UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

Policy review

Building the case for investment in local pharmaceutical production in Africa

A comprehensive framework for investment policymakers

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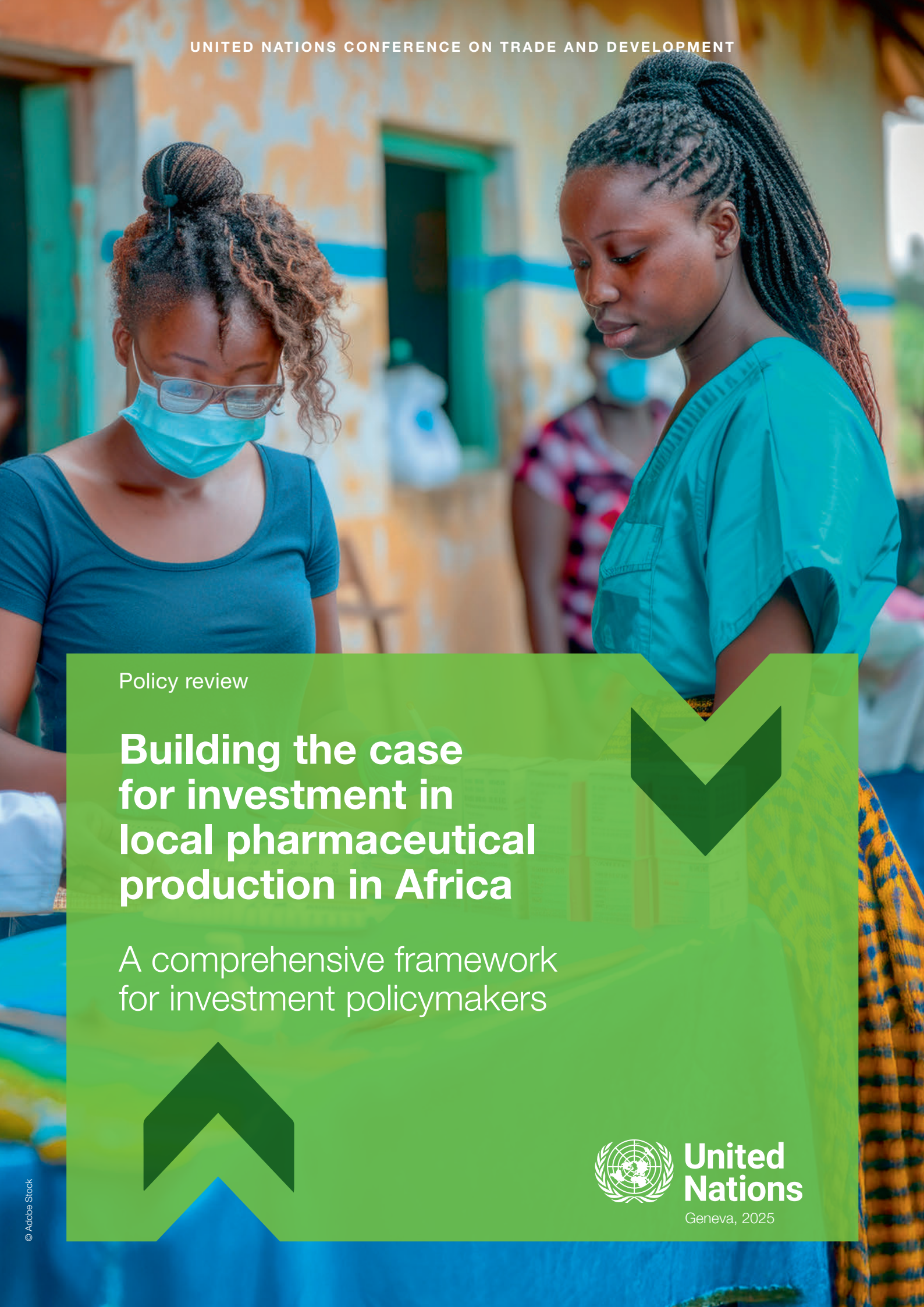

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Abbreviations

AfCFTA	African Continental Free Trade Area
AfDB	African Development Bank
AMR	antimicrobial resistance
AMRH	African Medicines Regulatory Harmonization
API	active pharmaceutical ingredient
EAC	East African Community
FDI	foreign direct investment
GDP	gross domestic product
GMP	good manufacturing practices
GVC	global value chain
IPA	investment promotion agency
LDCs	least developed countries
MNE	multinational enterprise
SDGs	Sustainable Development Goals
SEZ	special economic zone
UNCTAD	United Nations Conference on Trade and Development
UNECA	United Nations Economic Commission for Africa
UNIDO	United Nations Industrial Development Organization
VAT	value added tax
WHO	World Health Organization

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Overview

High time for investment promotion in local pharmaceutical production in Africa

Investment in local pharmaceutical production has become a global priority, particularly after the coronavirus (COVID-19) pandemic. This focus aligns with Sustainable Development Goal 3 (SDG 3), which aims to ensure healthy lives and promote well-being for all. Target 3.B emphasizes the need for affordable access to essential medicines and vaccines. Supporting investment in local manufacturing capacity contributes to meeting these global health goals and to reducing reliance on external supply chains.

In Africa, where there is heavy dependence on imported medicines and limited access to essential drugs, this issue has taken on special urgency. The discussion has now moved from whether to promote local production across the continent to how to make it happen. Strengthening the pharmaceutical industry, coupled investing adequately in healthcare services, is key to improving health outcomes and building resilience in African healthcare systems.

Ambition versus reality: a tough business landscape

The African pharmaceutical market relies heavily on imports, with over 70 per cent of pharmaceuticals sourced externally, primarily from Asia. While local production exists in about half of African countries, it is predominantly concentrated in North Africa and a few regional hubs in sub-Saharan Africa. It is driven largely by domestic small and medium-sized enterprises, with limited foreign direct investment (FDI).

The underlying business model is not fully local but mixed, involving the importation of active pharmaceutical ingredients (APIs) for local formulation. With a strong emphasis on generic drugs, profit margins are driven by costs and volumes, exposing the African pharmaceutical industry to major competitive pressure from global manufacturers.

What is needed? A comprehensive approach to promoting investment: impact, feasibility and incentives

Promoting investment in local pharmaceutical production across Africa is a complex task that requires collaboration among multiple stakeholders, from both the public and private sectors, at national, regional and global levels. To develop effective and sustainable strategies, investment policymakers need to rely on a comprehensive framework centred on three key pillars: impact, feasibility and incentives.

Impact: health first, but also strategic and economic impact

The value proposition for local production is threefold. The most urgent is the health impact, where increased local production can significantly improve access to medicines. This is particularly important for essential drugs such as vaccines and antibiotics, where timely availability is key to improving public health outcomes and even preventing healthcare crises.

On the strategic front, local production enhances national health sovereignty by reducing reliance on imports and ensuring a stable supply of essential medicines. Economically, it can stimulate job creation, foster local industries and support long-term economic development. The interplay

between health, strategic and economic impacts creates a virtuous cycle, where improved access to medicines enhances human capital, boosts productivity and strengthens economic resilience, while simultaneously attracting investment and fostering long-term development.

Feasibility: local production can be competitive with imports, under the right conditions

The business case for local pharmaceutical production in Africa faces significant challenges, particularly because of high production costs and reliance on imported APIs. These factors limit the competitiveness of local production with imports. However, stylized evidence suggests that, at sufficient scale, African local production becomes competitive with imports.

Achieving competitiveness in Africa's pharmaceutical industry depends largely on increasing production volumes. In addition, the establishment of strategic partnerships with multinational enterprises and of strong infrastructure and regulatory frameworks – at both national and regional levels – can also make a difference.

Incentives: balancing impact and feasibility

Incentives play a key role in balancing the feasibility and the impact of local production. Well-designed incentives can improve feasibility, making local production more competitive and unlocking health and economic benefits. However, when feasibility is low, the costs of incentives rise, requiring careful consideration of their benefits against other public needs. Policymakers must strategically assess how incentives can drive feasibility while delivering meaningful impacts, to ensure the best use of public resources.

The promotion of local pharmaceutical production in Africa relies on a combination of production-facilitating incentives, such as fiscal incentives, and market-shaping incentives, such as preferential procurement. Effective governance, with clear criteria and regular monitoring, is key to ensuring the sustainability and impact of these measures.

Is Africa ready? A narrow path for many countries

The readiness for local pharmaceutical production in Africa depends on factors that vary widely across countries, among them population size, industry maturity and FDI presence. A high-level mapping reveals that many countries face substantial barriers, with smaller economies confronting especially narrow paths to industrialization.

Industrial paths to local production in Africa broadly fit into four main policy clusters. *Starters* – generally the smallest, predominantly low-income, economies – face significant structural barriers to initiating local production and a challenging trade-off with imports. *Prospects* have high untapped market potential and should prioritize mobilizing investments to fully capture it. *Followers* need to sustain their existing local production and leverage opportunities from regional integration. *Regional leaders* are the pharmaceutical hubs in their respective regions and should focus on expanding and upgrading their industries.

Insights from the field: how to leverage local production to tackle antimicrobial resistance

The field project *Investment Incentives for Local Production of Essential Antibiotics in East Africa* carried out by UNCTAD and the East African Community (EAC) over the period 2019-2023 provides key insights into antibiotic production and antimicrobial resistance (AMR) in the region, with a focus on Ethiopia, Kenya and Uganda. Local production can improve access to essential antibiotics and help reduce the burden of AMR, but it must be integrated with AMR

stewardship to maximize health benefits. The feasibility of antibiotic production varies across countries, requiring tailored investment strategies. Despite public support, current policies lack targeted incentives for antibiotic production, which highlights the need for refined, product- and country-specific interventions.

Addressing common AMR challenges and gaps in incentive schemes calls for shared policy recommendations, including improved information systems, product-specific incentives for antibiotics, incentives linked to compliance with good manufacturing practices (GMP), stronger regional integration and exploration of joint API procurement. In addition, each country requires tailored investment strategies to meet its unique feasibility conditions and industrial goals.

Note on the scope.

This report emphasizes local formulation – the process of (locally) transforming imported APIs into finished pharmaceutical products – as the most immediate and feasible strategy for enhancing medicine production in Africa. It is nevertheless important to recognize the strategic relevance of API production in building resilient African manufacturing.

In the short to medium terms, scaling API production across Africa – beyond a few of the continent's most advanced pharmaceutical hubs – remains constrained by market and industry conditions. These include the lack of an established industrial base, fragmented demand, limited economies of scale and weak integration into global supply chains. Nonetheless, countries such as Egypt and Nigeria are making efforts to strengthen API production, demonstrating both the potential for progress and the necessity for sustained investment and strategic planning (UNCTAD, 2023d).

Achieving sustainable local API production demands more complex enabling conditions than achieving local formulation. These conditions include robust policy frameworks, strategic investment in infrastructure and in research and development (R&D), technology transfer, and incentives to foster market consolidation and regional collaboration. Although these conditions require time to achieve, they are essential for building a resilient pharmaceutical manufacturing ecosystem in Africa.

This report is more limited in scope. It focuses on local formulation as a practical and more widely accessible step to harness immediate investment opportunities and catalyse the development of local and regional pharmaceutical value chains. At the same time, it underscores the importance of continuing efforts to advance API production capabilities over time.

Key messages: 10 takeaways for investment policymakers

Strategic priorities:

- **Address the health imperative.** Local pharmaceutical production is essential for improving access to medicines in Africa, contributing to the achievement of SDG 3 and to addressing critical public health challenges such as pandemics and AMR.
- **Promote a comprehensive approach.** Supporting local production is a complex, multidimensional policy goal that requires a comprehensive strategy that aligns health, economic and business priorities. This strategy must address multiple interconnected dimensions such as impact, feasibility and incentives.
- **Balance incentives with feasibility and impact.** Incentives are key to triggering investment in local production in Africa. To ensure the best use of public resources, policymakers must strategically assess how incentives can drive feasibility while delivering meaningful impacts.
- **Tailor policy responses to country-specific conditions.** Africa's diversity presents both challenges and opportunities. Tailoring investment promotion strategies to each country's unique conditions will be key to fostering a sustainable and resilient pharmaceutical industry across the continent.

Investment promotion strategy:

- **Enhance incentive schemes.** Policymakers should design a balanced mix of product-facilitating incentives (e.g. fiscal measures) and market-shaping policies (e.g. preferential procurement) to support local pharmaceutical production, ensuring these incentives are governed transparently and effectively.
- **Leverage FDI.** Policymakers need to recognize the untapped potential of FDI, which has been underutilized in the past. Such investment is critical for financing productive capacity, integrating local industries into global value chains and facilitating technology transfer.
- **Invest in specialized infrastructure and special economic zones (SEZs).** Governments should prioritize investment in SEZs and other dedicated infrastructure to attract FDI and create conducive environments that support long-term growth in pharmaceutical manufacturing.

Operational and regulatory enablers:

- **Foster regional integration and cross-country collaboration.** Regional integration opens promising prospects for overcoming market fragmentation and achieving economies of scale, harmonizing regulations, pooling procurement and coordinating investment strategies.
- **Incorporate API supply chain strategies.** To capture immediate investment promotion opportunities, policymakers should couple investment in local formulation capacity with strategies aimed at enhancing the stability of the API supply chain, while laying the groundwork for longer-term local API production.
- **Strengthen investment facilitation.** Reducing administrative barriers through digital platforms and streamlined regulations enhances investment facilitation. These measures can create a more efficient and attractive investment climate, especially in a highly regulated sector like pharmaceuticals.

Introduction

High time for investment promotion in local pharmaceutical production in Africa

Investment in local pharmaceutical production has become a global priority, particularly after the COVID-19 pandemic. This focus aligns with SDG 3, which aims to ensure healthy lives and promote well-being for all. Target 3.B emphasizes the need for affordable access to essential medicines and vaccines. Supporting investment in local manufacturing capacity contributes to meeting these global health goals and to reducing reliance on external supply chains.

In Africa, where there is heavy dependence on imported medicines and limited access to essential drugs, this issue has taken on special urgency. The discussion has now moved from whether to promote local production across the continent to how to make it happen. Strengthening the local pharmaceutical industry, coupled with adequate investment in healthcare services, is seen as key to improving health outcomes and building resilience in African healthcare systems.

Local production widely advocated by policymakers

Promoting local pharmaceutical production has become a prominent policy priority worldwide, including in the United States,[1] the European Union,[2] India[3] and Africa.[4] The COVID-19 pandemic has heightened pre-existing concerns about dependency on imported medicines and vaccines, spurring support for initiatives aimed at localizing production – defined as production within a geographical region, whether domestically or foreign owned.

For well over a decade, greater pharmaceutical production in low and middle-income countries has been advocated internationally (WHO, 2008). In a 2019 joint statement UNCTAD, together with other United Nations agencies and the Global Fund, stated, "in recognition of the important role local production can play in improving access to quality-assured medical products and achieving universal health coverage, the undersigned organizations aim to work in a collaborative, strategic and holistic manner in partnership with governments and other relevant stakeholders to strengthen local production".[5]

1 See https://www.hhs.gov/about/news/2023/11/27/biden-harris-administration-announces-actions-bolster-medical-supply-chain.html; https://www.whitehouse.gov/cea/written-materials/2023/11/30/issue-brief-supply-chain-resilience/.

2 See https://health.ec.europa.eu/system/files/2021-02/pharma-strategy_report_en_0.pdf.

3 See https://pharmaceuticals.gov.in/schemes/production-linked-incentive-pli-scheme-promotion-domestic-manufacturing-critical-key.

4 See https://www.eib.org/en/press/all/2023-095-eib-and-afreximbank-launch-eur-200m-africa-health-resilience-investment-initiative#:~:text=The%20new%20EIB%2DAfreximbank%20health,and%20increasing%20local%20pharmaceutical%20manufacturing.

5 World Health Organization (WHO), United Nations Industrial Development Organization (UNIDO), United Nations Conference on Trade and Development (UNCTAD), Joint United Nations Programme on HIV/AIDS (UNAIDS), United Nations Children's Fund (UNICEF) and the Global Fund. (2019). Interagency statement on promoting local production of medicines and other health technologies. Retrieved from https://www.unaids.org/en/resources/presscentre/pressreleaseandstatementarchive/2019/may/20190524_local-production-medicines.

Africa, the continent most reliant on imported medicines, is central in local production policy discussions and initiatives, at the continental level (African Union, 2007, 2022; African Union and UNIDO, 2012), the regional level (EAC, 2017) and the national level (UNCTAD, 2023a, 2023b, 2023c). The issues faced during the pandemic in sourcing essential raw materials and finished pharmaceuticals have intensified policy attention, particularly on vaccine production (Banda et al., 2021, 2022; African Development Bank, 2022).

Perhaps contrary to common perception, local pharmaceutical production in Africa is not recent. Its origins date back to the end of the 19th century, with several documented cases of success across countries (UNCTAD, 2011a; Mackintosh et al., 2016; Chorev, 2019; Banda et al., 2022). Yet, the feasibility of local production – especially in economies with smaller markets – remains highly contentious (Kaplan and Laing, 2005; UNCTAD, 2011a; Chaudury and West, 2015; Conway et al., 2019).

Discussions on local production in Africa have shifted **from "if" to "how"**

Beyond long-standing policy and academic debates, the reality is that policymakers at national as well as regional and international levels are actively pursuing African pharmaceutical production. The focus of discussions has shifted in the past decade from whether to promote local pharmaceutical production to how to do it effectively.[6]

In this context, this report proposes a comprehensive framework to promote investment in local pharmaceutical production in Africa. It aims to inform discussions on the factors shaping investment in local production and the appropriate policy incentives to promote it across African countries. The report focuses on the investment promotion dimension of local production. Occasional references to health policies and regulations are made only to the extent that they influence investment aspects.

This publication builds on two decades of UNCTAD experience supporting local pharmaceutical production in developing countries through research, technical cooperation and consensus-building (box 1). A recent joint UNCTAD–EAC project has focused in particular on promoting investment incentives for the local production of essential antibiotics. This collaboration led to the adoption of a regional policy framework and an information exchange mechanism by the EAC Council of Ministers in November 2023, marking a significant step forward in regional cooperation for local pharmaceutical production.[7]

Building on this long-standing engagement, this report draws on firsthand insights from stakeholders involved in local pharmaceutical production across Africa, including policymakers, business leaders and representatives of non-governmental organizations. It presents a comprehensive and balanced approach to assessing the case for, and promoting investment in, African pharmaceutical production. By integrating the health, economic and business dimensions of local production, the main goal of this report is to serve as a platform for constructive dialogue among various stakeholders. It will guide future UNCTAD engagement in Africa and other developing regions, informing policy initiatives that support investment in the local pharmaceutical industry.

[6] See for example, several industry profiles for African countries that identify challenges facing local manufacturers and suggest strategies for enhancing local manufacturing (e.g. UNIDO, 2011; Government of Ethiopia, 2015).

[7] See "EAC Council of Ministers adopts Regional Framework for the supply and production of antibiotics", 20 December 2023, https://unctad.org/news/unctad-outlines-actions-boost-production-essential-antibiotics-east-africa.

Box 1
UNCTAD engagement with local pharmaceutical production in developing countries

UNCTAD work on promoting local pharmaceutical production in developing countries to improve access to medicines stems from its longstanding expertise in investment and technology transfer. Following a 2005 recommendation from its Commission on Investment, Technology and Related Financial Issues to "assess ways in which developing countries can develop their domestic productive capacity in the supply of essential drugs in cooperation with pharmaceutical companies", UNCTAD launched a broad capacity-building programme. This initiative benefited countries in the EAC, as well as in Indonesia, Thailand and Viet Nam.

In 2008, the World Health Assembly designated UNCTAD as a key stakeholder in global efforts to promote local pharmaceutical production and related technology transfer under the Global Strategy and Plan of Action on Public Health, Innovation and Intellectual Property. This mandate resulted in a partnership with the World Health Organization (WHO), through which UNCTAD, with funding from the European Union (EU), produced case studies on successful local pharmaceutical manufacturing firms in 11 developing countries (UNCTAD, 2011a). UNCTAD also co-authored a summary report on a framework for policy coherence to support local production (WHO, 2011). The second phase of this EU-funded project (2012–2014) aimed to enhance policy coherence for local pharmaceutical manufacturing.

