and may undergo primary processing (according to product-specific need), before onward transport to the APH, or direct marketing to consumers (as may be the case for fresh fruits and vegetables). Beyond their primary functions, rural transformation centres also provide farmers with microfinance services, market information and extension services, along with training and other social amenities such as health care services. Rural transformation centres serve both as primary processing hubs and storage points, and also as centres for capacity-building, knowledge dissemination, market intelligence and other rural services. For most producers, the centres are the main point of contact with commercial agricultural value chains (see the text box below).

3 Collection centres

Collection centres (CC), the third component, are located in villages close to the source of production, within feeder catchment zones, to ensure a steady supply of raw materials to regional transformation centres and APHs. Such centres are village-level small-scale aggregation points with basic infrastructure used to consolidate produce from large numbers of small-scale suppliers.

The three components together can cover thousands of hectares surrounding the APH, and also the wider catchment area, sometimes called an agro-crop procurement zone. The IAFP comprises the APH, rural transformation centres and collection centres and covers the full area that supplies the APH with raw materials. The agro-crop procurement zone (IAFP catchment area) can range in size depending on several factors, including the processing capacity of the site, total raw material requirements and productivity of the land.

Confined to geographical limits, agro-food parks allow governments to pilot new policies for agro-industrialization that cut across sectors, including agriculture, industry, finance, environment, labour, investment and research and development, among others.

IAFPs, rural translation centres and the benefits of increased commercialization of farming

In Ethiopia, UNIDO is supporting the development of four integrated agro-industrial parks. These are home to numerous companies, including many food-processing firms. A Netherlands company, Tradin Organic, established the Sunvado factory in 2018 to process premium organic avocado oil at the Yirgalem integrated agro-industrial park. Before the establishment of the park, most avocados fetched low prices at local markets. When Sunvado began operations, it offered farmers a higher price for their avocados. This had a positive impact on local growers and their communities. The oil from the avocados is exported to markets in Japan, the Netherlands, North America and other areas. Working together with the avocado farmer cooperatives, Sunvado employs field extension workers to support the supply chain. The company deployed 26 professionals to provide extension services to help farmers meet specifications. The company also distributed 24 motorbikes to support transport logistics and 24 smartphones to upload harvest data in real time to a database at the integrated agro-industrial park. The company established an organic monitoring system, helping to secure organic certification in 2019. Approximately 81 avocado fruit collection centres – 22 multipurpose and 51 fruit and vegetable cooperatives – were established and 78,000 smallholder farmers, 22 per cent of them women, from seven districts are presently supplying produce to the Sunvado factory. Sunvado also established two avocado seedling nursery sites, owned by smallholder farmers, to introduce improved varieties. The new varieties significantly reduce the pre-production period of avocado trees to satisfy future demand. To further improve quality, the company is working with Hawassa University to introduce additional improved varieties and further research and development services.

Also operating at the Yirgalem integrated agro-industrial park is the Jojo natural milk processing factory owned by Duoley Food Processing PLC. The factory has a processing capacity of 30,000 litres of milk per day and collects milk from farmers residing within a 60-kilometre radius of the hub. The processing facility established links with approximately 15,000 smallholder farmers to supply milk. The company provides training courses, concentrated feed inputs, together with interest-free credit to boost the capacity of its suppliers. The processing facility has plans to expand its capacity to 100,000 litres per day and expand its procurement area to a 100-kilometre radius. The expansion is expected to double the number of direct jobs and further increase the number of indirect jobs in and around the park. The factory sells its dairy products to the local market and is working towards export to nearby African markets.

Source: Authors' own elaboration

4.2 IAFP OBJECTIVES

IAFPs have multiple objectives that combine business opportunities with economic development and poverty reduction needs to create win-win solutions for sustainable agro-industrial growth. The primary objective of IAFPs is to create investment opportunities in agribusiness. Figure 3 outlines seven key objectives that make IAFPs a unique agro-industrial development model.