In 2011, UNCTAD delivered an analytical report on opportunities to attract investment in pharmaceutical firms in least developed countries (LDCs), as part of the deliverables for the LDC IV Conference in Istanbul, Turkey (UNCTAD, 2011b).

With the adoption of SDG 3 on good health and well-being in 2015, UNCTAD launched a new initiative to promote investment in the local manufacture of antibiotics. In 2017, it convened an Ad Hoc Expert Group meeting to explore future areas for contribution. These efforts culminated in a four-year project in collaboration with the EAC, leading to the adoption of two regional instruments by the 44th EAC Council of Ministers and the development of specific recommendations for Ethiopia, Kenya and Uganda in 2023 (UNCTAD, 2023a, 2023b, 2023c).

Source: UNCTAD.

The landscape of local pharmaceutical production in Africa

The African pharmaceutical market relies heavily on imports, with over 70 per cent of its pharmaceuticals sourced externally, primarily from Asia. While local production exists in about half of African countries, it is predominantly concentrated in North Africa and a few regional hubs in sub-Saharan Africa. It is largely driven by domestic small and medium-sized enterprises, with limited FDI.

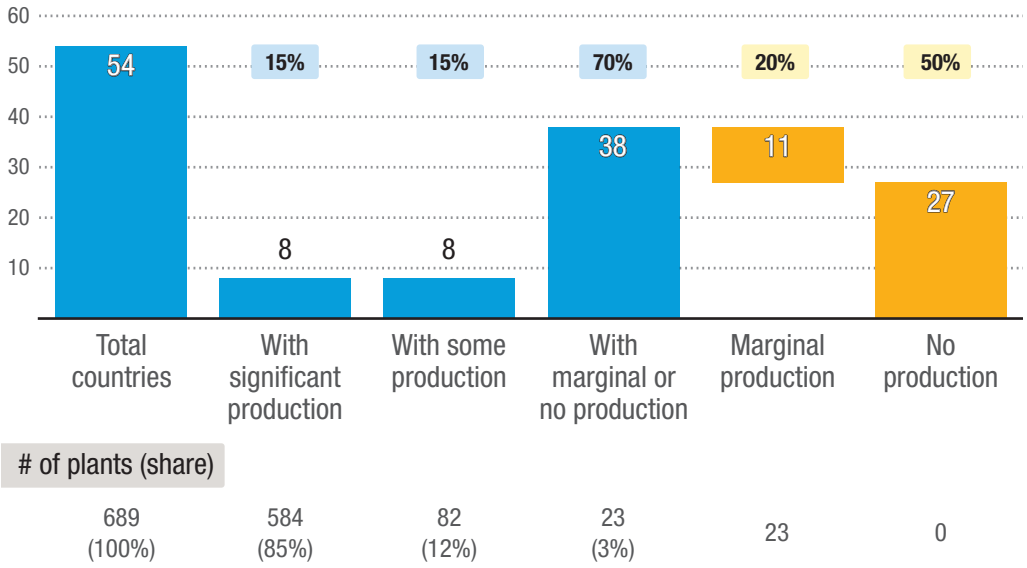
The underlying business model is not fully local but mixed, involving the importation of APIs for local formulation. With a strong emphasis on generic drugs, profit margins are driven by costs and volumes, exposing the African pharmaceutical industry to major competitive pressure from global manufacturers.

a. Local production: small and concentrated

Over 70 per cent of the African market is made by imports

The African pharmaceutical market was sized at about $25 billion in 2022 (Rickwood and Lutzmayer, 2023) and is projected to grow rapidly.[8] At least 70 per cent of pharmaceuticals used in Africa are imported (Buckholtz, 2021).[9] Manufacturing occurs primarily in Asia. China is the world's leading producer of APIs – the first stage of manufacturing. Following the chemical-intensive API production stage, the second stage, known as formulation production, combines APIs with excipients (non-active ingredients) and presses them into tablets or fills them into capsules or other formats, depending on the final product form destined for consumers. India plays a prominent role in this segment and is the biggest source of finished pharmaceutical products imported into African countries.

Figure 1
About 70 per cent of African countries have very little or no local production footprint
(Number of countries)



Source: UNCTAD elaboration based on Banda et al. (2022).

Note: In the absence of systematic data on African production facilities, this mapping uses information from company websites, industry contacts and networks as collected by Banda et al. (2022). Precise numbers may vary as a result of uncertainties, but relative scales of production across countries are reliable for analytical purposes. Owing to lack of data, 11 countries – mostly small – were not mapped in the original analysis. For simplicity and completeness, they are included here under the assumption that they have no production facilities, based on empirical evidence from similar countries. Excluding them would not alter the findings. For the underlying country-level data, see the annex.

[8] The market is expected to have considerable growth potential – with growing populations, urbanization, the expansion in healthcare capacity and the maturing of the business environment (Holt et al., 2015, p. 6).

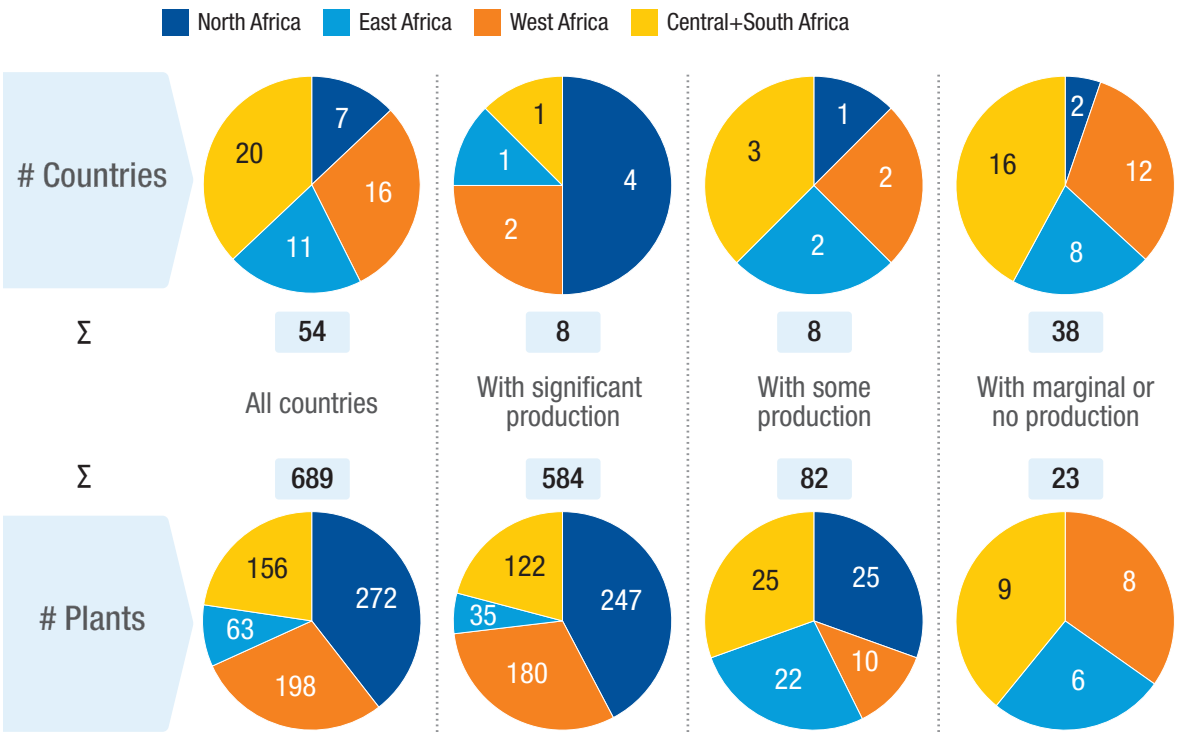
[9] African pharmaceutical markets are split into two main segments – public and private. The public market is coordinated by ministries of health allocating tenders to procure medicines on behalf of their populations for distribution through public hospitals and pharmacies. Public procurement can account for up to 50 per cent of the value of the pharmaceutical market in many African countries. The private market, in contrast, involves the retail and sale of medicines through private pharmacies and hospitals. In some countries, there is also a third segment broadly referred to as *the mission sector*, involving procurement and distribution of medicines by religious organizations.

~700 local production plants in Africa, but half the countries have none

Local production, accounting for less than 30 per cent of the African market, is present in about half of countries (27) but remains marginal in over a third – with 11 counting fewer than five manufacturing plants (figure 1). As a result, 70 per cent of countries on the continent have no or marginal local production. The remaining group of 16 is equally split between countries with moderate local production (5 to 30 plants) and those with a more substantial industrial footprint (more than 30 plants). Notably, this last group of eight countries, four of them in North Africa, accounts for 85 per cent of the approximately 690 pharmaceutical plants in Africa, indicating significant concentration of the industry.

North Africa hosts the largest concentration, with about 270 manufacturers, accounting for 40 per cent of all African producers (figure 2). Egypt leads in this region, though the other major North African economies also have a sizable number of local producers. West Africa has the second-largest share of local manufacturers at about 30 per cent, followed by Central and Southern Africa and East Africa. In each of these sub-Saharan regions, local production is concentrated in a few key manufacturing hubs: Nigeria is the most prominent in West Africa, Kenya leads in East Africa and South Africa serves as the main hub in Central and Southern Africa.

Figure 2
Local production is concentrated in North Africa and in regional hubs in sub-Saharan Africa



Source: UNCTAD elaboration based on Banda et al. (2022).
Note: For details, see note to figure 1. For the underlying country-level data, see the annex.

b. Foreign direct investment: limited footprint

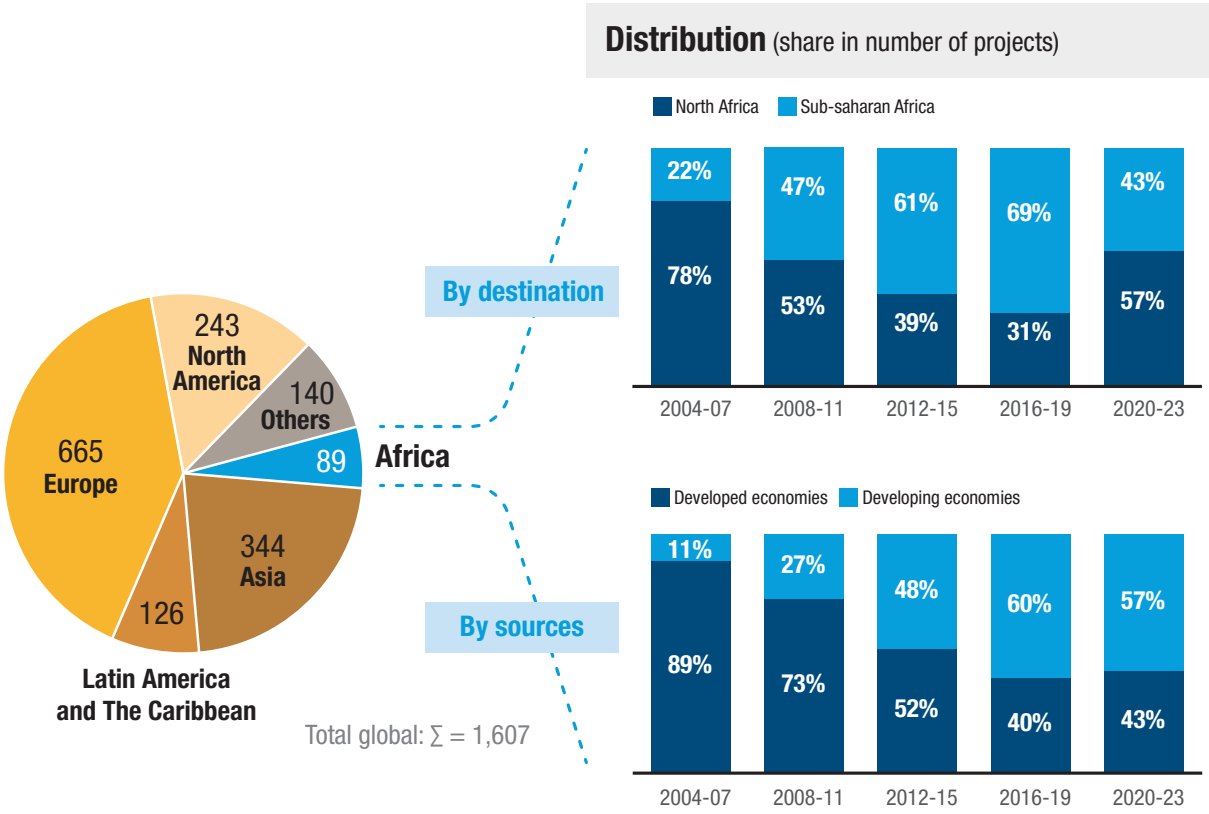
The involvement of FDI in local pharmaceutical production in Africa is very limited (figure 3). Over the past two decades, only about 200 cross-border greenfield projects were announced in

Africa's pharmaceutical sector, with fewer than 90 in manufacturing activities.[10] During the same period, Asia recorded almost 350 projects in pharmaceutical manufacturing and Latin America and the Caribbean about 130. As a result, the African share in global cross-border greenfield activity in pharmaceutical manufacturing remains low, at approximately 5 per cent.

Only 5 per cent of global FDI in pharma production lands in Africa

This FDI is not only limited but also concentrated, with North African countries hosting about half of all cross-border greenfield projects over the past two decades. There has been a notable shift in the source of FDI, with developing countries – particularly India – leading the majority of pharmaceutical investment in Africa in recent years, reversing the earlier dominance of developed countries (figure 3).

Figure 3
FDI footprint in African pharmaceutical production is small
(Number of announced cross-border greenfield projects in pharmaceutical manufacturing, 2004–2023)

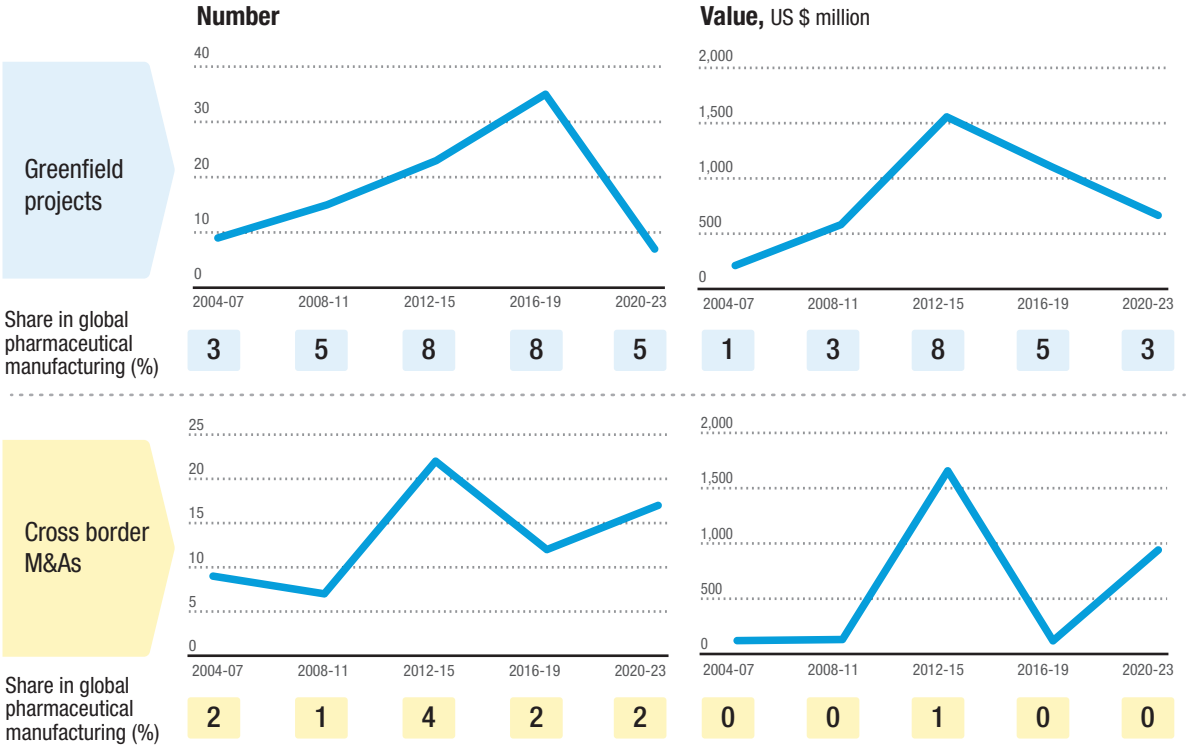


Source: UNCTAD, based on information from The Financial Times Ltd, fDi Markets (www.fDimarkets.com).

More recently, the sharpening policy focus on local production has not materialized in any meaningful mobilization of cross-border capital. Rather, after showing some promising growth from a low base, cross-border greenfield projects in African pharmaceutical manufacturing have declined in recent years (figure 4). Similarly, cross-border mergers and acquisitions (M&As) in Africa have remained small, at just 2 per cent of global pharmaceutical M&As.

[10] Announced cross-border greenfield projects are new investment projects through which a company from one country plans to build a completely new business or facility (such as a factory or office) in another country.

Figure 4
FDI in Africa has been declining further in recent years
(Announced cross-border greenfield projects and mergers and acquisitions in African pharmaceutical manufacturing)



Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fDimarkets.com) and Refinitiv.

Note: M&As = mergers and acquisitions.

The overall low level of pharmaceutical manufacturing in the continent only partially explains the lack of FDI. For instance, only seven greenfield projects were announced in 2023, underscoring the minimal engagement of multinational enterprises (MNEs), even when considering African underdeveloped manufacturing base. In countries such as Kenya and Nigeria, relatively large pharmaceutical manufacturing hubs have emerged, driven primarily by domestic companies and with minimal involvement from MNEs (for the case of Kenya, see UNCTAD, 2023b). In the past 10 years, only five cross-border greenfield projects in pharmaceutical manufacturing were recorded in Kenya (three) and Nigeria (two). Ghana, another country with sizable production, has hosted only three projects.

While some countries such as Ethiopia and Uganda have more systematically leveraged the presence of MNEs to build their pharmaceutical manufacturing basis (see for example UNCTAD 2023a, 2023c), the broader trend across Africa, particularly in sub-Saharan Africa, shows that the pharmaceutical industry has largely developed without significant contributions from MNEs.

c. Business model: cost-driven, subject to competitive pressure

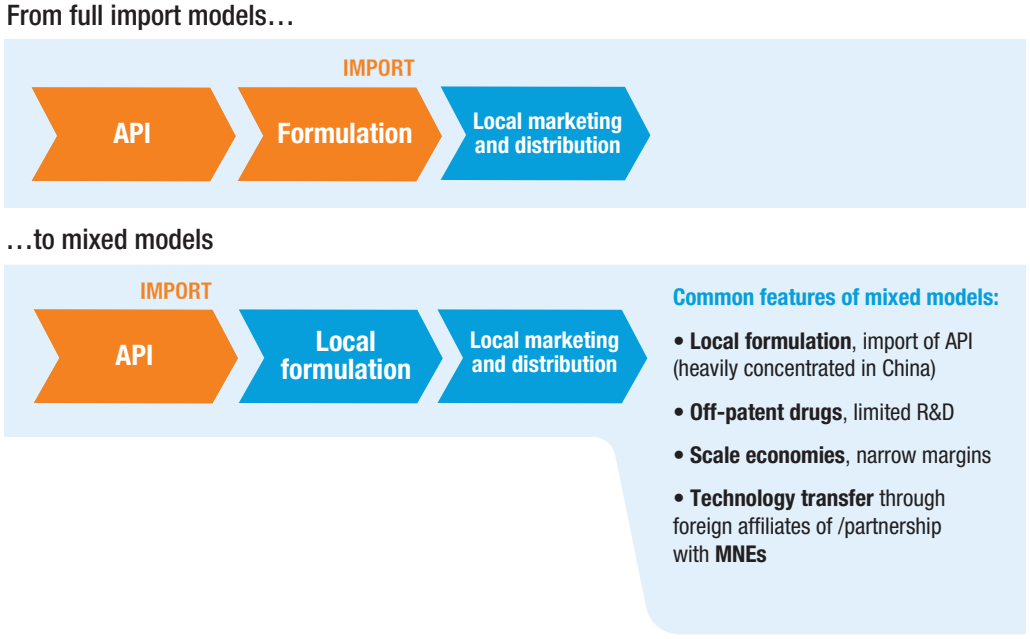
A mixed model, not fully local

African pharmaceutical production operates under a mixed model, in which APIs are imported and drug formulation is completed locally (figure 5). In this context, producers can leverage their comparative advantages by specializing in final drug formulation, packaging and distribution, while integrating into broader supply chains through strategic partnerships and regional market

access.[11] This model is also the most realistic path for expanding local production in the medium term given that API manufacturing is still substantially absent in Africa.