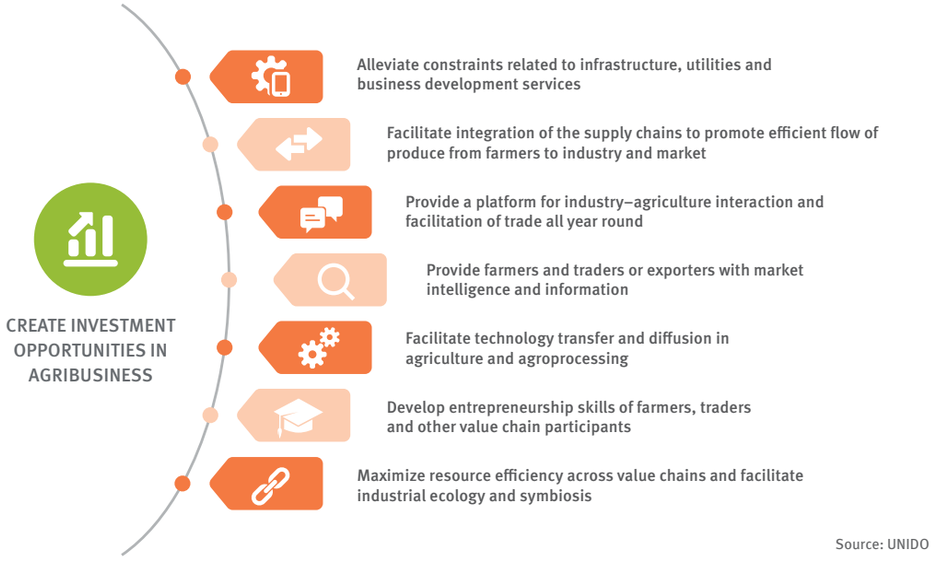


FIGURE 4: Integrated agro-food park objectives

4.3 SUMMARY OF BENEFITS

The immediate benefits of IAFPs are those derived in the relatively short-term through their use as instruments of trade and investment policy. These include an increase in investment flow, technology transfer, skills development, off-farm employment creation, increased export of processed agricultural products and additional government foreign exchange earnings, among others. IAFPs leverage these benefits to trigger strategic broad-based development benefits such as balance of trade, improved manufacturing value added in GDP and sustainable rural development.

The IAFPs increase the efficiency and value-capturing capacity of the firms located in APHs, and subsequently may play a multiplier role in the emergence of agro-industry as a leading sector that can propagate growth and linkages to other economic activities. They combine the pursuit of value addition and industrial efficiency with principles of industrial symbiosis[10] and innovation.

A number of the key benefits of IAFPs – both immediate and strategic – are highlighted below.

Agribusiness competitiveness contributes to structural change

IAFPs contribute directly to the transformation and modernization of the agricultural sector in developing countries. IAFPs help to drive the transition from supply-led subsistence production to commercialized market-driven production systems by shifting resources from less productive to more productive sectors. The move from low productivity agriculture to higher productivity agro-industries increases manufacturing value added. The shift to agro-industries also creates linkages to other parts of the economy, fuelling a virtuous circle of growth. The emergence of a strong agro-industrial sector is a stepping stone to industrialization and the structural transformation that is critical to meeting the targets of the 2030 Agenda.

Providing decent employment opportunities for the growing rural population

Agro-industries have significant multiplier effects due to backward and forward linkages along agricultural value chains.[9] Investment in IAFP tenants generates employment opportunities for the rural population at each node of the value chain. In addition to direct jobs at the APHs, IAFPs generate demand for agricultural produce at the farm level, which in turn contributes to increased demand for agricultural inputs, such as fertilizers, feeds, veterinary products, seeds, extension services, and training, among others. The demand for goods and services from allied industries, such as those providing farming equipment, processing technologies, environmental services and packaging, contributes to off-farm employment. IAFPs also generate secondary employment by attracting a range of administrative, financial and logistic service providers, as well as numerous social and commercial services around the park.