In sub-Saharan Africa in particular, local pharmaceutical production mainly focuses on basic drugs like painkillers, antibiotics, antimalarials and vitamins (Bumpas and Betsch, 2009). These are small-molecule drugs, easier and cheaper to produce than biologics. The market is dominated by generics – lower-cost alternatives to patented drugs – with very limited research and development (R&D) activity.

Figure 5
Scoping the business of local production in Africa: API import and local formulation



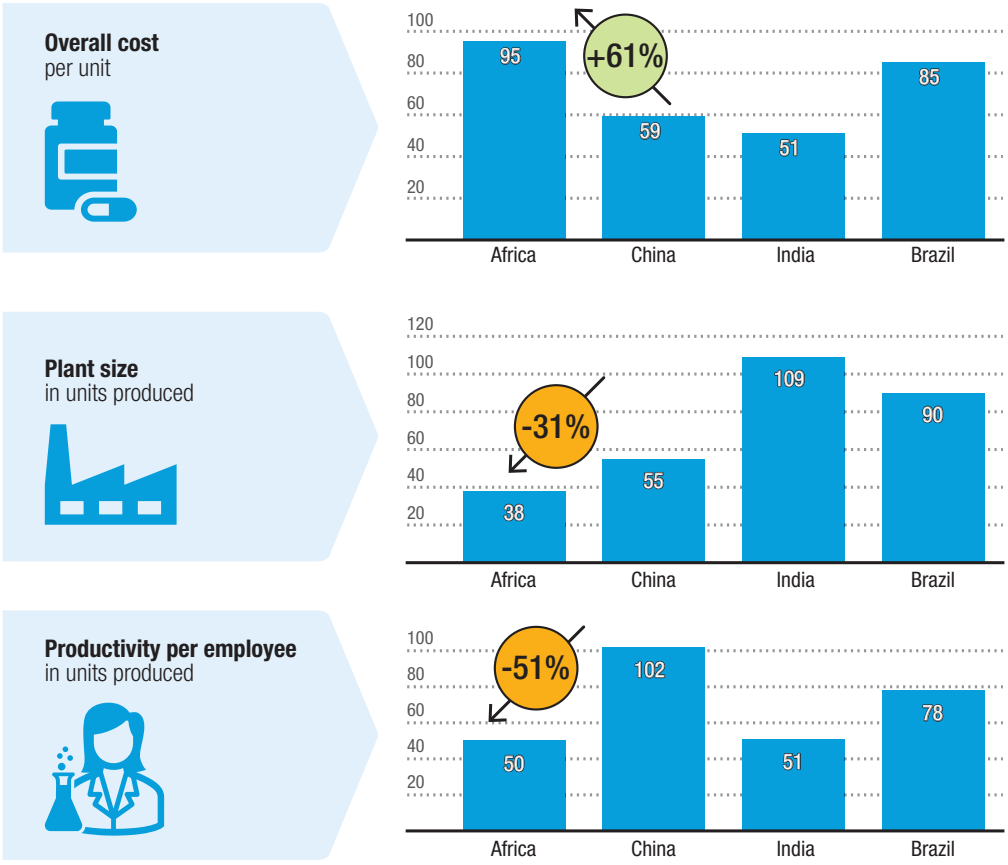
Source: UNCTAD.

Note: M&As = mergers and acquisitions, R&D = research and development. This simplified scheme of the pharmaceutical production supply chain focuses on the stages more relevant to implementation of the local manufacturing agenda in Africa. For a more complex articulation, see for example OECD (2023) (figure 11.2; page 332).

In this market landscape, African pharmaceutical manufacturers face strong pressure from international producers (figure 6). Their production costs are higher than those in China and in India (for detailed cost comparisons, see chapter 2). The scale of operations is smaller, with plant sizes nearly a third of those in India. Productivity per employee is also lower, on par with India but significantly behind that of China and Brazil. These interconnected factors – higher costs, smaller plants and lower productivity – severely limit the ability of Africa to compete globally in the pharmaceutical industry, including in attracting FDI. Without substantial improvements in these areas, Africa is likely to remain less attractive to large multinationals, which will continue to favour more established manufacturing hubs in Asia and other regions.

[11] This model is consistent with the modern mode of internationalization led by global value chains (GVCs), also known as "second unbundling" (Baldwin, 2011; 2016), wherein production processes are no longer confined within national borders but are instead distributed across multiple locations, driven by cost efficiency and specialization.

Figure 6
Competitiveness of African pharmaceutical manufacturing lags behind that of other countries
(Median, indexed to global median = 100)

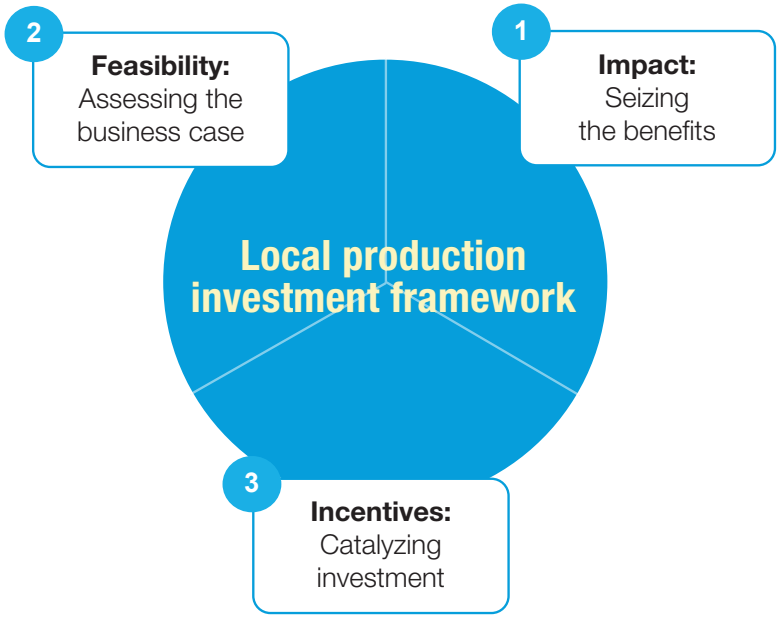


Source: African Development Bank (2021). Available at: https://www.afdb.org/en/documents/new-frontier-african-pharmaceutical-manufacturing-industry

A comprehensive framework for investment promotion in local pharmaceutical production

Promoting investment in local pharmaceutical production across Africa is a complex task that requires collaboration among multiple stakeholders, from both the public and the private sectors, at national, regional and global levels. To develop effective and sustainable strategies, investment policymakers need to rely on a comprehensive framework centred on three key pillars: impact, feasibility and incentives (figure 7).

Figure 7
Policy considerations on investment in local production involve three key aspects: impact, feasibility, incentives



Source: UNCTAD.

At the heart of the local production agenda lies the potential impact on a country relative to imports. Benefits of local production include primarily greater availability of medicines and stronger local health systems. Public health benefits typically feature prominently in policy discussions on promoting local production. However, they are not automatic, and they are not the only potential benefits. Benefits related to strategic autonomy and economic growth add to the public health rationale for local production. Chapter 1 presents the dimensions that policymakers should consider when seizing the benefits of local production.

Impact: **seizing benefits** *(chapter 1)*

The feasibility of local production depends on its competitiveness with imports. Affordable prices are key enablers of access to medicines. Locally produced medicines can have major adverse health impacts if they end up being more expensive than imports (Bigdeli et al., 2013). Discussions on feasibility and competitiveness – the assessment of the business case for local production – often take a backseat to considerations of impact in policy discussions. Failing to adequately incorporate the business case into policy considerations risks undermining the sustainability of local production, be it from a business standpoint or in terms of public finance. Chapter 2 will discuss the key factors shaping the business case for local production in the African context.

Feasibility: **assessing the business case** *(chapter 2)*

Well-designed public incentives can stimulate investment in local production, particularly when the business case alone is not viable. In addition to standard incentives, the pharmaceutical sector offers additional opportunities through public procurement, where the state, as a major purchaser, can implement market-shaping measures to support local producers. In setting up an incentive scheme, policymakers must strike a balance between feasibility and impact, as lower feasibility increases the cost of incentives, which must be weighed against the expected benefits. Chapter 3 outlines the key policy trade-offs in promoting investment in local production and the range of incentives available to address them.

Incentives: **catalyzing investment** *(chapter 3)*

Mapping Africa readiness *(chapter 4)*

Building on this theoretical framework, chapter 4 maps the readiness of African countries for local pharmaceutical production. The high-level analysis identifies macro patterns of development of local production across African countries, providing insights into their future growth prospects and informing policy options to enhance their investment promotion strategies.

Insights from the field *(chapter 5)*

Chapter 5 draws on insights from a recent UNCTAD project conducted jointly with the East African Community on local antibiotic production in East Africa. It complements this report's analysis and theoretical framework with real-world perspectives on investment trends and challenges in local antibiotic production, with a focus on three countries: Ethiopia, Kenya and Uganda (UNCTAD, 2023a, 2023b, 2023c).

The report concludes summarizing the main insights, including 10 key policy implications, focusing on three priorities:

10 ways to promote investment *(conclusion)*

- First, aligning local production with health and economic goals through tailored strategies and well-balanced incentives
- Second, leveraging incentives and FDI to integrate local industries into global value chains (GVCs), supported by targeted infrastructure such as special economic zones (SEZs)
- Third, strengthening operational and regulatory frameworks by promoting regional cooperation and reducing barriers to create a more efficient, investment-friendly environment for the sustainable growth of the pharmaceutical industry.

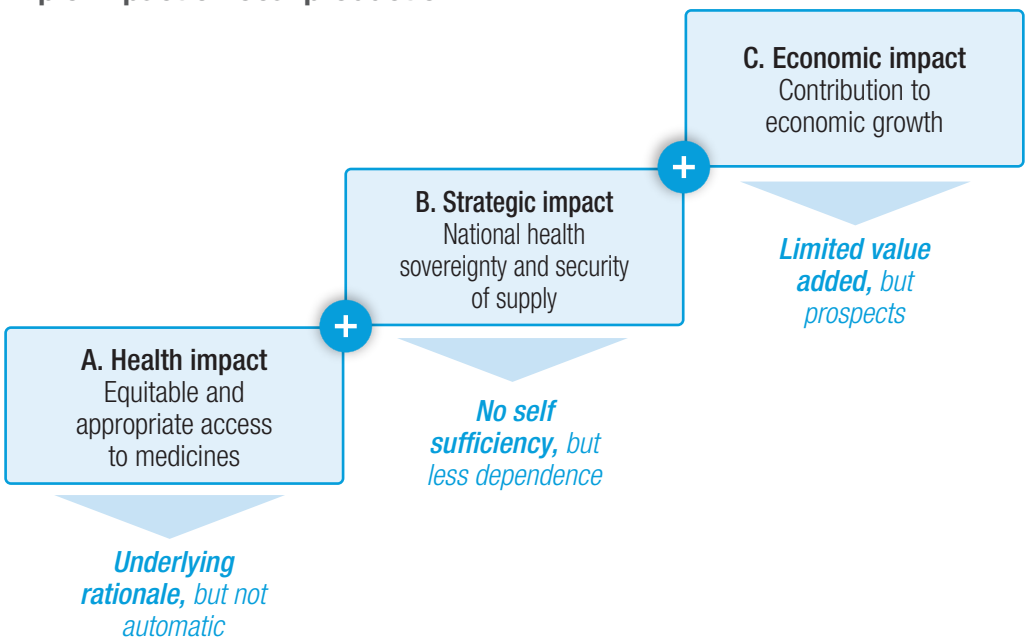
Chapter 1

Impact: seizing the benefits

The value proposition for local production is threefold. The most urgent element is the health impact, where increased local production can significantly improve access to medicines. This is particularly important for essential drugs such as vaccines and antibiotics, for which timely availability is key to improving public health outcomes and preventing healthcare crises.

On the strategic front, local production enhances national health sovereignty by reducing reliance on imports and ensuring a stable, minimal supply of essential medicines. Economically, it can stimulate job creation, foster local industries and support long-term economic development. The interplay between health, strategic and economic impacts creates a virtuous cycle, where improved access to medicines enhances human capital, boosts productivity and strengthens economic resilience, while simultaneously attracting investment and fostering long-term development (figure 8).

Figure 8
Triple impact of local production



Source: UNCTAD.

A. Health impact

Access to essential medicines is key to achieving universal health coverage, as recognized in the SDGs. Target 3.b emphasizes the importance of providing access to affordable essential medicines and vaccines for all, particularly in low- and middle-income countries, where the burden of disease is highest.

In Africa, access to medicines remains a major challenge with serious implications for public health and development. According to WHO, nearly 50 per cent of the population in Africa lacks reliable access to essential medicines (WHO, 2024). Contributing factors include regulatory barriers, weak healthcare infrastructure, inadequate supply chains and high out-of-pocket costs for patients.

Access to medicines is a multifaceted goal, encompassing availability, affordability and reliability, as well as qualitative factors such as safety, quality and suitability for local populations. While the focus often falls on the numbers, quality – medicines that are safe, effective and appropriate – is equally vital. Local pharmaceutical production offers Africa a strategic chance to improve access to essential medicines on all fronts (box 2).

Half of Africans lack access to essential drugs

Box 2
The health benefits of local production: quantity and quality of access

Local pharmaceutical production enhances access to medicines by improving both the quantity and quality of supply, addressing key challenges such as availability, affordability, safety, and innovation.

Box figure 1
Summary of the potential health benefits of local production

Availability: facilitating market entry

Many medicines fail to reach African markets because multinational companies delay or avoid the registration process, which is essential for importing and selling drugs.[a] These decisions are typically driven by concerns about market size, profitability or regulatory hurdles. Local manufacturing may address this challenge by strengthening ties between producers and national regulators, enabling countries to take greater control over the registration process. Furthermore, local manufacturers are well positioned to leverage regional initiatives such as the African Medicines Regulatory Harmonization (AMRH), which seeks to streamline the registration process across countries, enhancing access to medicines.

Stability: strengthening the supply chain

Supply stability is a persistent issue in African healthcare, with frequent shortages disrupting treatments. Local production reduces dependence on imports, which are vulnerable to global disruptions and transportation delays. By controlling production locally, countries can better manage supply, ensuring timely availability of medicines.

Affordability: enhancing competition

Local production can lower costs by eliminating import-related expenses such as transportation and tariffs, making medicines more affordable. Greater competition between producers is also expected to drive prices down. This is especially important in low-income countries where high prices, often paid out-of-pocket, can limit access to treatment. By reducing costs, local production helps ensure that essential medicines reach a broader population.

Safety: ensuring GMP compliance

Good manufacturing practice (GMP) compliance is crucial for medicine safety. Local production allows for closer oversight, ensuring medicines meet quality standards. This reduces reliance on imported drugs, which may face less stringent regulations and may raise the risk of substandard or counterfeit products entering the market.

Appropriateness: promoting stewardship

Local production supports better management of pharmaceuticals by aligning products with local health needs. It can be instrumental in promoting rational medicine use, reducing wastage and aligning with global efforts to combat challenges such as antimicrobial resistance (UNCTAD, 2023a, 2023b, 2023c). Local manufacturers are also more likely to participate in public health campaigns promoting responsible drug use.

Customization and resilience: driving innovation

Local production encourages innovation to address regional health needs, including neglected diseases. Local manufacturers can develop formulations suited to local climates and preferences. This capacity for customization strengthens healthcare resilience and improves health outcomes by enabling a focus on local challenges that may not receive global attention.

[a] For example, the AMR Benchmark examined registration filings from 17 companies covering a range of about 150 products. The analysis finds 14 countries in which none of the products have been filed for registration. In many African countries, the number of filings is fewer than 10. This evidence has very serious implications for severity and spread of AMR in Africa (Access to Medicine Foundation, 2022).

Source: UNCTAD.

The health benefits of local production are not guaranteed but depend on effective implementation and management tailored to each country's specific health and economic context. While evidence from Africa highlights positive impacts, such as increased availability of locally produced medicines and improved access during emergencies,[12] overall data remain limited and do not confirm a systematic link between local production and better access to medicines (WHO, 2011).

The pressure for enhancing local production is particularly high in categories of pharmaceuticals for which poor access has most severe public health consequences.

Notable initiatives on local production of vaccines (e.g. ADB, 2022) have seen UNCTAD at the forefront (box 3). UNCTAD has also supported efforts to strengthen local antibiotic production, addressing the urgent need to combat infectious diseases and AMR (see chapter 5; UNCTAD, 2023a, 2023b, 2023c).

B. Strategic impact

Localizing production to reduce dependency in critical industries such as pharmaceuticals or semiconductors is becoming a strategic priority of industrial policy for both developed and developing countries (UNCTAD, 2020; UNCTAD, 2023d; Yeung, 2024).

[12] For the African context, see Ewen et al. (2017) and Ewen and Okemo (2018) on greater availability of locally produced medicines than imports in Ethiopia, Kenya and the United Republic of Tanzania; Lartey et al. (2018) on enhanced access to critical medicines during emergencies; and Pourraz et al. (2021) on the strengthening of public health regulatory systems in Benin, Côte d'Ivoire and Ghana as a result of efforts to promote local production. Beyond Africa, Brazil serves as a notable example of health concerns spurring industrial policy to foster local production, improving drug supply (Shadlen and Massard da Fonseca, 2013).

Box 3
Efforts to support local production of vaccines in Africa and UNCTAD contribution

The vaccine inequities faced by African countries during the pandemic highlighted the urgent need to strengthen vaccine manufacturing capabilities on the continent. Before the crisis, 99 per cent of Africa's vaccines were imported, with few facilities integrated into international value chains. Without a secure supply, Africa was left behind amid global vaccine demand.

There is consensus that enhancing Africa's vaccine manufacturing capacity and reducing its import dependence will improve its pandemic preparedness. More than 30 new manufacturing initiatives have been announced across 14 African countries, with some leveraging existing capabilities and others starting from scratch.

Various stakeholders play key roles in fostering a conducive environment for vaccine manufacturing in Africa. The African Union's Partnership for African Vaccine Manufacturing (PAVM) aims to meet 60 per cent of the continent's vaccine needs locally by 2040, providing a framework to navigate this complex environment. PAVM's Framework for Action includes areas focused on vaccine technology transfer, intellectual property support and manufacturing deal preparation. These initiatives aim to create an enabling environment for local production.

UNCTAD has been actively engaged in a project for facilitating investment and technology partnerships for vaccine production in line with the PAVM framework. The project aims to assess the pain points of investment and technology partnerships for vaccine manufacturing in Africa and at facilitating collective efforts to address them, by providing opportunities for linkages and coordination among technology providers, investors and development partners (UNCTAD, forthcoming).

UNCTAD analysis underscores that vaccine manufacturers in Africa confront structural challenges, such as difficulties in accessing affordable, industry-specific capital and a challenging business case that requires clarity about products, markets, pricing and timelines. It emphasizes the need for adaptable, market-based solutions to navigate the technical and political complexities of building the vaccine industry. Alongside a top-down market-shaping strategy implemented under the PAVM framework and through the African Vaccine Manufacturing Accelerator, a complementary bottom-up approach is key to reflect Africa's diversity and the sovereignty of African Union Member States, ensuring countries engage in a way that aligns with their socioeconomic and public health objectives.

Source: UNCTAD.

The globalization of production through GVCs has led to vertical specialization across regions, creating significant interdependence on foreign suppliers. Motivated by concerns over security, supply chain resilience and geopolitical dynamics, policymakers are increasingly focused on strategically enhancing domestic manufacturing capacity.