In their capacity to create jobs, off-farm income opportunities and improve the quality of life in rural areas, IAFPs support rural and local area development and reduce rural-urban migration. A growing rural population in an already crowded agricultural sector means that land plots are increasingly subdivided, making farming an untenable livelihood and reinforcing the subsistence nature of agricultural work. The high level of youth unemployment is leading to migration both within the country and outside, and also to harmful social and economic consequences for the economy. IAFPs create manufacturing jobs in agro-industries, which often require skills that can be acquired through technical and vocational training, enabling manufacturing to better absorb the current oversupply of labour in the agricultural market.

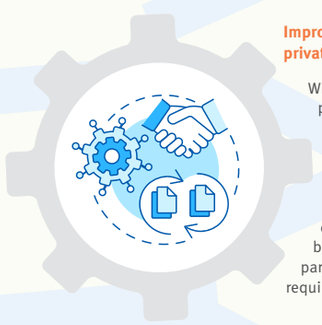
Environmental sustainability

IAFPs help to improve environmental sustainability in the catchment area by establishing shared services in the APHs, enabling resident firms to access technology and services that would otherwise be out of reach. Firms can share utilities such as wastewater treatment, transportation, landscaping, waste collection and by-product utilization. Recycling waste and by-products, in particular, helps to close product life cycles, yielding environmental and financial benefits.

9) Food and Agriculture Organization of the United Nations, *Innovative Policies and Institutions to Support Agro-industries Development* (Rome, 2011). Available at https://www.fao.org/3/i2420e/i2420e.pdf

Reducing post-harvest losses

Processing within IAFPs seeks to add greater value to agricultural produce, in particular when combined with product differentiation strategies Linkages to APHs provide ready markets for produce, together with the agro-logistics to transport goods to processing facilities and markets efficiently. Improved storage facilities (dry and cold), as well as pre-cooling at collection centres, rural transformation centres and agroprocessing hubs, also help to reduce post-harvest losses. Losses are also minimized through training and access to information and services. At APHs, value addition processes further reduce losses, including through by-product utilization.



Improved extension services with private sector participation

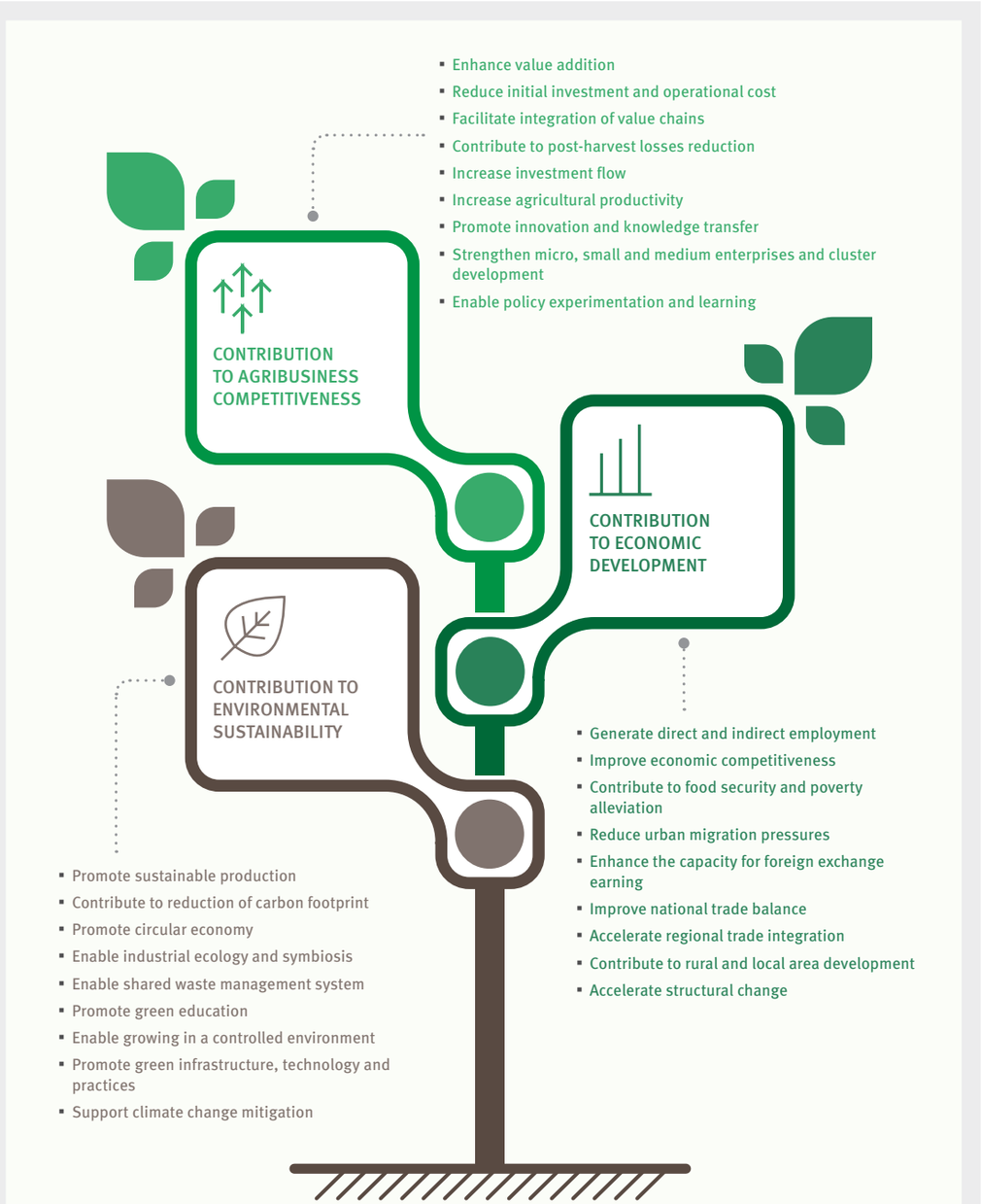
With its proximity to and linkage with smallholders, and the presence of large-scale processing firms in need of quality raw materials, IAFPs facilitate demand-driven extension services through which farmers gain access to information, education, research results, inputs, and markets, and improve their knowledge and skills of production technology. IAFPs facilitate the demonstration of participatory and collaborative processes where the private sector – tenants of the park – take part in the delivery of extension services. Apart from contributing to improved efficiency, decentralized and demand-driven extension programmes also reduce government burden. For example, the Sunvado factory in the Yirgalem integrated agro-industrial park in Ethiopia hired extension workers to provide training and extension services required for farmers (see the text box above).

Innovation and technology transfer

IAFPs can form hubs for innovation, research and development, training, technology transfer and business incubation. This, in turn, further supports the sustainable development of the agricultural sector. Technology and its ability to reach all corners of the globe will be crucial if the agricultural sector is to be able to feed a projected global population of almost 10 billion by 2050.[11] The technology transfer opportunities that foreign investment, in particular, can bring to an economy are crucial to improving productivity. Introducing producers, processors and other value chain participants, together with industrial park residents, to appropriate and emerging technologies to optimize processes along the supply chain is crucial to the sustainable long-term growth of the sector. Through links to multinational firms, regional trade blocks, academia and research laboratories, IAFPs have a key role to play in the diffusion and local adoption and adaptation of technologies. Resident public and private extensions services may facilitate this process in IAFPs, innovating, creating and harnessing both local and global best practices to solve challenges for local and national agribusiness.