In this context, self-reliance or self-sufficiency is often highlighted as a key reason for promoting local pharmaceutical production. In reality, current local production initiatives in Africa mainly focus on the formulation stage, leaving countries reliant on imported APIs. API production remains highly concentrated in major international hubs, especially China, making it challenging for smaller-scale local producers to compete. Unlike in formulation, Africa has essentially no industrial footprint in API production, with only a few exceptions, primarily in South Africa and Egypt.

Establishing API production from the ground up in this context is unlikely in the short to medium terms because of several challenges: high energy demand, environmental concerns, and the technical and political difficulties of coordinating large-scale production without having infrastructure in place. Future changes and technological advancements in the global pharmaceutical industry may improve the case for broad-based production of APIs in Africa, particularly in countries with larger markets and more developed pharmaceutical industries.

Nevertheless, even without APIs, local production can still significantly enhance resilience and autonomy. By localizing the formulation step, African countries can better shield themselves from global supply chain disruptions, particularly during crises like the COVID-19 pandemic. Though full API production may not be feasible in the short term, improved formulation capabilities reduce dependency on imported medicines, laying the groundwork for more integrated and self-reliant pharmaceutical systems.

Finally, more robust local production would strengthen ties with MNEs through FDI, joint ventures or long-term supply agreements. These connections improve access to APIs, critical inputs and advanced technologies, contributing to the resilience of the sector to external shocks.

APIs still to be imported

Overall, while full self-sufficiency may be a long-term goal, local formulation can drive meaningful progress towards strategic autonomy and better health outcomes across Africa.

C. Economic impact

The focus on the low value added stage of formulation limits the short-term economic benefits that local production can realistically achieve in Africa. The pharmaceutical industry, more than others, is characterized by massive concentration of value creation upstream, at the R&D stage.

The estimated economic impact of local pharmaceutical production on GDP in countries such as Ethiopia and Nigeria is modest, projected at less than 1 per cent of their annual GDP by 2027 – approximately $190 million and $230 million, respectively (Conway et al., 2019). Direct job creation estimates range from 1,300 jobs in the United Republic of Tanzania to 9,600 in South Africa. Even with the potential for indirect job creation, the overall employment impact remains limited compared with that of other manufacturing industries. Moreover, contributions to trade balance and foreign exchange reserves are constrained by reliance on imported inputs such as APIs and production equipment.[13]

Despite these limitations, local production offers a strategic pathway for African economies to engage in the global pharmaceutical value chain.

[13] For example, increasing the share of domestically manufactured pharmaceuticals in Ethiopia from 15 per cent to 40 per cent could boost the trade balance by about $150 million, just a fraction of the country's foreign exchange needs (Conway et al., 2019).

A strategic opportunity to diversify beyond traditional GVCs

Local formulation, in particular, serves as an accessible entry point, enabling countries to integrate downstream marketing and distribution services, thus moving into higher value added activities relatively quickly. While upstream integration into API production or R&D remains challenging, these opportunities could become more attainable as the industry matures, especially in larger economies with stronger market bases.

Investing in local pharmaceutical production is also a strategic opportunity to diversify beyond traditional, GVC-intensive manufacturing industries. Grounded in health policy and aligned with the SDG agenda, this shift can set the stage for a more resilient and self-sufficient industrial trajectory. In a context where GVCs are increasingly disrupted, fragmented and reshaped, prioritizing sectors such as healthcare or renewables – backed by public policies and the SDG framework – may prove essential for achieving long-term sustainable development (UNCTAD, 2024a).

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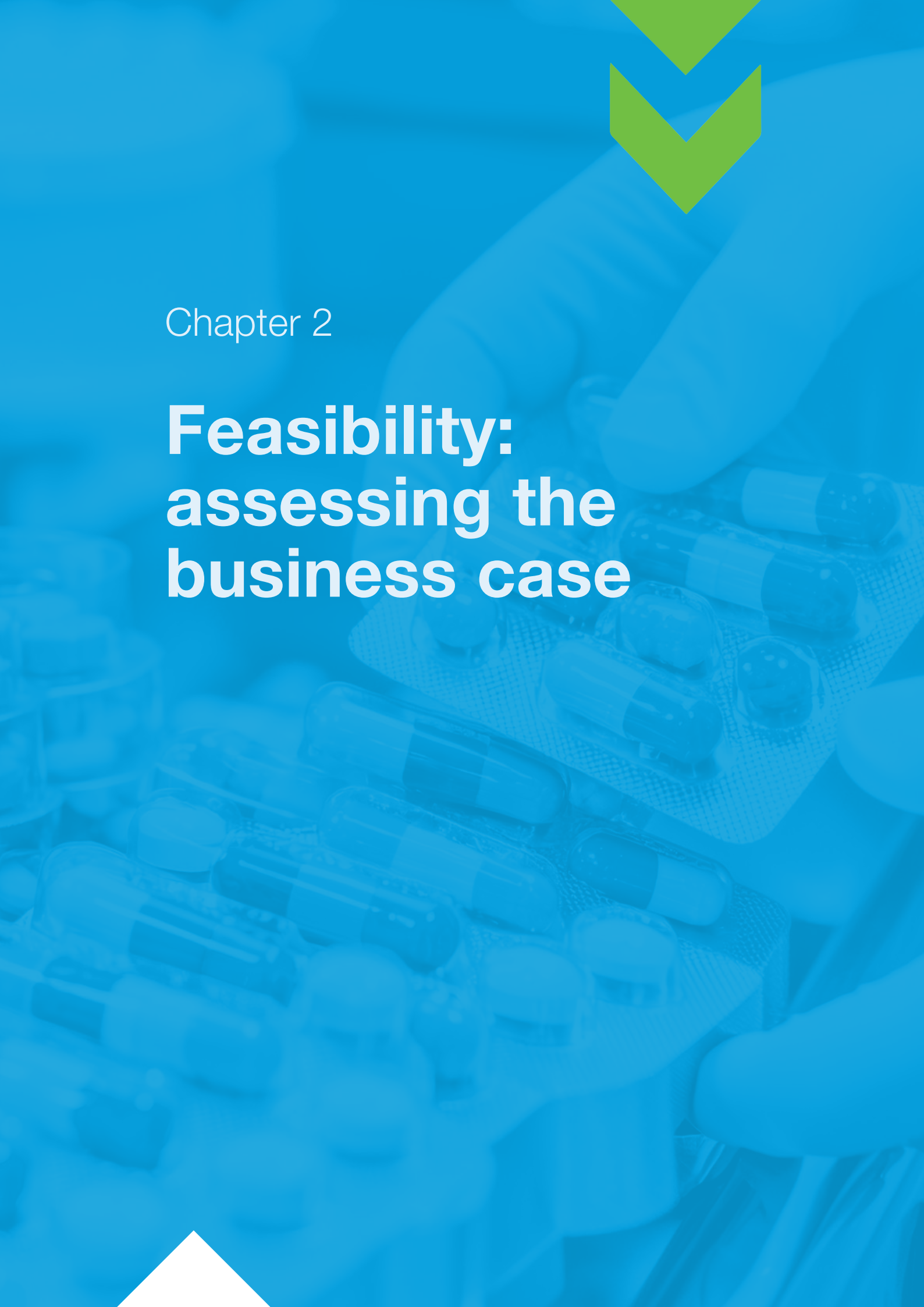
These dimensions of impact – health, strategic and economic – are deeply interconnected, creating a dynamic interplay that amplifies the benefits of local pharmaceutical production. Improved access to medicines not only addresses immediate health needs but also strengthens human capital by enhancing health outcomes, which drive higher educational attainment, labour productivity and overall economic performance. This virtuous cycle underscores the broader economic value of investing in local production as a means to boost both public health and economic growth.

Strategic investments in healthcare and local pharmaceutical production also shape a country's ability to attract FDI. Poor health systems can act as a deterrent for investors, reducing the reliability of the labour force and increasing perceived risks. Conversely, improved health outcomes enhance a country's credit rating – an essential parameter for attracting international investment – and support efforts to graduate from the least developed countries (LDCs) category.

This alignment between improved health systems and economic competitiveness highlights the potential for local production to serve as a foundation for broader socioeconomic development. By leveraging the interplay between health, strategic and economic impacts, local pharmaceutical production provides a unique opportunity to foster resilience, support long-term growth and address Africa's healthcare and economic challenges in tandem.

Chapter 2

Feasibility: assessing the business case



Stylized evidence

The business case for local pharmaceutical production in Africa faces significant challenges, particularly because of high production costs and reliance on imported APIs. These factors limit the competitiveness of local production with imports. However, stylized evidence suggests that, at sufficient scale, African local production becomes competitive with imports (figure 9).

The most persistent criticism of local manufacturing in the African context is its perceived lack of competitiveness. Critics argue that higher production costs, limited economies of scale, and inadequate human and technological capabilities hinder local producers from competing effectively with global manufacturers (see figure 6). Another stream of critiques highlights the heavy reliance on importation of APIs, essential components for manufacturing. The costs of imported APIs represent a significant portion of total production expenses, so African producers face limited operational and financial room for cost optimization to withstand competitive pressure from global manufacturers.

These challenges can render local production unsustainable, leading to distortions in various parts of the system – such as patients and healthcare systems bearing higher costs than for imported pharmaceuticals or public finances being strained by the need to subsidize local manufacturing. The overarching concern is that local production could exacerbate economic inefficiencies rather than provide a cost-effective alternative to imports, undermining the affordability of medicines.

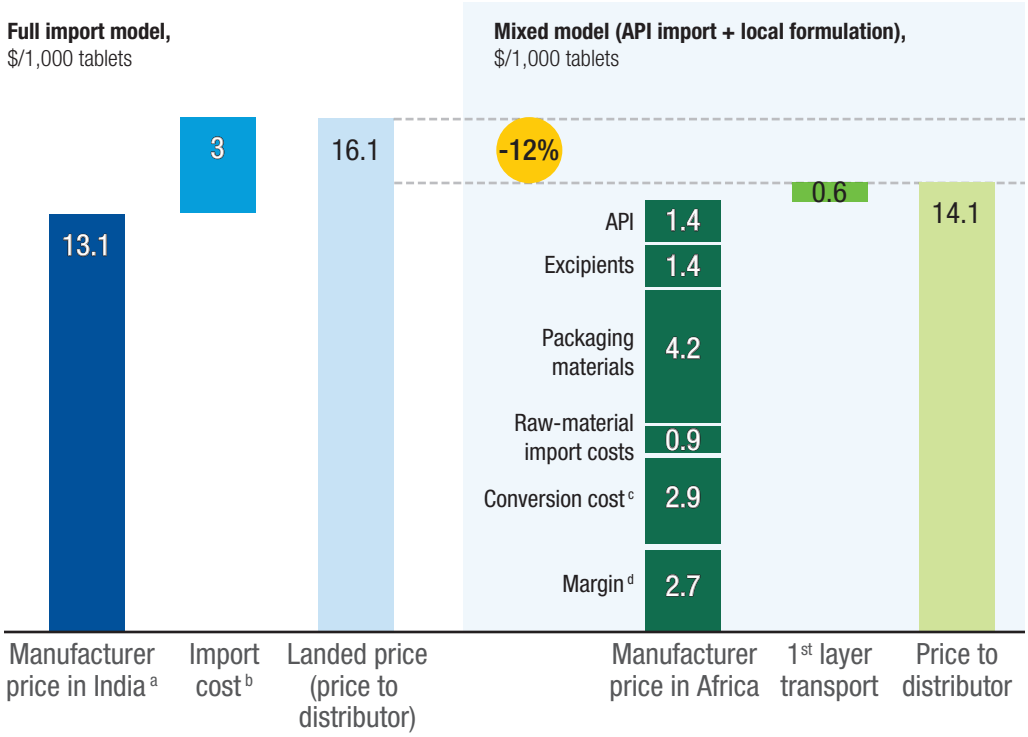
Assessing the feasibility and competitiveness of local pharmaceutical production in Africa requires a comprehensive and nuanced analysis of key factors such as cost structures, production capacities, technological capabilities and market demand. Collecting reliable data is challenging. Cost structures vary widely because of differences in labour, energy and raw material access. Production capacity and technology data are often fragmented or outdated, and market demand projections are complicated by fluctuating economic conditions, healthcare infrastructure disparities and inconsistent regulations. These challenges hinder informed decision-making regarding the competitiveness of local production.

Against this backdrop, a stylized analysis by McKinsey & Co. provides useful insights into the cost breakdown and associated competitiveness of local pharmaceutical production (figure 9; from Conway et al., 2019).

The analysis compares two models: a full-import model, in which finished drugs are imported from India and sold in Ethiopia, and a mixed model, in which APIs are imported to Ethiopia and drugs are formulated locally. The latter is regarded as the most realistic model for local production in Africa, at least in the medium term. According to the McKinsey analysis, under the critical condition of comparable scale and utilization, local production can be more cost-effective than importation of finished products.

A challenging **business case**

Figure 9
The mixed model, with local formulation and API import, *can be* competitive in Africa
(Analysis for one over-the-counter drug in Ethiopia)



Source: McKinsey & Co. analysis (Conway et al., 2019).

Note: This analysis is for one over-the-counter drug in Ethiopia; economics for other drugs may vary. [a] Per clean sheet model; [b] Includes freight: 10 per cent; duties: 5 per cent and value added tax: 5 per cent of API value.

[c] Includes direct labour, testing, facility, equipment and overhead costs.

[d] Margin for local manufacturers: ~20 per cent.

Producing in Africa can be **5 to 15 per cent cheaper than importing**

The landed price of a drug in Ethiopia includes the manufacturer's price in India plus more than 20 per cent in additional costs for freight, duties and value added tax (VAT). If the same drug were produced locally in Ethiopia, the raw materials would still be imported, but the overall import costs would be lower because of their relatively low value. While local manufacturing efficiency might be also lower, increasing the conversion cost, the reduced transport costs make the locally manufactured product more affordable. This mixed model can lead to a 12 per cent reduction in the price for distributors compared with fully imported drugs. The McKinsey analysis concludes that for various products, including tablets, capsules and creams, the cost of drugs produced in Ethiopia and Nigeria is generally 5 per cent to 15 per cent lower than the landed price of imports from India.

This outcome challenges the assumption that local production is inherently more expensive and less efficient than importation of finished products. The analysis underscores an important message for policymakers: with the right conditions of scale and utilization, local pharmaceutical manufacturing can be cost-competitive. This is particularly significant for African countries that aim to reduce dependency on imports and build a more resilient healthcare supply chain. With targeted support and investment, local production could serve as a strategic asset, advancing both economic development and public health.

Realizing this potential is not without challenges. The analysis is based on stylized models that may not fully reflect the complexities of local pharmaceutical production.[14] More critically, the assumption that African manufacturers can achieve the same scale and efficiency as global producers may be unrealistic given the continent's smaller markets and fragmented healthcare systems. These limitations can make it difficult for local producers to achieve the high volumes needed to compete with established global suppliers.

These constraints highlight the need for substantial public support to make local production viable and competitive. Measures such as subsidies, tax breaks or grants can help offset higher production costs, enabling local manufacturers to produce affordable, high-quality medicines. However, to avoid market distortions and ensure that affordability and access for patients remain a priority, such interventions must be carefully designed (see chapter 3).

In addition to costs, one key aspect not addressed by the McKinsey analysis is the impact of mark-ups on pricing competitiveness. Several studies, both within Africa and globally, have found substantial evidence of very high mark-ups during the marketing, retail and distribution stages of pharmaceutical value chains. Mark-ups exceeding 100 per cent of the manufacturing price are relatively common (Guimier et al., 2004, p. 15) and in many cases are even higher.[15] These margins suggest that there are additional opportunities for local firms to compete on prices, despite facing higher manufacturing costs.

In conclusion, the analysis in Figure 9 provides an indication that local production can be competitive under the right conditions. However, it should be viewed as a directional guide rather than a definitive answer. Policymakers must consider country-specific determinants of feasibility of pharmaceutical production (including mark-ups as well as costs) and set up appropriate systems of incentives and enablers.

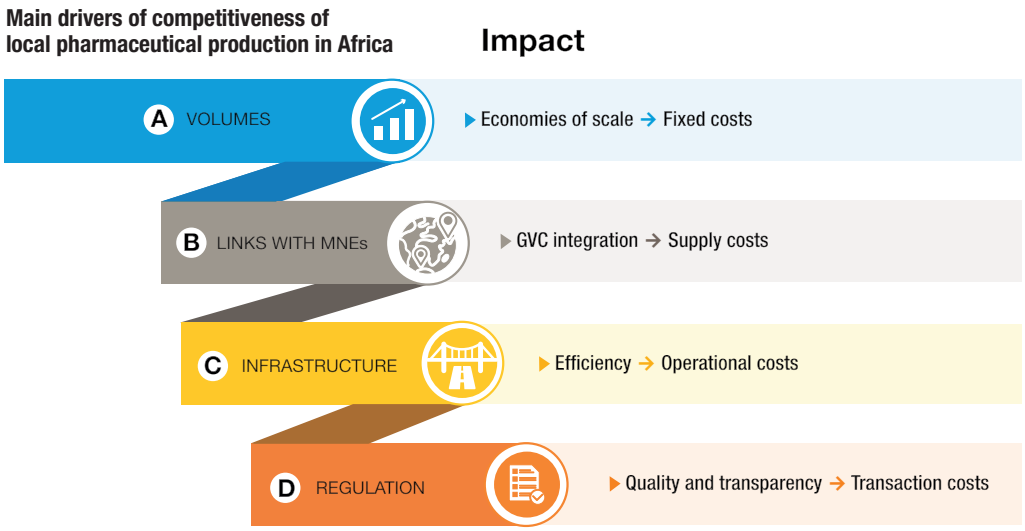
Main determinants

Achieving competitiveness in Africa's pharmaceutical industry depends largely on increasing production volumes. In addition, the establishment of strategic partnership with multinational enterprises and of strong infrastructure and regulatory frameworks – both at national and regional levels – can also make a difference (figure 10).

[14] For example, outside inspection does not clarify whether the comparison assumes the construction of new manufacturing facilities (greenfield projects) in both India and Africa, or whether it is based on the use of existing capacity. This distinction is crucial because the inclusion of capital costs could significantly alter the cost comparison between local production and imports.
Another critical factor is the incidence of API costs in the analysis. The analysis suggests a relatively low cost for APIs, which is a key determinant of the competitiveness of local production. However, if API costs were higher, the cost advantage of local manufacturing could diminish or even disappear. This raises questions about how representative the analysis is of the broader pharmaceutical market, given that API costs can vary widely depending on the drug.
Furthermore, the analysis assumes that conversion costs – the expenses associated with turning raw materials into finished products – do not undermine the overall competitiveness of local production. However, productivity in African manufacturing is significantly lower than in other regions, which could lead to higher conversion costs than those estimated in the analysis.

[15] Markups ranging from 2 per cent to 380 per cent for wholesale and from 10 per cent to 552 per cent for retail were found in an analysis of 45 surveys of by WHO and Health Action International across 36 low- and middle-income countries (Cameron et al., 2009). In South Africa, for 22 per cent of essential drugs, the lowest available prices are more than three times the estimated generic production cost (Hill et al., 2018). In Ethiopia, the median price of imported products was found to be almost three times higher in the private sector than in the public sector – further evidence of the significance of post-manufacturing mark-ups (Ewen et al., 2017). In Ghana, for the prices of 10 formulations manufactured in India, the ratio of the price in Ghana (data from 2011) to that in India (data from 2013) ranged from 1.8 to 29.2, with mark-ups playing a prominent role in driving this gap relative to transportation costs and other manufacturing costs (see Chaudhuri and West, 2015; p. 33).

Figure 10
Volumes are the primary (but not the only) driver of competitiveness



Source: UNCTAD.

Note: GVC = global value chain, MNE = multinational entreprise.

A. Volumes: unleashing economies of scale

Pharmaceutical production demands significant upfront investment, including in R&D, manufacturing facilities, specialized equipment and regulatory compliance. Scaling up production is the key to spreading these fixed costs over larger output volumes, to lower the unit cost and enhance overall competitiveness.