10) Industrial symbiosis, a practice of circular economy, entails the exchange of by-products, energy, and process wastes among closely situated firms. As indicated by Marian R. Chertow in her article "Industrial symbiosis: literature and taxonomy", *Annual Review of Energy and the Environment*, vol. 25, 2000, pp. 313–337, the keys to industrial symbiosis are collaboration and taking advantage of the synergistic possibilities offered by firms situated close to one another.

11) United Nations, "World population projected to reach 9.8 billion in 2050, and 11.2 billion in 2100", press release, 21 June 2017. Available at https://www.un.org/development/desa/en/news/population/world-population-prospects-2017.html



Source: UNIDO

FIGURE 5: Summary of benefits of IAFPs

5 INTEGRATED AGRO-FOOD PARKS AND INVESTMENT IN AGRIBUSINESS IN AFRICA

Investment in developing countries' agribusiness sectors has increased in recent years along with price increases for agricultural commodities in the global market. Several multinational companies, from developed countries and emerging economies in particular, have begun to invest in the agroprocessing sector in developing countries. The UNCTAD World Investment Report 2021[12] ranked food and agriculture among the three most important industries for attracting foreign investment.

The IAFP model is an effective means of agribusiness development, in particular in Africa. The Africa SDG Index and Dashboards Report 2019 noted that the integrated agro-industrial parks of Ethiopia are a best practice for attainment of the Sustainable Development Goals.[13] By combining strategies to develop industrial infrastructure with rural transformation centres, the integrated agro-industrial park programme internalizes the infrastructure dimension of the Sustainable Development Goal agenda and contributes to economic growth, poverty reduction and food security.

The African Union (AU) proposed the Common African Agro-Parks Programme to support the implementation of the Comprehensive Africa Agricultural Development Programme within the framework of Agenda 2063 of the African Union. The Common African Agro-Parks (CAAP) Programme, still in the inception phase, aims to facilitate the development of regional agro-industrial hubs in key trade corridors to industrialize and scale up African agriculture. The overall goals are to increase domestically produced agricultural goods, reduce food imports, create business and employment for Africans, and increase value-added processing of agricultural commodities to boost intra-African trade and investments.[14]

The African Development Bank is coordinating a dedicated policy for special agro-industrial processing zones under its "High Five (High 5s) Agenda", the transformation of African agriculture and industry prioritized through the "Feed Africa"[15] and "Industrialize Africa"[16] Strategies. In addition to the full project life cycle support to IAFPs in Africa provided by UNIDO, other multilateral institutions supporting IAFP initiatives include the Food and Agriculture Organization (FAO) of the United Nations, the Economic Commission for Africa (ECA) and the Common Market for Eastern and Southern Africa (COMESA).

The use of industrial parks or special economic zones as a tool for agricultural value addition and competitiveness is a recent phenomenon, in particular in Africa. Efforts are at an early stage on the continent, with most spatially organized agro-industrial efforts launched only within the last decade. There is limited research on the performance of the IAFP model in Africa, but early indications point to successes in attracting new investment in the agro-industrial sector, albeit at a slow pace due to long incubation periods and delays in the construction of basic and connective infrastructure.

12) United Nations Conference on Trade and Development, *World Investment Report 2021: Investing in Sustainable Recovery* (Geneva, 2021).

13) SDG Center for Africa and Sustainable Development Solutions Network, "Africa SDG Index and Dashboards Report 2019" (Kigali and New York, 2019).

14) African Union (2019), Programme for Establishing the Common African Agro-Parks (CAAPs) Concept Note, Forum for Agricultural Research in Africa.