Capacity utilization is a key element in this equation. Operating at or near full capacity ensures that fixed expenses, such as machinery depreciation and facility maintenance, are optimized, minimizing per-unit production costs. High-capacity utilization also minimizes idle times and enhances resource efficiency, boosting overall productivity. Pharmaceutical manufacturing facilities in many African countries operate at low utilization rates, typically between 30 and 60 per cent, compared with more than 70 per cent in developed economies (UNCTAD, 2023a, 2023b, 2023c).

Empirical analyses confirm **volumes is key**

Boosting production volumes not only allows economies of scale but also unlocks additional efficiencies, such as bulk purchasing of raw materials and investment in advanced technologies. These improvements enhance cost-effectiveness and productivity, making local production more attractive to market-seeking FDI, particularly in sizable domestic or regional markets where such benefits can be fully realized. This interplay between capacity and efficiency underscores the critical importance of aligning production strategies with market demand to drive sustainable growth in Africa's pharmaceutical sector.

Empirical studies and industry analysis reinforce this perspective. The relatively limited studies on the feasibility of local pharmaceutical production consistently highlight volumes as the main drivers of feasibility (box 4). Among those, the cost comparative analysis by McKinsey (figure 9; box 4/item a) concludes that *"production volume – defined as the plant's capacity multiplied by its utilization – has a disproportionately larger impact on economics and affordability than other factors like labor productivity or electricity costs"* (Conway et al., 2019, p. 7).

Box 4
Main studies assessing the feasibility of local pharmaceutical production in Africa

I) Study	II) Research question	III) Analysis	IV) Results	V) Conclusion
a. Conway et al. (2019) – *McKinsey and Co.*	Can local manufacturing be cost competitive with imports? At what volume can local production be competitive with imports?	Analysis of manufacturing costs for one unnamed "common over-the-counter drug" in Ethiopia and India.	When scale and utilization are held constant, and volumes of production sufficiently high, local manufacturing can be more cost-competitive than imports. The production volume at which local production becomes competitive depends on the product, but for a tablet-based product it is about 500 million tablets annually.	Increased local drug production is feasible in about a half dozen sub-Saharan African countries at current and projected demand levels.[a]
b. Chaudhuri and West (2015) – *Innovation and Development*	Can local producers in low-income African countries compete with imports? How large a market is required for local production to be competitive?	Comparison of actual production costs for tablets in a GMP-compliant plant in India with simulated costs for Ghana (including analysis of mark-ups).	Profitability in Ghana is lower if the volume and price charged are the same as in India. However, if the volume in Ghana increases above that of India (to 209 million tablets, compared with 152 million produced in India), the Ghana plant can enjoy the same profit margin.[b]	Higher costs do not necessarily lead to higher prices. Cost disadvantages can be compensated for by larger volumes and/or smaller margins.
c. Kaplan and Laing (2005) – *The World Bank*	What conditions make a country "globally competitive" in pharmaceuticals?	Cross-country analysis of correlation between value of local production and key variables for developing economies.	To be globally competitive requires a GDP greater than about $100 billion, a population greater than about 100 million, advanced secondary and tertiary educational enrolment, a UNIDO competitiveness score greater than 0.15 and a net positive pharmaceutical balance of trade.	Only a few developing economies (Brazil, China, Egypt, India, Korea) have sufficient industrial capacity for local production to be feasible.

[a] Although the paper does not name the countries, Kenya, Nigeria and South Africa are noted as having "a sizable industry", while Ethiopia is the subject of their price comparison indicating feasibility.

[b] A small-scale plant in India would break even at an annual output of 89 million tablets and would enjoy a profit margin of 15.3 per cent (understood as typical in India) at an output of 152 million; a plant in Ghana would enjoy the same profit margin at an output of 208 million tablets annually (Chaudhuri and West, 2015).

Source: UNCTAD.

There is, however, less consensus in the empirical literature on whether Africa's current and projected economies of scale are sufficient to justify significant investment in local pharmaceutical production. Recent assessments offer cautious optimism, particularly for larger countries. Based on current and projected demand, Conway et al. (2019) estimates that increased local production could be viable in about half a dozen sub-Saharan African countries. Similarly, Chaudhuri and West (2015) suggest that African pharmaceutical firms can compete with small-scale Indian formulation companies by adjusting profit margins and production volumes. Earlier studies take a more skeptical stance, citing challenges such as limited market size,

small populations and low educational enrolment, which may impede global competitiveness for most developing countries (Kaplan and Laing, 2005).

At the heart of the challenges faced by African producers, especially those from smaller countries, is the fragmented nature of the continent's markets, which hinders their ability to achieve the necessary volumes. In this context, regional integration initiatives such as the African Continental Free Trade Area (AfCTA) provide a promising pathway to unlocking greater production volumes and enhancing efficiency (box 5; UNCTAD, 2023d).

Box 5
Local pharmaceutical production and the African Continental Free Trade Area

The African Continental Free Trade Area (AfCFTA), launched in January 2021, aims to create a single market across Africa by reducing trade barriers and boosting the flow of goods, services and investment. Although many countries have signed the agreement, full implementation is still in progress. The next steps include finalizing protocols, harmonizing regulations and building the infrastructure needed for seamless trade across the region.

The AfCFTA offers significant opportunities for strengthening local pharmaceutical manufacturing, as recognized by the establishment of a dedicated UNECA Pharmaceutical Initiative anchored in the AfCFTA.

By expanding markets, the AfCFTA helps overcome the limitations of smaller, isolated markets, enabling economies of scale that can cut costs and improve competitiveness, particularly against established global players. It supports regulatory harmonization efforts, through initiatives such as the African Medicine Regulatory Harmonization to streamline approvals.

Beyond market expansion, regional integration provides additional benefits, such as harmonized regulatory frameworks, pooled procurement mechanisms and coordinated investment promotion strategies.

Moreover, by aligning regional trade frameworks with industrial policies, AfCFTA can help structure targeted incentives for pharmaceutical manufacturing, ensuring that investment facilitation, technology transfer and local content policies are coordinated at the regional level. This alignment can make the sector more attractive to both domestic and foreign investors while ensuring that benefits are distributed across different economies within the continent.

AfCFTA also encourages the development of regional value chains, enabling countries to specialize in different aspects of pharmaceutical production, boosting local manufacturing, investment and strategic autonomy on a regional basis.

Initiatives such as the African Pooled Procurement Mechanism, developed under the framework of the UNECA Pharmaceutical Initiative, are early but promising steps towards unified demand for African medicines and vaccines.

Source: UNCTAD.

B. Links with multinationals: enabling GVC integration

The African mixed model of pharmaceutical production – combining local formulation with international sourcing of APIs – benefits greatly from partnerships with MNEs. These collaborations help local manufacturers address scale-related challenges by providing cost-effective access to APIs and leveraging MNEs' global networks, opening markets and distribution channels that otherwise would be difficult to enter. Beyond supply chains, MNEs also play a crucial role in transferring technology and expertise, which are essential for building the skilled workforce and scientific infrastructure needed for successful local production (UNCTAD, 2011a).[16]

In sub-Saharan Africa, strategic partnerships with MNEs, particularly from other developing countries in Asia, have enabled countries like Ethiopia and Uganda to establish local pharmaceutical production despite constraints in industrial infrastructure and financial capacity (UNCTAD, 2023a, 2023c).[17] These partnerships not only facilitate technology transfer but also help integrate local firms into GVCs, improving the prospects of participation in activities with higher value added, such as API production and R&D. This integration enhances the competitiveness of local firms and contributes to broader economic goals, including diversification and the development of a resilient industrial base (UNCTAD, 2013).

MNEs help addressing local talent shortages by providing skilled managerial and technical expertise while promoting best practices in regulatory compliance, quality assurance and supply chain management. Various forms of partnerships, such as FDI, joint ventures and strategic alliances, offer different levels of integration into MNEs' global networks. Among these, FDI stands out as the strongest commitment, facilitating deep integration and extensive technology transfer. From this perspective, Africa's limited FDI footprint in the pharmaceutical sector stands out as a concern (figure 4).

Partnering with MNEs: a catalyst for local production in **Ethiopia and Uganda**

C. Hard and soft infrastructure: enhancing efficiency

A thriving pharmaceutical industry depends on strong infrastructure support. Reliable access to electricity, clean water and waste management systems is essential, with consistent power supply being critical for production processes that are sensitive to temperature and humidity. As the industry moves towards API production, infrastructure will need to meet even higher standards.

Efficient transport networks – roads, railways and ports – are equally important to ensure the smooth flow of raw materials and finished products. These logistical systems must support both the import of key inputs and the export of pharmaceuticals to local, regional and global markets.

SEZs can play a pivotal role in providing integrated infrastructure and a favourable business environment. They offer targeted incentives such as tax breaks, streamlined regulations and tailored support services that can help the pharmaceutical industry flourish (box 6; UNCTAD, 2025).

On the human capital side, the industry requires a specialized workforce skilled in industrial pharmacy, chemistry, biochemistry, engineering and GMP. Countries with strong training institutions and a steady pipeline of

High infrastructure demand: electricity, water, waste management, transport networks

[16] UNCTAD (2011a) analysis of technology transfer in the pharmaceutical industry analyzed several cases of local production in developing countries, grouped into four models: South–South partnerships (exemplified by Bangladesh, Ethiopia and Uganda), North–South collaborations (as seen in Indonesia) and the creation of domestic technological capabilities through either State support (Thailand) or private sector leadership (Argentina, Colombia and Jordan). These case studies illustrate that technology transfer is key to making local pharmaceutical production viable, particularly in developing and least developed countries.

[17] For example, collaboration in Uganda with the Indian firm Cipla led to the establishment of Quality Chemical Industries, a WHO-prequalified facility that highlights the transformative potential of government-facilitated FDI in strengthening local pharmaceutical production.

qualified professionals are better equipped to sustain a robust pharmaceutical sector.

Affordable finance, such as long-term loans and investment capital, is also essential for enabling manufacturers to upgrade infrastructure, adopt advanced technologies and expand capacity. However, the broader financial landscape in Africa is constrained by fiscal challenges, limiting public investment in critical infrastructure, education and R&D. To address these barriers, innovative financial mechanisms can play a transformative role. Proposals such as debt-to-health or debt-to-equity swaps could enable creditors to reinvest in the pharmaceutical sector by becoming shareholders in local pharmaceutical plants, thereby improving access to capital and strengthening long-term viability. Structured finance mechanisms, such as first-loss capital schemes, can also help manage risks by bringing together development banks, governments and private investors into collaborative financing models. These approaches not only attract private investment but also reduce perceived risks, making the sector more appealing to diverse investors.

D. Regulation: improving quality and transparency

Balancing regulation with **health entrepreu-nership**

A strong regulatory framework is vital for a successful pharmaceutical industry, ensuring quality, safety and efficacy. Adopting international GMP enhances product quality and bolsters the global competitiveness of local producers. However, inconsistencies in implementing and enforcing these standards in Africa remain a challenge, limiting the achievement of their full potential. Effective regulation can curb the influx of substandard and counterfeit medicines, which undercut local producers that adhere to quality norms. By fostering trust in locally made medicines, strong regulatory systems help build consumer confidence, stimulate market growth and support the long-term viability of local production.

To drive entrepreneurship and innovation in the health sector, regulatory frameworks must strike a balance between protecting patients and enabling progress. For instance, health sector entrepreneurs face significant barriers in accessing finance because of lengthy timelines for production and complex funding requirements. This underscores the need for stronger collaboration between regulators, investors and financial institutions (UNCTAD, 2022a).

Achieving regulatory harmonization across regions is equally critical for simplifying compliance, particularly for companies operating in multiple markets. Continental initiatives such as the African Medicines Regulatory Harmonization (AMRH) effort aim to streamline processes such as product registration and approval, opening broader markets for local manufacturers. This has significant implications for investment, including pharmaceutical FDI, predominantly market-seeking. By reducing regulatory fragmentation, AMRH enhances market integration, making Africa a more attractive destination for pharmaceutical investors while facilitating cross-border trade for local producers. Further progress in harmonization, along with pooled procurement mechanisms and industrial policies that recognize regional firms as “local” suppliers, will be key to strengthening Africa’s pharmaceutical ecosystem.

Box 6
The development of the Kenyan pharmaceutical industry through SEZs

Kenya, historically home to the largest pharmaceutical industry in East Africa, notably lacks foreign-owned pharmaceutical companies. GlaxoSmithKline, the sole longstanding multinational enterprise in the country, has announced its withdrawal to adopt a distributor-led model while retaining its factory under affiliate Haleon (Healthcare Middle East & Africa, 2022).

As part of Vision 2030, which aims to transform Kenya into a middle-income country with a high quality of life, the Government has established SEZs and export processing zones. Administered by the Special Economic Zones Authority Kenya under the Ministry of Trade, Investments and Industry, Kenya leads Africa, with 61 of the 237 zones on the continent as of 2019 (Government of Kenya, 2007).

Although SEZs vary, they typically offer distinct regulatory frameworks, infrastructure and customs advantages, such as tax exemptions (UNCTAD, 2019). While not a cure-all for localizing pharmaceutical production, SEZs represent an initial step in attracting investment. Their infrastructure and services make them attractive to foreign companies, potentially boosting production capacity and efficiency in a country (UNCTAD, 2025).

Kenya's SEZ policy has spurred recent FDI in the pharmaceutical sector. Notable examples include facilities established by Square Pharmaceuticals from Bangladesh and Dinlas Pharma EPZ from India. In addition, Strides Pharma from India acquired Universal Corporation, and B. Braun Pharmaceuticals from Germany renovated a factory in Nairobi.

The largest pharmaceutical-related investment in SEZs announced in Kenya to date has been Moderna's planned $500 million project to produce 500 million vaccine doses per year in the first mRNA facility in Africa. A memorandum of understanding was announced in March 2022 and the agreement officially finalized in March 2023. In April 2024, however, Moderna "paused its efforts to build an mRNA manufacturing facility in Kenya while it determines future demand for mRNA vaccines on the African continent" (Moderna, 2024). Although the future of the project is unclear, the case highlights the key role of demand-side factors, alongside production facilitation factors such as those provided by SEZs.

Source: UNCTAD.

Chapter 3

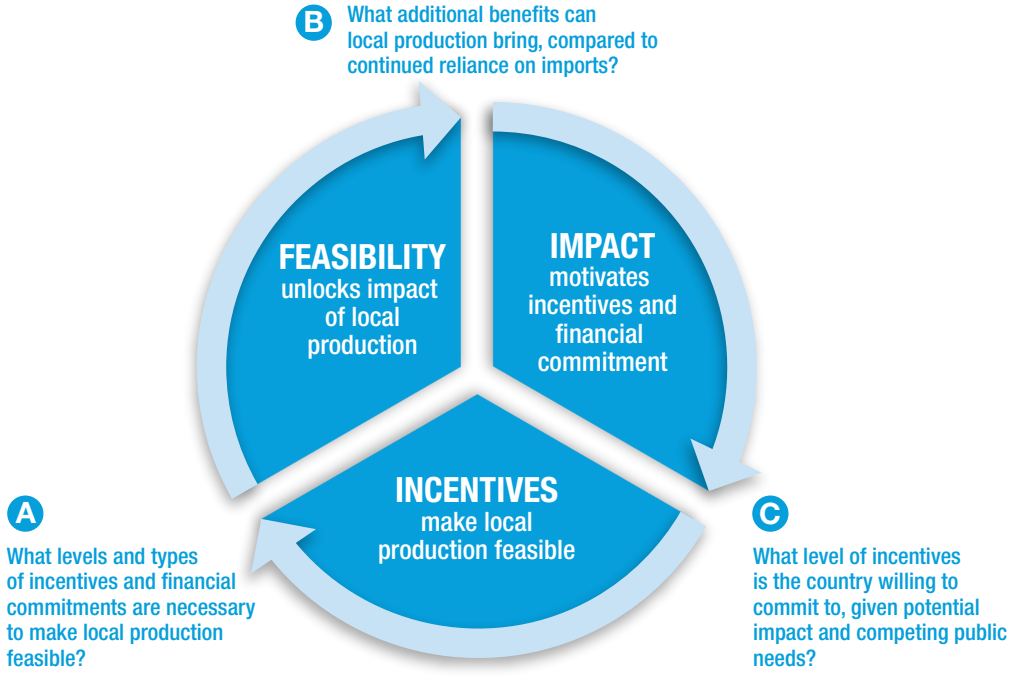
Incentives: catalysing investment

Policy framework

Incentives play a key role in balancing the feasibility and impact of local production. Well-designed incentives can improve feasibility, making local production more competitive and unlocking health and economic benefits. However, when feasibility is low, the costs of incentives rise, requiring careful consideration of their benefits against other public needs. Policymakers must strategically assess how incentives can drive feasibility while delivering meaningful impacts, to ensure the best use of public resources.

Deciding whether and how to promote investment in local pharmaceutical production necessitates a thorough assessment of its impact, its feasibility and available incentives. These three elements cannot be considered in isolation. Their interaction is crucial in shaping the policy trade-offs inherent in promoting local production (figure 11).

Figure 11
Local production investment framework



Source: UNCTAD.

Well-designed incentives can enhance the feasibility and competitiveness of local production (incentive → feasibility), potentially unlocking its full benefits by improving access and affordability (feasibility → impact). However, when feasibility is low, the costs associated with supporting local production through incentives and public support increase. These costs must be carefully weighed against the benefits of local production (impact → incentives) and other competing public needs.

Balancing feasibility and impact, incentives are pivotal in this context, effectively serving as the strategic levers that governments use to jump-start and sustain local production.

Aligning impact, feasibility and incentives in policy

Their effectiveness depends on policymakers' ability to address key questions and navigate the policy dilemmas underlying each stage of the decision-making process:

a) Incentive → Feasibility: What levels and types of incentives and financial commitments are necessary to make local production feasible?

b) Feasibility → Impact: What additional (health, strategic and economic) benefits can local production bring, compared with continued reliance on imports?

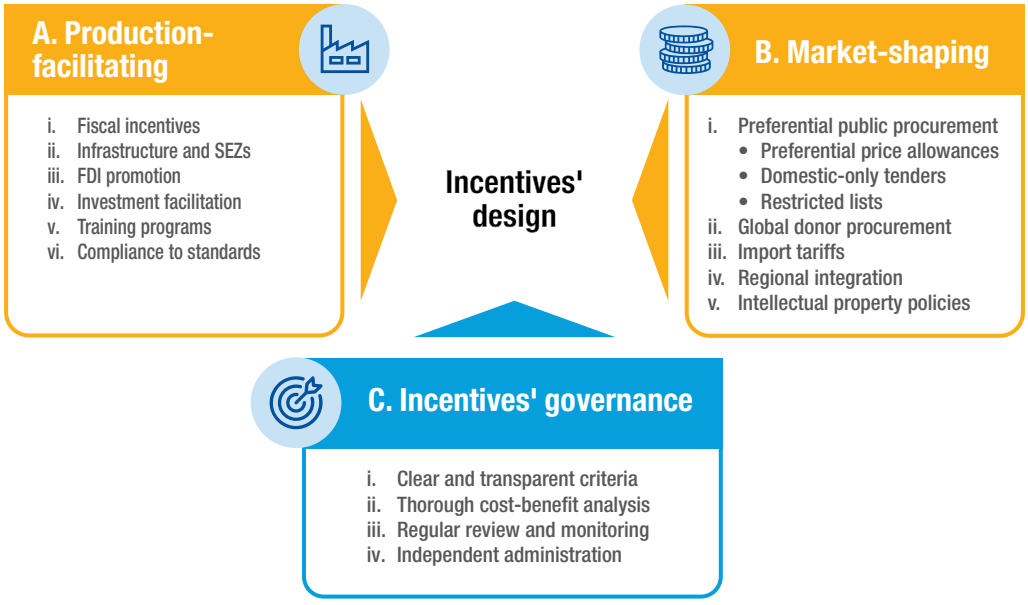
c) Impact → Incentives: What level of incentives is a country willing to commit to, given the potential impact of local production and competing public needs?

Addressing these questions is complex and requires robust analytical foundations, strong political commitment and a deep understanding of each country's specific conditions to identify the most appropriate incentive schemes.