15) African Development Bank (2016). Feed Africa: Strategy for Agricultural Transformation in Africa 2016-2025. Available at https://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/Feed_Africa-_Strategy_for_Agricultural_Transformation_in_Africa_2016-2025.pdf

16) African Development Bank (2019), Industrialize Africa. Available at https://www.afdb.org/sites/default/files/2019/07/05/hight_5_industrialize_africa.pdf

6 SUCCESSFUL IAFP IMPLEMENTATION: INGREDIENTS FOR SUCCESS

IAFPs can serve as a testing ground for policy learning and economic reforms. Approaches can be piloted in a geographically concentrated area, and their demonstrated effects can, if successful, be replicated nationwide, along with the best practices. Putting in place a strategy to develop and scale up effective IAFPs requires careful planning that draws on emerging international best practices, including the following elements:

Long-term vision in place

A primary driver for establishing an IAFP relates to its prospective contribution to regional development through fostering new investment, industries, jobs, linkages and growth. When properly designed, IAFPs can serve as platforms for delivering on broader local community goals, such as local employment creation, transport services, education and training, health care and communication services. This requires authorities to make the IAFP an integral part of a long-term development strategy, integrating the programme into national or regional industrial policies and economic development strategies.

Strong government support from planning to implementation

Park development often requires the participation of a wide number of stakeholders, including institutions at different tiers of government – central, regional and local; the private sector and sectoral associations; development partners and financial institutions; smallholder farmers, cooperatives and unions; and academic and research institutions and civil society organizations. Each stakeholder brings a set of assets and interests. Ensuring that these are complementary and contribute to overarching agro-industrial development objectives, and IAFP development specifically, requires a predictable and transparent legal and regulatory framework. Such a framework helps to clearly define roles and responsibilities, provide investor protection and privileges and ensures that IAFPs reduce risks and attract the right investments.

It is also crucial to explore how various stakeholders' contributions interact and intersect, and how to engage stakeholders and the local community in a well-coordinated manner to ensure that their concerns are addressed. Establishing a coordination structure led by a public or private entity, in consultation with stakeholders and relevant institutions, is important for successful IAFP development. The appropriate institutional set-up can mitigate the internal coordination difficulties of an IAFP programme that may arise from the diversity of stakeholders. Successful experience shows that an IAFP regime should be coordinated by a high-level interministerial committee or a joint steering committee often under the leadership of the president, vice president or a ministry designated by the head of government.

Effective IAFP development strategy and management practices

The planning, design and construction of an IAFP is a long process due to the scope of the action itself, as well as the numerous stakeholders involved. Successful IAFP development requires a clear and step-by-step strategic framework ranging from project conceptualization to operation and management.

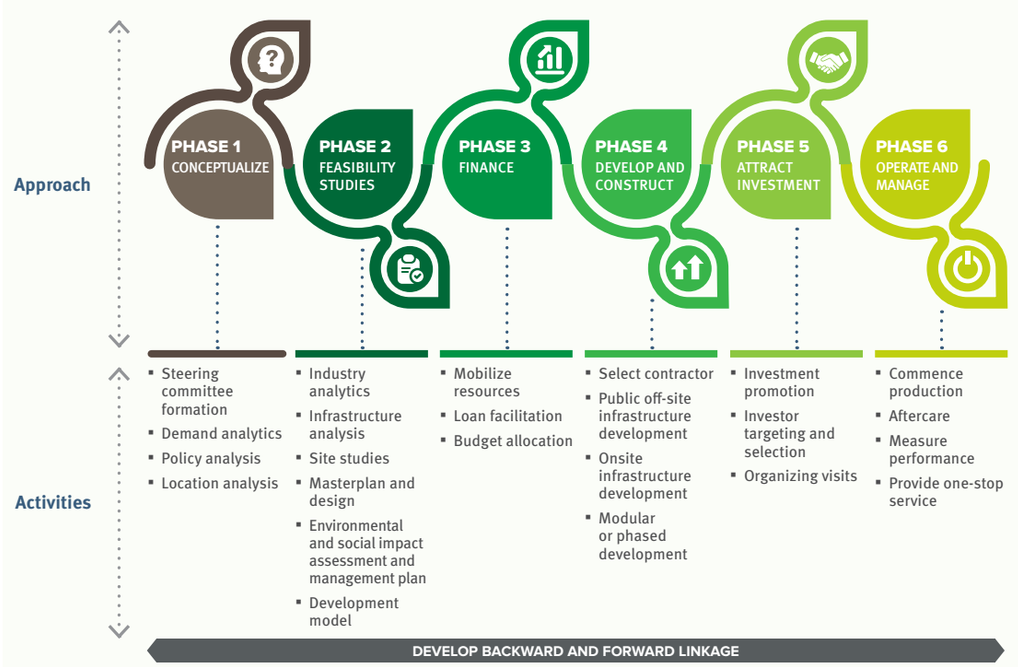


FIGURE 6: Different phases of IAFP development[17]