Incentive design and governance

The promotion of local pharmaceutical production in Africa relies on a combination of production-facilitating incentives such as fiscal incentives and market-shaping incentives such as preferential procurement. Effective governance, with clear criteria and regular monitoring, is key to ensuring the sustainability and impact of these measures (figure 12).

Figure 12
A wide range of incentives is available to African policymakers to support local pharmaceutical production



Source: UNCTAD.

Note: SEZ = special economic zone.

A. Production-facilitating incentives: the standard investment promotion toolkit

Production-facilitating measures encompass a range of tools aimed at creating a conducive environment for local pharmaceutical production. These measures do not really differ from the standard investment promotion toolkit used by governments to stimulate investment across other industries. Their primary objectives are to reduce entry barriers, lower production and transaction costs, and enhance the overall business climate to attract both domestic and foreign investment. Compared with market-shaping incentives, these measures are typically broader in scope, less intrusive and less resource intensive.

i. Fiscal incentives

Fiscal incentives are a key tool for fostering local pharmaceutical production in Africa, offering significant financial relief to manufacturers and helping them compete against imported finished pharmaceutical products. These incentives typically include tax holidays, reductions in corporate income tax, exemptions from VAT on both final products and machinery, and the removal of tariffs on essential imports such as APIs, excipients and production equipment. By offering preferential fiscal treatment at various stages of the pharmaceutical value chain – from sourcing to production and marketing – these measures form a core element of investment promotion strategies across African countries (see for example table 1 for Ethiopia, Kenya and Uganda; UNCTAD, 2023a, 2023b, 2023c).

ii. Infrastructure and SEZs

Many African countries have set up industrial parks or SEZs with dedicated infrastructure to attract investment. The Sidi Abdellah Industrial Park in Algeria and the Kilinto Industrial Park in Ethiopia serve as hubs for pharmaceutical production, providing necessary facilities such as reliable power, water and transport links. Kenya is planning to leverage SEZs to expand its local production footprint, particularly as it concerns attracting FDI (box 6). These zones are designed not only to attract MNEs but also to enhance the overall enabling environment for local industries. They also include regulatory benefits, such as simplified customs procedures and faster processing times, which can significantly reduce operational costs and time to market (UNCTAD, 2025).

The case for **attracting pharma investment to African SEZs**

iii. FDI promotion

FDI has the potential to significantly boost the pharmaceutical industry in Africa by providing capital, technology, expertise and access to global markets. It can help address infrastructure gaps, increase production capacity and improve the quality of locally produced medicines. To attract FDI, African countries may offer targeted incentives, such as tax breaks, streamlined regulatory procedures or access to SEZs. These measures create a favourable investment climate, reducing risks and encouraging long-term investor commitment. Thus far, proactive FDI promotion in the pharmaceutical sector has been limited to a few countries, with Ethiopia and Uganda being notable examples. More recently others, such as Kenya, have started focusing specifically on attracting FDI to the pharmaceutical industry (see box 6).

iv. Investment facilitation

Investment facilitation aims to create a more open and supportive environment for domestic and foreign investors, increasingly leveraging digital tools to streamline processes and enhance transparency (UNCTAD, 2024b). It involves simplifying administrative procedures through online platforms, strengthening legal frameworks and providing clear, accessible regulations in a digital format. By integrating digital solutions into investment facilitation, countries can reduce the time and cost of starting and operating businesses, making their local markets more attractive and competitive.

Leveraging **digital tools** to streamline processes and enhance transparency

A **structured approach** to FDI promotion and facilitation

For example, UNCTAD assistance to Mali in creating a digital platform for electronic medicine registration addresses delays and inefficiencies in approval procedures (box 7). This intervention reflects the broader shift towards using technology to enhance investment facilitation, lowering barriers to entry and improving investor confidence in essential sectors such as healthcare.

FDI promotion and facilitation are both key pillars for supporting local pharmaceutical production, each addressing distinct but complementary aspects of attracting and retaining investment. Whereas promotion focuses on enticing investors through incentives and targeted outreach, facilitation creates a supportive environment that ensures investments are successfully implemented and sustained. To fully realize their potential, these two elements must not operate in isolation but instead be aligned and integrated into a cohesive strategy with a structured approach.

Drawing on frameworks such as the SDG Investment Promotion Cycle developed in the UNCTAD Investment Advisory Series (UNCTAD, 2018, 2022b), such a structured approach involves aligning the mandate and structure of investment promotion agencies (IPAs) to prioritize local pharmaceutical production, identifying and developing specific investment projects (such as those within SEZs) and promoting these opportunities through targeted outreach and tailored campaigns. Effective facilitation also includes streamlining administrative processes, connecting investors with local small and medium enterprises and providing ongoing aftercare to address operational challenges and expand investment. In addition, IPAs can play a critical role in policy advocacy by channeling investor feedback to address systemic barriers.

Box 7
UNCTAD e-registration project: Mali pharmaceutical digital register

UNCTAD is helping to digitally transform the pharmaceutical sector in Mali, where currently it can take up to 18 months for medical supplies to reach patients. These delays endanger lives and leave healthcare professionals struggling without the right medications when they need them most.

In November 2023, the government began live prototyping and testing of an online pharmaceutical registry, developed jointly by UNCTAD, the Ministry of Health and the National Pharmaceutical Association. Part of the UNCTAD digital government initiative, this platform replaces outdated paper-based systems with an integrated online solution.

By streamlining the marketing authorization process, the registry will help ensure the quality and safety of medicines, improve transparency and traceability, make better use of resources, strengthen the local pharmaceutical industry and combat counterfeiting. Importers, producers, distributors and government officials will have access to a centralized digital hub, enabling them to address supply chain delays, fraud and accessibility issues more effectively.

Crucially, the system will reduce approval times for essential medicines and vaccines from 18 months to just 3. It also allows online registration for all pharmaceutical stakeholders and provides authorities with real-time oversight of products entering, being produced and circulated in the country, making it easier to identify and remove obsolete or unauthorized items quickly.

Source: UNCTAD.

v. Training programmes

Building a sustainable pharmaceutical sector also depends on addressing critical workforce gaps, including shortages of pharmacists, biomedical engineers and laboratory scientists. By developing these professions, countries can create a competitive workforce that strengthens local production capacities and enhances integration into GVCs. Training programmes such as the Advanced Industrial Pharmacy Training Programme of the United Nations Industrial Development Organization (UNIDO) in the United Republic of Tanzania help develop the skills necessary for drug development, manufacturing and regulatory compliance. These programmes benefit from partnerships with local universities and international institutions, ensuring that the workforce is well equipped to meet the industry's evolving demands.

vi. Compliance to standards

Governments and international organizations can provide technical assistance, financial support and training to help manufacturers upgrade their facilities and processes to meet the WHO GMP standards. Assisting local producers in meeting these standards, as seen with the GMP roadmaps in Kenya, helps them comply with international regulations and enhances their competitive positioning, including in regional and global markets.

B. Market-shaping incentives: leveraging public procurement to support local production

Beyond standard incentives that improve the general business environment, market-shaping measures rely on the State's capacity to use procurement, regulation and pricing strategies to tilt demand in favour of local producers. While this approach demands substantial investment and a more hands-on role, it can be suited to strategic sectors such as pharmaceuticals, with significant social value at stake. By encouraging local manufacturers over imports, these interventions aim to improve access to essential medicines and ultimately enhance public health outcomes (see box 2).

i. Preferential public procurement

The most commonly used market-shaping measure is preferential public procurement, through which governments prioritize purchasing medicines from local producers. This often includes mechanisms such as price preferences to bolster local manufacturing. As major buyers, governments can shape market conditions significantly; in some African countries, public procurement can represent up to 50 per cent of the pharmaceutical market. Centralized procurement systems, such as those in Ethiopia and Uganda, enhance planning and implementation, enabling authorities to favour local products and ensure consistent demand.

Yet, the effectiveness of preferential procurement is often questioned, even by the local producers it aims to support. Concerns include inconsistent application of policies and insufficient incentives for meaningful industry growth. Another challenge is finding the right balance between supporting local production and keeping medicines affordable. In South Africa, for instance, locally made products have sometimes been more expensive than imports (Horner, 2022). To address these issues, some governments are exploring hybrid approaches that combine preferential treatment with efforts to improve the efficiency and cost-effectiveness of domestic production.

Prioritizing local producers in medicine procurement

Governments typically employ three broad approaches to support local producers through public procurement:

- Preferential price allowances: Countries such as Ghana, Kenya and the United Republic of Tanzania allow local producers to win bids even if their prices are slightly higher – up to a 15 per cent margin – and Ethiopia allows up to 25 per cent.
- Domestic-only tenders: Restricting certain tenders exclusively to local producers guarantees a stable

market. Although more radical, this approach ensures a baseline demand for domestic manufacturers.

- Reserved or restricted lists: By designating specific medicines for exclusive local production, as seen in Ghana and Nigeria, governments create secure market segments. However, careful monitoring is needed to ensure local firms meet demand without raising prices or compromising quality.

ii. Global donor procurement

Global donor procurement also plays a major role in shaping pharmaceutical markets, particularly for diseases such as HIV/AIDS, malaria and tuberculosis. Traditionally, these programmes have favoured low-cost suppliers from countries such as India. However, there is a growing shift towards supporting local production in Africa, which presents new opportunities for African pharmaceutical industries to participate in global procurement systems. Global health donors, including PEPFAR (the President's Emergency Plan for AIDS Relief), UNITAID and the Bill & Melinda Gates Foundation, are increasingly adapting their procurement policies to support local production. This includes commitments to source a percentage of their pharmaceutical purchases from local manufacturers in Africa, provided that they meet criteria for quality and cost-effectiveness. This shift is often accompanied by capacity-building initiatives aimed at helping local manufacturers meet the stringent quality standards required by global health donors, enhancing their ability to compete in international markets.

Strengthening efforts towards **expanding markets** at regional level

iii. Import tariffs

Imposing tariffs on finished pharmaceutical products can make imports more expensive, giving local producers a competitive edge. However, this approach can also increase costs for consumers. To safeguard access to affordable healthcare, some governments pair tariffs with subsidies or price controls on essential medicines. This strategy aims to support the growth of local production without undermining the availability of reasonably priced treatments.

iv. Regional integration

Equally significant, yet distinct in nature, are policy initiatives focused on expanding the pharmaceutical market through targeted regional integration. Regional integration offers substantial opportunities for local pharmaceutical producers in Africa. By harmonizing regulations and pooling markets, it enables local manufacturers to achieve economies of scale, reducing production costs and enhancing competitiveness. Moreover, a unified regional market attracts investment and encourages technology transfer, providing local firms with access to larger markets and advanced production technologies.

However, joint projects require careful planning and regulatory coordination. Integration in particular may also bring greater competition between regional producers as well as with more established international players. A related, common concern is also that larger countries in the region benefit disproportionately from regional integration, at the expense of smaller and least developed regional partners, less equipped to leverage industrial opportunities from open and integrated regional markets. Thus, a balanced approach is necessary to ensure that local industries can grow and thrive while ensuring equal opportunities to all regional partners and maintaining fair competition.

The cooperative instruments developed by UNCTAD represent the first targeted regional mechanisms to support antibiotic production, providing a valuable precedent for broader regional pharmaceutical initiatives (box 8).

Box 8
UNCTAD–EAC project: regional efforts to promote manufacturing of antibiotics

The East African Community is a highly integrated regional economic community, comprising a Customs Union, Common Market, Monetary Union and Political Federation. These integrations not only facilitate broader liberalization of trade, services and investment but also play a crucial role in promoting local pharmaceutical production. The EAC initiatives are particularly significant given the region's strategic focus on developing its pharmaceutical industry as a key sector for economic growth and public health.

The EAC Industrialization Policy and Strategy (2010–2030) highlights the pharmaceutical industry as one of six priority sectors, underscoring the collective commitment of EAC partner States to nurture this industry. The EAC Pharmaceutical Manufacturing Plan of Action (2017–2027) serves as a regional road map, aimed at developing a robust pharmaceutical sector capable of supplying national, regional and international markets with high-quality medicines. This plan emphasizes building an efficient regional pharmaceutical industry, which is critical for ensuring the availability of essential medicines across the EAC.

Furthermore, the EAC Medicines and Health Technologies Policy and Strategic Plan (2016–2021) focuses on bolstering domestic pharmaceutical production by promoting GMP standards, incentivizing local industries, enhancing skills development and establishing robust quality assurance systems. The harmonization of medicine regulation through guidelines adopted in 2015 further supports this goal by standardizing procedures for marketing authorization, thus simplifying market access for local producers across the region. In addition to these foundational policies, the EAC is considering the Pharmaceutical Bill 2020, which aims to formalize regional cooperation in the pharmaceutical sector. This legal framework would provide a more stable and enduring basis for collaboration, enhancing the region's capacity to collectively address pharmaceutical needs and challenges.

The partnership between UNCTAD and the EAC to enhance local antibiotic production exemplifies the tangible outcomes of these regional efforts. On 1 April 2023, the EAC's 38th Extra Ordinary Sectoral Council on Trade, Industry, Finance and Investment adopted two pivotal instruments: the Regional Policy Framework for the Promotion of Antibiotics Production and Supply and the Regional Cooperation Mechanism for Information Exchange.[a]

Policy coherence between public health policies addressing AMR and investment incentives for local production of antibiotics is part of the rationale for the EAC regional policy framework. The framework proposes policy measures and incentives that have been shaped by the need to address AMR. Furthermore, the regional pharmaceutical sector lacks reliable and up-to-date data on the supply, production and consumption of essential antibiotics. Considering the complexity of the antibiotics market, access to reliable and up-to-date market information is crucial for both policymakers and investors. Therefore, the establishment of a regional cooperation mechanism that brings together all the key actors is meant to address this challenge for informed decision-making at the national and regional levels.

These instruments represent the first region-specific cooperative measures targeting antibiotic production, highlighting the EAC's proactive stance in addressing critical healthcare needs through regional collaboration. By leveraging regional integration, the EAC is not only expanding market opportunities for local pharmaceutical producers but also fostering a competitive and collaborative environment that is essential for the sustainable development of the pharmaceutical industry in East Africa.

[a] See EAC Council of Ministers adopts Regional Framework for the supply and production of antibiotics; https://unctad.org/news/unctad-outlines-actions-boost-production-essential-antibiotics-east-africa.

Source: UNCTAD.

v. Intellectual property policies

Pharmaceutical manufacturers in Africa primarily focus on producing generic medicines rather than patented ones. Since off-patent medicines are generally more affordable for local firms to produce, policies that expand the range of medicines eligible for generic production can significantly influence the viability and competitiveness of local pharmaceutical production (box 9).

Box 9
Intellectual property and local production of pharmaceuticals in developing countries

Intellectual property rights are designed to incentivize pharmaceutical innovation by granting time-limited exclusive rights to new medicines that meet patentability criteria. However, such exclusivity can also lead to higher medicine prices and hinder future innovation and research. Recognizing this, the 2001 WTO Declaration on the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) and Public Health noted that "intellectual property is important for the development of new medicines", but that Members "also recognize the concerns about its effects on prices".[a] The Declaration emphasized the importance of utilizing TRIPS flexibilities to enhance access to medicines.

Effective promotion of local pharmaceutical production in developing countries relies on factors beyond intellectual property rights. However, TRIPS flexibilities can support access to medicines and local production, including pre-patent measures such as strict patentability criteria, opposition procedures and limits on unwarranted patents. Post-grant flexibilities such as compulsory licensing, parallel importation and exceptions to patent rights further enhance this framework. LDCs also benefit from a WTO waiver permitting them to exclude pharmaceutical products from patentability until 2034,[b] alongside a separate pandemic-related waiver.[c] In addition, many pharmaceutical firms often do not seek patents in certain African countries, providing additional opportunities for generic production (Mercurio et al., 2023).

In summary, targeted intellectual property measures and TRIPS flexibilities allow countries to overcome intellectual property barriers that often restrict access to essential medicines and limit local manufacturing. These tools enable the production, importation and distribution of affordable medicines while fostering growth in the local pharmaceutical industry. However, the effective use of these flexibilities requires strong legal frameworks, institutional capacity and coordination among health, trade and industrial policymakers.

[a] Declaration on the TRIPS Agreement and Public Health, WTO document WT/MIN(01)/DEC/W/2, of 14 November 2001.

[b] Decision of the Council for TRIPS, WTO document IP/C/88, of 29 June 2021.

[c] Ministerial Decision on the TRIPS Agreement, WTO document WT/MIN(22)/30, of 17 June 2022.

Source: UNCTAD.

C. Incentive governance: ensuring sustainability and impact

Effective governance of investment incentives for local pharmaceutical production in Africa is critical to ensuring that these tools truly contribute to sustainable industrial development, rather than causing unintended fiscal strain or market distortions. A recent UNCTAD survey of antibiotic producers in Ethiopia, Kenya and Uganda found a significant discrepancy between the existence of substantial supportive incentives and their on-the-ground effectiveness, largely a result

of poor enforcement and implementation (UNCTAD, 2023a, 2023b, 2023c).[18] This gap underscores the need for robust governance frameworks to maximize the positive impact of incentives on the pharmaceutical sector.

Drawing on the UNCTAD Investment Policy Framework for Sustainable Development (UNCTAD, 2012, 2015), effective incentive governance should integrate several key dimensions.

i. Clear and transparent criteria

To ensure that incentives for local pharmaceutical production are both fair and effective, they must be granted on the basis of a set of predetermined, objective, clear and transparent criteria. This approach minimizes the risk of arbitrary decisions that could lead to favouritism, corruption or inefficiencies. The criteria should align with the country's broader health and industrial objectives, ensuring that incentives are granted to projects that contribute to sustainable pharmaceutical production, such as those that enhance local capacity for producing essential medicines, promote technology transfer or support compliance with international quality standards.

ii. Thorough cost-benefit analysis

Before implementing any incentive scheme aimed at boosting local pharmaceutical production, it is essential to conduct a comprehensive cost-benefit analysis to evaluate its potential long-term impacts. This analysis should consider not only the direct fiscal costs, such as foregone tax revenues, but also the broader economic, social and health impacts. For instance, while tax breaks might attract investment in local production, they could also reduce public revenue needed for other critical areas, such as healthcare infrastructure or education. Policymakers must carefully weigh these trade-offs to ensure that the incentives deliver net positive benefits to the economy and public health.

iii. Regular review and monitoring

Investment incentives for local pharmaceutical production should not be static. Periodic reviews are necessary to assess their continued relevance and effectiveness in achieving the desired objectives. This process should involve monitoring the performance of incentivized investments against established benchmarks, such as the production of affordable essential medicines, job creation in the pharmaceutical sector or advancement in local manufacturing capabilities. If an incentive is found to be underperforming or leading to unintended negative consequences, it should be restructured or phased out. Regular reviews also allow governments to adapt incentives to evolving economic and health needs, ensuring that they remain aligned with national development priorities.

iv. Independent administration of incentives

The administration of investment incentives should be entrusted to an independent entity or ministry with no conflicting objectives or performance targets related to investment attraction. This separation helps prevent conflicts of interest and ensures that decisions regarding incentives are made on the basis of objective criteria rather than short-term goals or political pressures. For the local pharmaceutical sector, an independent body is more likely to maintain a balanced perspective, focusing on long-term benefits such as improving drug availability, enhancing local production capacity and reducing dependency on imports, rather than on immediate investment figures.

Enhancing governance: clear criteria, careful analysis, continuous review, independent oversight

[18] https://unctad.org/news/unctad-outlines-actions-boost-production-essential-antibiotics-east-africa.

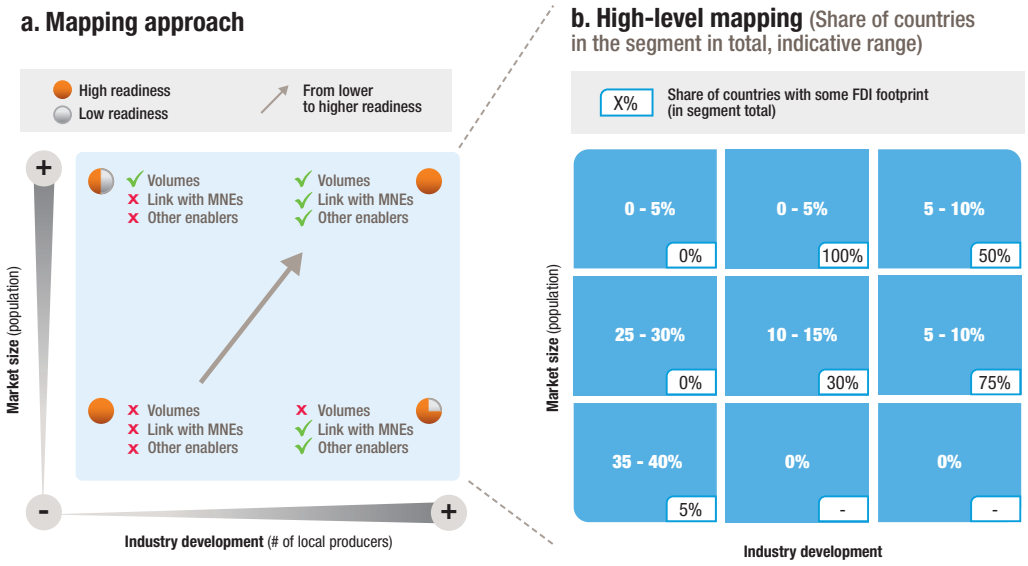
Chapter 4

Africa readiness for local production

High-level mapping

The readiness for local pharmaceutical production in Africa depends on factors that vary widely across countries like population size, industry maturity and FDI presence. A high-level mapping reveals that many African countries face substantial barriers, with smaller economies confronting especially narrow paths to industrialization (figure 13).

Figure 13
Mapping Africa readiness by market size, industry development and FDI footprint



Source: UNCTAD, based on Banda et al. (2022) for industry development and World Bank development indicators for market size.

Note: In panel b, the x-axis maps industry development into three segments on the basis of the number of local producers. Countries with "significant" production have more than 30 plants; those with "some" production have 5–30 plants; and those with "marginal" production have fewer than 5 plants (see also figure 1). The y-axis defines population clusters using 2023 data: "small" for countries with populations under 10 million (22); "medium" for those with populations between 10 and 50 million (25); and "large" for those with populations exceeding 50 million (7). Each cell in the matrix is weighted by the share of African countries in that segment, with weights expressed as ranges. The extremes of these ranges are calculated using two assumptions: one excludes countries without production data in Banda et al. (2022) (option A), and the other assumes such countries have marginal production on the basis of available data from similar countries (option B). The resulting ranges are then rounded to the closest 5 percentage point range to provide a broad proxy for segment weights, reflecting the high-level nature of the analysis. As a result of these procedures, the weights do not necessarily sum to one. For FDI mapping, countries with "some FDI footprint" are defined here as those with at least three announced greenfield projects in pharmaceutical manufacturing in the past decade. The shares of countries with an FDI footprint in each cell are calculated under option B, assuming that option A would not alter the findings of the analysis. They are then approximated to the closest 5 pp-rounded figure. For the underlying country-level data, see the annex.

a. Mapping framework

The readiness of African countries to pursue local pharmaceutical production hinges on some critical dimensions such as volumes and links with MNEs and other enablers, including infrastructure and regulatory frameworks. These dimensions collectively determine the feasibility of local production, as they directly influence operational efficiency, competitiveness and integration into global supply chains (see chapter 2, figure 10).

Readiness depends primarily on **population size and industry development**

The presence of these dimensions, however, is shaped by country-specific factors (figure 13a), such as:

(a) Population size,

(b) Level of development of the pharmaceutical industry

(c) Presence of FDI

Larger populations provide the market size necessary to achieve economies of scale, which is essential for reducing production costs and sustaining local industries. A developed pharmaceutical sector increases the likelihood of having strong operational capabilities, established infrastructure and productive links with MNEs. Similarly, the presence of FDI facilitates technology and knowledge transfer while creating opportunities to integrate into GVCs.

b. High-level mapping: overview

A **narrow path** for many African countries

Mapping African countries at the intersection of these factors (a-c) is key to gauge their readiness for local pharmaceutical production (figure 13b).

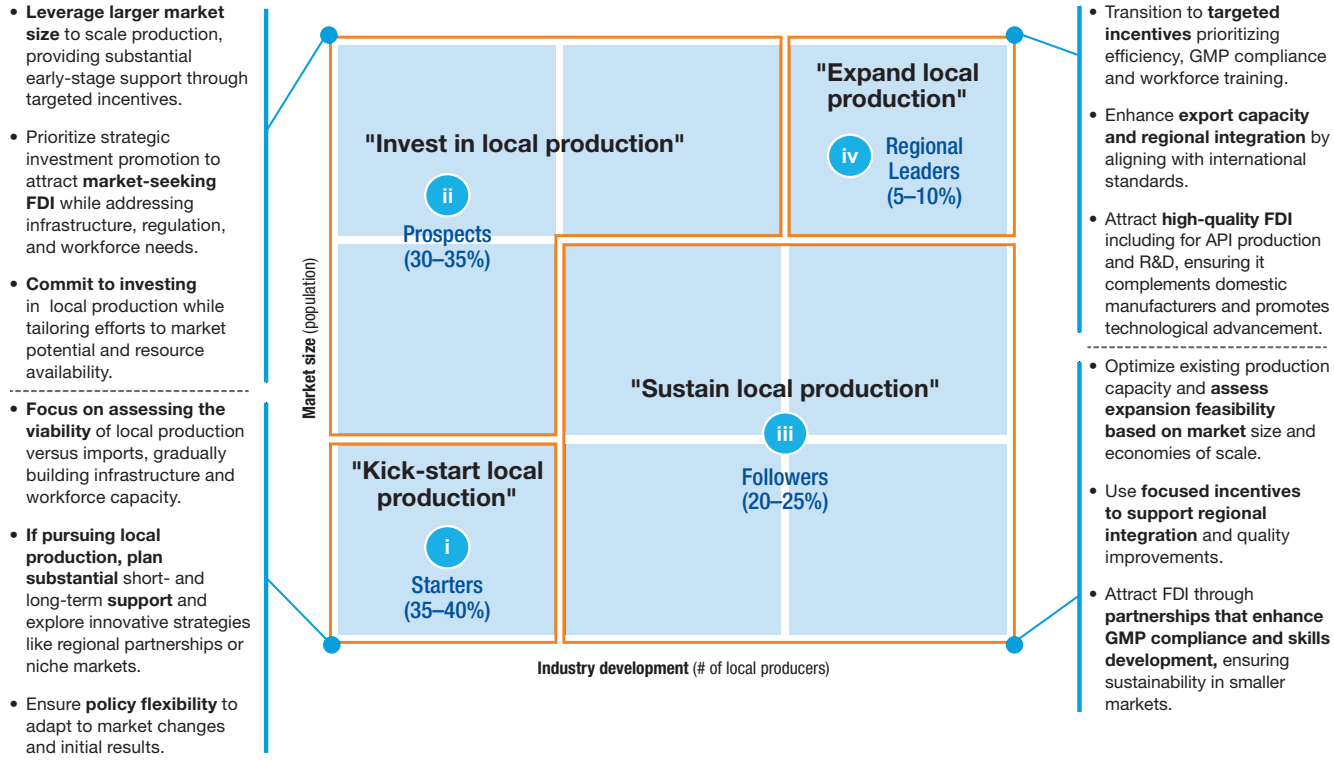
Overall, four key insights into the state and prospects of local pharmaceutical production in Africa emerge from this mapping exercise.

- *Low readiness overall.* A third to half of countries stand at the lowest levels of readiness for advancing local pharmaceutical production. This underscores the substantial challenges in establishing a broad-based industry across the continent.
- *Challenges for small countries.* No country with a population under 10 million has developed a meaningful pharmaceutical sector so far, reflecting the heightened difficulties smaller countries face in industrializing this sector.
- *Market size matters but is not the sole determinant.* While the most prepared countries tend to be the largest in their regions, the market size alone is insufficient. Some large countries (population over 50 million) still lack adequate production capacity, while several mid-sized countries (10–50 million) have established manufacturing and hold potential for expansion with supportive policies and targeted investments.
- *Weak and uneven FDI.* FDI in pharmaceutical production is weak and unevenly distributed. Only a few countries have attracted significant investment, but this has not consistently translated into strong manufacturing capabilities. Some success stories among mid-sized countries (e.g. Côte d'Ivoire and Uganda) demonstrate that, with better investment strategies, other countries could also achieve similar outcomes.

Policy responses

Industrial paths to local production in Africa broadly fit into four main policy clusters. *Starters* – generally the smallest, prominently low-income economies – face significant structural barriers to initiate local production and a challenging trade-off with imports. *Prospects* have high untapped market potential and should prioritize mobilizing investments to fully capture it. *Followers* need to sustain their local production and leverage opportunities from regional integration. *Regional leaders* are the manufacturing hubs in their region and should focus on expanding and upgrading their industries (figure 14).

Figure 14
Four main policy clusters
(share of countries)



Note: API = active pharmaceutical ingredient, FDI = foreign direct investment, GMP = good manufacturing practices, R&D = research and development. For the definition of the quadrants and for the calculation of the ranges, see note to figure 13. For the underlying country-level data, see the annex.

The heterogeneity of the readiness profiles of African countries highlights the inherent limitation of any one-size-fits-all approach to foster local production. To maximize impact, policymakers must align strategies with their country's market size, industry maturity and structural constraints. From this perspective, industrial paths to local production in Africa broadly fit into four main policy clusters.

i. *Starters*

Starters: Addressing barriers to **kick-start local production**

Many sub-Saharan African countries face tough barriers to local pharmaceutical production because of their small markets and lack of an existing industry. As a group they represent about 40 per cent of African countries; more than half are LDCs. The sheer size of this group shows the scale of challenges in building a broad pharmaceutical base across Africa.

These countries are "starters" not only because they must build local production from the ground up but also because no similarly small African country has successfully established meaningful local production at this scale before. Despite the challenges, developing a local industry is not impossible; it requires innovative approaches and adopting a cautious, pragmatic strategy tailored to this group's unique market and industrial constraints.

The key question is not just how to start but whether local production is truly viable. Establishing a competitive sector needs substantial capital, long-term government support and costly incentives – resources that many LDCs may struggle to provide. For some, it might be more practical to rely on imports, at least in the medium term while gradually building infrastructure, improving regulations and developing a skilled workforce.

Prospects: **Pushing investment** to capture market potential

If pursuing local production, countries should consider tailored, innovative solutions, such as regional partnerships, niche markets or specialized production that does not require large-scale infrastructure. This approach enables a tailored strategy that accounts for each country's unique challenges and opportunities, avoiding a one-size-fits-all approach. Policy frameworks should remain flexible, allowing adjustments as markets evolve and initial results are assessed.

FDI could be a valuable source of capital and expertise but attracting it in the absence of a compelling market-seeking rationale will require substantial incentives and a focused strategy that appeals to MNEs. This will entail leveraging corporate social responsibility commitments and the promise of long-term market potential, particularly through regional integration.

ii. *Prospects*

The lack of a robust pharmaceutical industrial base is not confined to small African economies; it also affects mid-sized countries and even larger economies such as the Democratic Republic of the Congo and the United Republic of Tanzania and, to some extent, Ethiopia.

Similar to the Starters, the Prospects faces significant challenges stemming from the lack of a robust manufacturing base to support further expansion. However, their larger market size offers a key asset that can be leveraged to drive local production. Unlike smaller countries, their efforts to scale up manufacturing are bolstered by examples of other African countries with comparable population sizes that have successfully initiated – and in some cases consolidated – their industrialization process. This provides a foundation for ambition, though success will still depend on addressing specific constraints and adopting carefully tailored strategies.

The larger countries, such as Ethiopia and the United Republic of Tanzania in particular, have substantial market potential that makes them attractive candidates for investment, including market-seeking FDI. With adequate support, these countries are well positioned to compete with larger manufacturing hubs. However, doing so will require significant financial commitment from governments in the early stages, including market-shaping incentives that

can be gradually phased out as market forces begin to sustain local production. In this context, Ethiopia is uniquely positioned, having already developed a manufacturing base that is largely driven by FDI.

For mid-sized countries, the case for local production is more complex and requires a balanced, strategic approach. While their market potential supports the development of manufacturing capacity, moves towards local production must be carefully evaluated, particularly as these countries are generally LDCs, with limited resources.

To ensure sustainability, policymakers need to assess the full costs – spanning infrastructure, regulatory reforms and workforce development – against the expected benefits. FDI can be a game-changer, offering critical private capital to tap into sizable, underserved markets. Countries such as Côte d'Ivoire and Uganda showcase how well-targeted strategies can successfully kick-start industrialization, providing valuable lessons for mid-sized countries in this group.

iii. *Followers*

In each African region, a select group of mid-sized countries (populations between 10 million and 50 million) has emerged as local pharmaceutical producers. They include Algeria, Morocco, Sudan, and Tunisia in Northern Africa; Cameroon, Côte d'Ivoire, Ghana and Senegal in Western Africa; Uganda in Eastern Africa; and Zambia and Zimbabwe in Southern Africa. While some, such as Algeria, Ghana, Morocco and Tunisia, have developed substantial manufacturing capacity, others are at earlier stages of industrialization, including several LDCs such as Senegal, Sudan, Uganda and Zambia.

From a policy perspective, this group is relevant as it demonstrates that developing local pharmaceutical production is possible even without a very large population. However, a more granular inspection of the configuration of this group (see also figure 13b) calls for some realism in setting expectations. Countries with small populations have not succeeded in building meaningful manufacturing capacity, and no LDCs in this cluster have ultimately advanced beyond a modest level of production.

The key challenge for these countries is determining whether further expansion is feasible. Policymakers should focus on supporting and optimizing existing capacities rather than pursuing aggressive expansion in markets which may be too small to achieve economies of scale. Expansion efforts must be grounded in a clear assessment of costs, benefits and potential returns. A review of investment frameworks is crucial to ensure incentive structures are effective, targeted and financially sustainable over time.

Regional integration offers an opportunity to sustain and even grow local production. However, care must be taken to ensure smaller producers are not overshadowed by dominant regional hubs. Policies should encourage inclusive value chain participation rather than direct competition with well-established hubs. Partnerships with MNEs can also enhance production capacity and quality, particularly by improving access to skills, raw materials and GMP compliance.

Followers: Focusing on **sustaining existing capacity**

FDI remains a critical lever for transition and growth, especially for LDCs with limited domestic capital. In smaller markets, attracting FDI often depends on well-designed incentives and alignment with corporate responsibility goals. Regional integration can further motivate multinational firms by offering larger, interconnected markets. Countries such as Uganda, with its majority foreign-owned GMP-compliant facilities, provide valuable lessons on how FDI and partnerships can help emerging producers build more established industrial footprints.

iv. *Regional leaders*

Egypt, Kenya, Nigeria and South Africa lead pharmaceutical manufacturing in their regions, accounting for 60 per cent of all pharmaceutical plants in Africa and

Regional leaders: Positioned for **further expanding**

75 per cent in sub-Saharan Africa. Their leadership stems not only from their population size but also from their roles as regional manufacturing hubs. Yet, despite their relatively developed industrial bases, these countries have struggled to attract significant FDI in the pharmaceutical sector. Over the past decade, only Egypt and South Africa secured some FDI projects, totalling fewer than ten, while Nigeria's FDI inflows nearly stopped. Kenya has developed its capacity so far with little foreign investment.

With their large markets and established industries, these countries are well-positioned to expand further. The key challenge lies in transitioning from early-stage industrialization to globally competitive industries.

Policymakers should gradually shift from broad, resource-intensive incentives to more targeted measures that prioritize quality and efficiency. The focus should move from building new plants to optimizing existing ones, ensuring they meet international standards and improving production quality.

Strategic incentives are essential for this transition. They include promoting GMP compliance, strengthening workforce skills through specialized training and improving the overall business environment to attract investment. Such measures not only drive industrial growth but also enhance the quality and competitiveness of these industries, enabling them to meet global market demands.

To maintain their leadership, regional hubs must strengthen exports and integrate more closely with neighbouring markets, taking a proactive role in regional trade initiatives. Aligning with international standards and effectively leveraging regional trade agreements will be critical for producing pharmaceutical products that can compete on the global stage.

FDI offers untapped potential to accelerate these transitions. By targeting quality investment that promotes technological advancements and sustainable practices, these countries can move into higher-value activities, such as API production and R&D. However, it is crucial to ensure that FDI complements rather than displaces domestic manufacturers, fostering partnerships that enhance competition, innovation and resilience in the industry.

Chapter 5

Insights from UNCTAD–EAC project on local production of antibiotics in East Africa

Assessment

The field project *Investment Incentives for Local Production of Essential Antibiotics in East Africa* carried out by UNCTAD and the East African Community (EAC) over the period 2019- 2023 provides key insights into antibiotic production and antimicrobial resistance (AMR) in the region, with a focus on Ethiopia, Kenya and Uganda.

Local production can improve access to essential antibiotics and help reduce the burden of AMR, but it must be integrated with AMR stewardship to maximize health benefits. The feasibility of antibiotic production varies across countries, requiring tailored investment strategies. Despite public support, current policies lack targeted incentives for antibiotic production, highlighting the need for refined product- and country-specific interventions (figure 15).

This chapter focuses on the case of antibiotics production in East Africa, drawing lessons from the four-year project *Investment Incentives for Local Production of Essential Antibiotics in East Africa* carried out joint by UNCTAD and the EAC. From a mix of literature review, secondary data analysis and primary data analysis of field surveys and meetings and interviews with stakeholders (including local producers, government, and the private sector and civil society), the project yielded some key insights into the trends and issues of local production of antibiotics in the region, with a focus on three countries – Ethiopia, Kenya and Uganda (UNCTAD, 2023a, 2023b, 2023c).

This case study provides insights that extend beyond antibiotics production in East Africa, demonstrating how broader principles and strategies for local pharmaceutical production can be applied in practice. It serves as a concrete application of the general approach and framework outlined in this report, showing how to leverage it to design and implement targeted investment incentives and strategic policy interventions that foster investment in local production.

In particular, the investment framework in chapter 3 (figure 11), which evaluates investment policy initiatives through the three-dimensional lens of impact, feasibility, and incentives, offers a valuable roadmap for assessing the case for supporting local antibiotic production in East Africa.

A. Impact: the threat of antimicrobial resistance

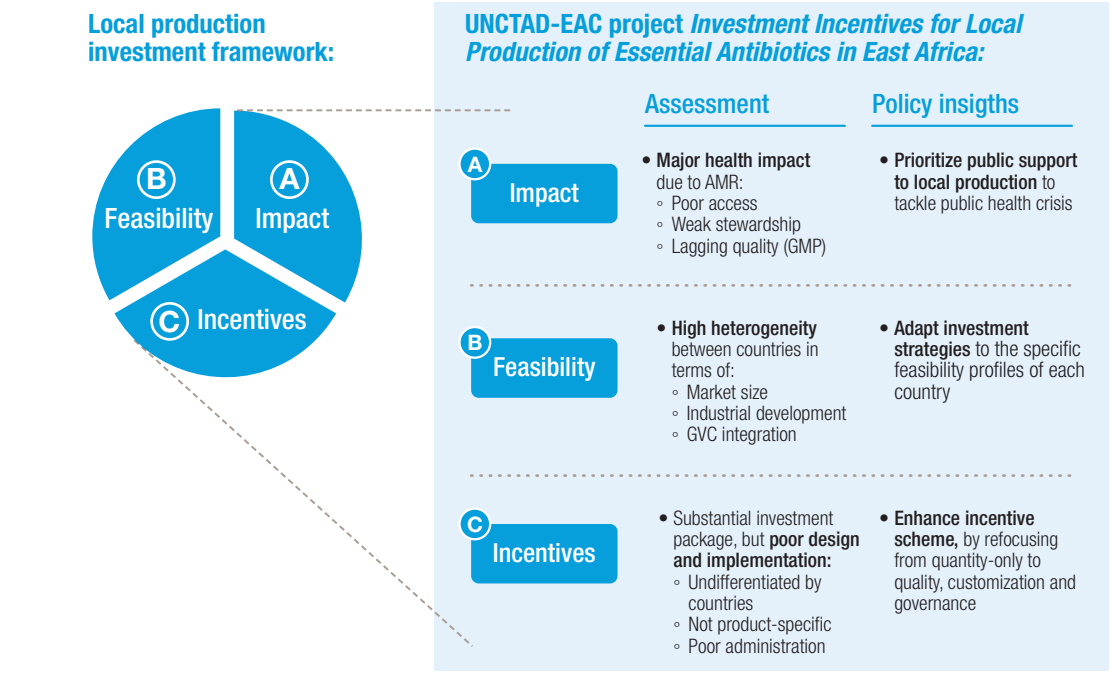
Antimicrobial resistance is a critical global health and development threat. In 2019, bacterial AMR directly caused an estimated 1.27 million deaths worldwide and contributed to 4.95 million deaths. WHO identifies AMR as one of the top 10 health threats to humanity.