Incorporating sustainable agribusiness practices

IAFPs offers significant opportunities to increase operational efficiencies and environmental sustainability through common infrastructure and systems for water management, energy, waste recycling and resource recovery. An environmental and social impact assessment is a critical component of any IAFP feasibility plan. Focus on environmental planning not only identifies environmental guidelines in respect of national laws and international best practices, but also identifies intervention points to promote sustainable food processing systems throughout the catchment area.

Environmental sustainability is further enhanced through the application of an eco-industrial park approach. The approach employs renewable energy and pollution prevention principles and applies industrial symbiosis and other environmental management methods to reduce pollution and waste. The large concentration of producers, agribusinesses and institutions organized around IAFPs, using natural resources, requires careful planning and operations respectful of natural systems. Sustainable solutions can be applied to different aspects of the IAFP, from basic infrastructure construction and operations, reserving land for green spaces, and waste utilization techniques. Agricultural extension services can also be augmented to support green industry and sustainable agribusiness.

The concentration of agricultural activities allows for a more self-contained system and a cycle-closing approach, in which the outputs of one process are the inputs of another. Examples of this approach include the use of heat from electrical generators for greenhouses, and of by-products of food processing for animal feed, organic fertilizer or essential oils. Such linkages and proximity also facilitate product traceability, which can be used to better measure the carbon footprint of a product from farm to fork.

17) The different phases of IAFP development are not necessarily sequential, as some of the activities are spread across phases. For example, investment promotion activities usually start in earlier phases. The same is true of financing, where the developers often identify financing sources starting from the project conceptualization phase.

7 CONCLUSION: IAFPS AS AN EMERGING TOOL FOR AGRO-INDUSTRIAL TRANSFORMATION

IAFPs offers a potentially transformative model for the development of the agribusiness sector, especially in developing countries. IAFPs create investment opportunities in agribusiness. They can contribute to the twin goals of agro-industrialization and rural development. This policy brief summarizes the challenges facing the agricultural sector, and the concept of the IAFP approach, its objectives and benefits, and strategies for putting it into practice. In conclusion:

1. IAFPs respond to a pressing need for sustainable agro-industrialization and a more competitive agricultural sector in developing countries, made more urgent by the global context of growing populations, high rural-urban migration, new supply-chain-focused approaches, new technologies, and the threat of climate change.

2. IAFPs expedite improvements in efficiency, greater synergy in agricultural production between IAFP-based firms, increased access to finance and agro-related services, and the rapid integration of rural areas into robust agricultural supply chains with strong forward and backward linkages. This is turn creates employment and income and enhances the quality of life in rural areas that will be essential for achieving the Sustainable Development Goals.

3. Partners from the public and private sectors should endeavour to design cost-effective solutions to meet the hard and soft infrastructure needs of agribusiness and related firms; create strong supply chain linkages to a surrounding rural catchment area; encourage innovative partnerships and platforms for sharing knowledge, skills, technology and information; and support broader rural development initiatives.

As interest in the IAFP approach grows, UNIDO and its partners are providing technical assistance and policy-focused research on IAFPs. The forthcoming publication ‘Guidelines for Sustainable Design, Development and Management of Integrated Agro-Food Parks (IAFPs)’ will provide more details on the introduction provided by the policy brief, including further details on step-by-step guidance for IAFP development.

LIST OF FIGURES

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