AMR occurs when microorganisms evolve to resist the effects of medications intended to eliminate them or inhibit their growth, encompassing resistance to antibiotics, antivirals, antifungals and antiparasitic drugs. The primary drivers of AMR include the misuse and overuse of antimicrobials in human health, animal health and agriculture. In addition to death and disability, AMR has significant economic costs. The World Bank estimates that AMR could result in $1 trillion in additional healthcare costs by 2050, and $1 trillion to $3.4 trillion in GDP losses per year by 2030.

Ensuring that every patient has timely access to appropriate antibiotics is crucial to combat AMR.

AMR: a global threat, with **highest incidence in sub-Saharan Africa**

Figure 15
Local production of antibiotics in East Africa: assessment and policy insights – focus on Ethiopia, Kenya and Uganda



Source: UNCTAD.

Note: AMR = antimicrobial resistance, GMP = good manufacturing practices, GVC = global value chain.

Local production: **ammunition against AMR**

The global narrative about AMR often focuses on antibiotic overuse in developed countries, but lack of access can be equally detrimental. Inadequate treatment options can lead to the use of suboptimal alternatives, providing pathogens more opportunities to develop resistance. This issue is particularly acute in developing countries, where essential antibiotics are often not even registered with national regulatory bodies. In sub-Saharan Africa in particular, barriers to accessing antibiotics and antifungals are exacerbated by inadequate distribution systems, an overreliance on imports, regulatory challenges and inconsistent prescription practices.

Sub-Saharan Africa is the area of the world with the highest burden of deaths resulting from AMR, with the eastern and western regions suffering the most deaths per capita (Murray et al., 2022). Specific evidence of inappropriate prescribing of antibiotics is documented for Ethiopia, occurring in 50 per cent of cases (Muhie, 2019). Similarly, a large proportion of antibiotics registered in Kenya (64.3 per cent) and Uganda (51.1 per cent) are non-essential (Lyus et al., 2020).

Local production can play a major role in addressing AMR by enabling governments to collaborate directly with manufacturers to ensure a reliable supply of the necessary antibiotics and to implement tailored stewardship strategies. This close partnership allows for more AMR-effective management of antibiotic supply, quality control and alignment with national AMR goals.

Data from WHO–Health Action International studies in Ethiopia and Kenya indicate that locally produced antibiotics are generally more available than imported ones across public, private and (in Kenya) mission channels (UNCTAD, 2023a, 2023b, 2023c). However, the picture is more nuanced when it comes to affordability. In Kenya, government procurement prices for locally produced antibiotics are often lower

than or comparable to those of imported medicines, indicating a competitive local pharmaceutical sector (UNCTAD, 2023b). Conversely, in Ethiopia, the Government often faces a cost premium for locally produced antibiotics, which are more expensive than imports, suggesting potential savings through imports. Nonetheless, in that country's private market, locally produced medicines tend to be cheaper than imports because of higher mark-ups on the latter, which allow local producers to remain competitive despite higher production costs (UNCTAD, 2023a).

Quality assurance remains a key challenge, with only a handful of manufacturers – mostly linked to multinational corporations – meeting GMP standards. Despite the existence of AMR strategies in Ethiopia, Kenya and Uganda, their impact on antibiotic consumption and production remains limited, as market forces largely drive these activities. Local manufacturers' awareness of the WHO's AwaRe list, which categorizes antibiotics by resistance risk, is low. As a result, antibiotics prone to developing resistance, including some on the AwaRe Watch list and others not recommended by WHO, are still widely used.

From a strategic perspective, local pharmaceutical production supports strategic autonomy but is largely limited to formulation, with no domestic production of APIs. Even in Kenya, where limited API production exists, the output is mainly for export. The high cost of imported APIs – often exceeding 10 per cent of the manufacturer price for generic over-the-counter drugs in sub-Saharan Africa – poses a major challenge (Conway et al., 2019). This dependency on imported APIs and excipients leaves local manufacturers vulnerable to global supply chain disruptions.

Policy insights: prioritize the health imperative. The critical public health threat posed by AMR necessitates a bold and immediate policy response. Efforts to support local antibiotic production should focus not only on expanding capacity and access but also on ensuring compliance with GMP standards and promotion of AMR stewardship. Recognizing the continued dependence on imported APIs, at least in the short to medium terms, these measures should be complemented by interventions to secure API supply chains and manage associated costs, to mitigate vulnerabilities associated with global supply disruptions, and to support the business sustainability of local production.

B. Feasibility: high heterogeneity within the same region

The feasibility of local antibiotic production varies widely even within the relatively confined geographic region of East Africa, demonstrating that there is no one-size-fits-all approach. Each country faces unique conditions shaped by its market size, industrial development, integration into GVCs and FDI links. Kenya has the largest pharmaceutical market (about $1 billion in 2018), followed by Ethiopia ($860 million in 2019). The market in Uganda is about a third of the market in Kenya ($340 million in 2018). Local production plays a different role in each market: in Kenya domestic production covers 20–30 per cent of the market, compared with 20 per cent in Ethiopia and 10 per cent in Uganda. In all countries, antibiotics are a key product segment.

Diversified approaches to developing local production

The approaches to developing pharmaceutical industries are diversified across the region. In Ethiopia, antibiotic production is deeply integrated into global networks, with five of the seven producers operating under foreign ownership, primarily through joint ventures with multinationals from other developing countries (UNCTAD, 2023a). Kenya has focused primarily on supporting domestic manufacturers but is making efforts to attract multinational companies, particularly through the establishment of SEZs (box 6; UNCTAD, 2023b; UNCTAD, 2025). In Uganda, despite its smaller market size, foreign investment has also been instrumental to develop local manufacturing (UNCTAD, 2023c).

Local manufacturers in all three countries face low-capacity utilization, typically ranging between 40 and 60 per cent, though this varies by formulation type. In Ethiopia, utilization is higher for antibiotics (52.4 per cent) than for other medicines (23.1 per cent).

Policy insights: align investment strategies to countries' specificities. To enhance local antibiotic production, policy measures must be tailored to each country's unique industrial and market conditions. By aligning investment strategies with the distinct feasibility profiles of target countries, policymakers can better support the sustainable growth of local production, improve access to essential medicines and strengthen efforts against antimicrobial resistance.

C. Incentives: substantial public support, but poor design and implementation

Fiscal incentives and preferential procurement employed across the board

Local pharmaceutical production is a strategic priority across East Africa, as reflected in the national strategies of Ethiopia, Kenya and Uganda (table 1). These policies aim to enhance access to essential medicines, foster self-sufficiency, and promote economic growth and strategic autonomy. Governments in the region have adopted a combination of fiscal incentives and market-shaping measures to support local manufacturers. Fiscal incentives include tax holidays, exemptions on imported capital goods and raw materials, and financial subsidies for new investment and equipment upgrades. These measures aim to reduce production costs and attract both domestic and foreign investment.

In parallel, market-shaping incentives focus on creating demand for locally produced medicines. Common measures include preferential procurement policies that give locally manufactured products a competitive edge in public tenders, with Ethiopia offering up to a 25 per cent price preference and Kenya and Uganda up to 15 per cent. Ethiopia and Uganda also provide exclusive tender opportunities for local manufacturers, further incentivizing production for domestic markets (table 1).

Despite these efforts, the current frameworks face limitations in addressing the unique challenges of antibiotic production and AMR. Fiscal incentives often fail to differentiate antibiotics from other medicines, overlooking the public health priorities associated with AMR. Similarly, supporting measures are not tailored to encourage responsible antibiotic production or stewardship. Inefficiencies in implementing these incentives, combined with a lack of detailed market and regulatory information, create additional barriers to investment.

Fragmented governance further weakens the effectiveness of these policies. Misalignment among ministries of health, finance, trade and industry often results in disconnected approaches, where public health priorities are treated separately from the economic and financial sustainability of the pharmaceutical sector. In addition, limited regional coordination leads to competition among countries, with overly generous incentives potentially creating inefficiencies and undermining long-term goals.

Policy insights: refine incentives, strengthen governance. To enhance the impact of local pharmaceutical production, policymakers should adopt a more targeted approach to both fiscal and market-shaping incentives. Fiscal measures should include product-specific incentives that address the unique requirements of antibiotics and AMR management. Market-shaping policies should focus on fostering demand for responsibly produced antibiotics through tailored procurement criteria. In addition, efficient administration, improved policy coherence and stronger regional coordination are critical to harmonize frameworks and prevent harmful competition. Complementary measures, such as streamlined regulatory processes and access to reliable market data, further support sustainable local manufacturing and better AMR management outcomes.

Table 1
Local production: policy recognition and incentives – Ethiopia, Kenya and Uganda

	Ethiopia	Kenya	Uganda
Recognition of local pharmaceutical production as a policy goal	• National Health Policy 1993 • National Drug Policy 1993 • Growth and Transformation Plan I (2010/11–2014/15) • Growth and Transformation Plan II (2015/16–2019/20) • National Strategy and Plan of Action for Pharmaceutical Manufacturing Development in Ethiopia (2015–2025) • Ethiopia 2030: The Pathway to Prosperity – Ten Years Perspective Development Plan (2021–2030)	• National Drug Policy 1994 • Kenya National Pharmaceutical Policy 2012 • Kenya's National Industrialization Policy Framework 2012– 2030 • Kenya Pharmaceutical Sector Development Strategy 2012 • 2020–2025 Strategic Plan of the Pharmacy and Poisons Board	• National Drug Policy 2002 • National Medicines Policy 2015 • National Pharmaceutical Services Strategic Plan 2020/21– 2024/25
Production-facilitating incentives	• Subsidized loans for new plants (up to 70 per cent) and for upgrading plants, equipment and machinery (60 per cent) • Dedicated pharmaceutical infrastructure and tax exemptions – Kilinto Industrial park • Customs duty exemptions on imported capital goods and spare parts (up to 15 per cent) Incentives if more than 60 per cent of products are exported	• VAT exemption on finished pharmaceutical products and raw materials • Tax holiday on greenfield investment for three to five years • SEZs and export processing zones (providing infrastructure and financial incentives)	• Tax holiday for greenfield investment • Tariff-free imports of capital goods, APIs, packaging and other equipment • VAT recoverable on pharma inputs • Zero duties on imported raw material and packaging • General industrial parks but not pharmaceutical-specific
Market-shaping incentives	• Price preference in procurement up to 25 per cent • Prepayment of up to 30 per cent of the tender value • Exclusive tenders offered for local manufacturers only where two or more manufacturers are producing in sufficient quantity	• Price preference in procurement up to 15 per cent	• Price preference in procurement up to 15 per cent • Exclusive tenders for local manufacturers • Three-year contract for tenders • Verification fee of 12 per cent on all imports of 37 selected locally manufactured medicines

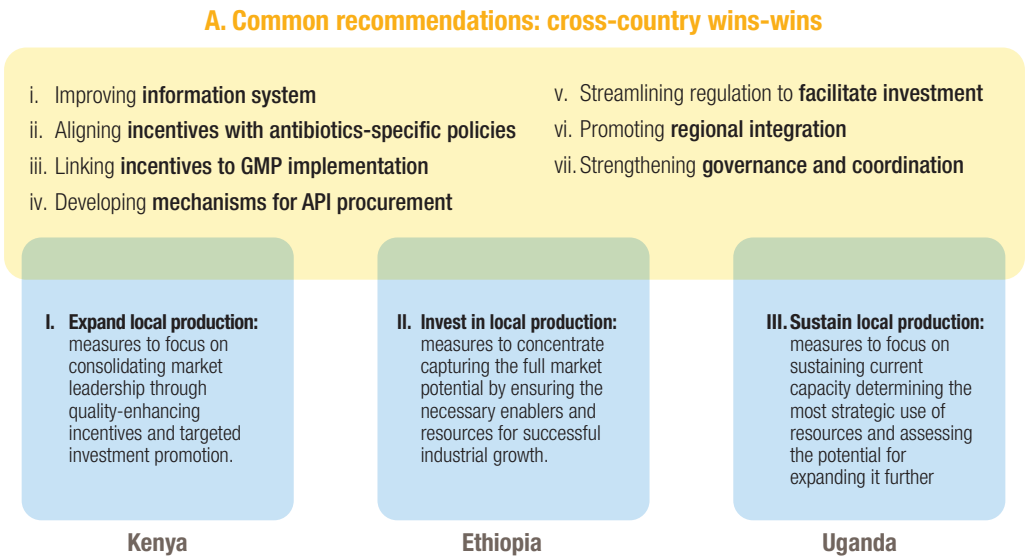
Source: Elaboration from UNCTAD (2023a, 2023b, 2023c).

Note: API = active pharmaceutical ingredient, SEZ = special economic zone, VAT = value added tax.

Policy recommendations

Addressing common AMR challenges and gaps in the incentive schemes calls for shared policy recommendations, including improved information systems, product-specific incentives for antibiotics, incentives linked to GMP compliance, stronger regional integration and exploration of joint API procurement. In addition, each country requires tailored investment strategies to meet its unique feasibility conditions and industrial goals (figure 16).

Figure 16
Cross-country measures to tackle common challenges and targeted interventions



Source: UNCTAD.

Note: API = active pharmaceutical ingredient; GMP = good manufacturing practices.

A. Common recommendations: cross-country win-wins

Shared AMR challenges, common gaps, **cross-country win-wins**

i. Improving information systems

Robust information systems on antibiotic production, supply and consumption are imperative. By enhancing data accuracy and accessibility, policymakers, health authorities and manufacturers can make informed decisions on AMR strategies and design consistent measures to support local production. Timely, digitized data help not only in formulating policy but also in monitoring and evaluating incentives and tracking production competitiveness over time.

ii. Aligning incentives with antibiotics-specific policies

Different therapeutic categories may require varying levels of support based on their specific needs. To address AMR effectively, incentives should be tailored to promote appropriate access to antibiotics. This includes designing incentives that prioritize antibiotics, aligning with international best practices.[19]

iii. Linking incentives to GMP implementation

Adherence to GMP standards is essential for sustainable industrial growth. Currently, GMP certification is lacking among most manufacturers, which impedes quality assurance. Incentives linked to GMP compliance can contribute to address this gap and ensure international quality standards

[19] Incentives that specifically target antibiotic producers are mostly employed in developed economies. Examples include shaping antibiotic prices to guide investment decisions; establishing long-term agreements between industry and public health agencies to determine pricing, stewardship and other terms; and exempting revenue from essential antibiotics from certain fiscal obligations, such as social security contributions (see Gotham et al., 2021 and Lim et al., 2020).

are met, though challenges such as inconsistent implementation and stakeholder coordination need to be resolved.

iv. Developing collaborative mechanisms for API procurement

Collaborative mechanisms, such as joint management teams, offer opportunities for nationally and regionally aggregated demand and competitive imports of critical inputs, ensuring a sustainable and resilient supply chain. These mechanisms also foster better understanding of manufacturer needs and promote procurement transparency (see also box 8).

v. Streamlining regulation to facilitate investment

Investment promotion measures need to be complemented by efforts to streamline regulations. Investment facilitation, including digital platforms and e-regulation programmes, can address administrative barriers and enhance the investment climate for local producers. To achieve these objectives, UNCTAD has created a digital platform that countries are using to make their own digital information portals (which show procedures step by step) and digital single windows (which facilitate fully online procedures). More than 60 countries use the platform successfully and effectively, including for the pharmaceutical industry (see box 7).

vi. Promoting regional integration

Regional integration is vital for expanding market sizes and attracting investment. Harmonized guidelines and regulatory frameworks facilitate market expansion, making the region more attractive for domestic and foreign investors. Continued efforts in regional integration, including the ACH Regional Pharmaceutical Manufacturing Plan of Action and the EAC Pharmaceutical Management Bill, can unlock significant growth potential for the industry (see also boxes 5 and 8).

vii. Strengthening governance and coordination

Effective implementation of incentives requires improved coordination among government agencies and local manufacturers. Recent efforts to enhance sector governance should be continued, with regular dialogues and better stakeholder engagement to address issues of inconsistent implementation.

B. Country-specific recommendations: accounting for heterogeneity

I. Kenya: expand local production

In Kenya the relatively well-established pharmaceutical sector and large market size present opportunities for expanding local production and reviewing the current incentive system.

Kenya is well positioned to continue to play a leading role in the implementation and operationalization of regional and continental integration, with the potential to strengthen its role as a regional hub for pharmaceutical manufacturing in antibiotics and other medicines.

Tailored strategies to reflect regional heterogeneity

Although some foreign investors are beginning to enter the market, the pharmaceutical sector has largely developed through domestic players. However, at this stage of development, it is important to intensify efforts to attract MNEs and enhance the country's integration into GVCs. SEZs and export-processing zones – a key element of the country's industrial strategy – can be instrumental to this purpose (see box 6; UNCTAD, 2025). Updated information on production capacity, consumption and pricing should guide a re-assessment of market-shaping policies, given local production is quite well established and competitive with imported production.

II. Ethiopia: invest in local production

In Ethiopia the pharmaceutical industry is benefiting from a comprehensive incentives package designed to attract investment from MNEs. The country's large and growing population presents significant opportunities for market expansion, reinforcing its appeal to market-seeking FDI.

To sustain growth and competitiveness, Ethiopia should adapt its incentives to align with the sector's evolving needs while addressing key challenges, such as streamlining foreign exchange procedures for importing inputs. For instance, with local production now accounting for half of the antibiotics market, policymakers could gradually scale back financial incentives, such as the 25 per cent price preference in public procurement – currently higher than in most African countries – or tie such preferences to supply availability and AMR objectives.

Regular reviews of public procurement policies, alongside strategies for regional and continental market integration, would further enhance the role of Ethiopia as a key player in the regional pharmaceutical market.

III. Uganda: sustain local production

Uganda's smaller market size and emerging industry require careful consideration of the kind of support that is needed to sustain or further expand the local manufacturing capacity.

A coherent, sustainable and long-term strategy supported by a cost-benefit analysis is needed to guide investment decisions. In this respect, coordination between health and industrial authorities is crucial.

Partnerships with MNEs can be helpful to overcome challenges related to availability of financing as well as of technology and expertise. Regional integration, including pooled procurement and regulatory harmonization, can reduce costs and support building regional value chains, with antibiotics being a strategic area for initiating these efforts.

Conclusion and policy implications

Conclusion

The COVID-19 pandemic highlighted the urgent need for self-reliance in essential sectors, including the pharmaceutical industry. This report underscores the critical role of promoting local pharmaceutical production in Africa, driven by objectives such as improved access to medicines, strategic health security and economic development. It articulates a comprehensive framework for evaluating and supporting investment in local production, addressing both the benefits and the challenges of such an initiative.

Informed by health imperatives and industry dynamics, this report presents a comprehensive framework for evaluating the case for investment promotion in local pharmaceutical production in Africa, encompassing the associated benefits, costs and tailored policy interventions. Through a structured approach, it endeavours to avoid overlooking the potential of local production while cautioning against ill-designed or ill-implemented investment measures that could prove unsustainable or detrimental to public health and/or finances.

Laying down a comprehensive framework offers several advantages, one of which is ensuring that diverse perspectives and interests are adequately represented. This establishes a constructive conceptual foundation for facilitating discussions and coordination among the wide array of stakeholders. These stakeholders hail from very different technical and policy areas, including health, industry, trade and investment, and finance, both public and private, and different governance levels, ranging from national to regional and international.

The nature and extent of policy support for local pharmaceutical production hinge on various factors, including projected impact, feasibility and cost-effectiveness relative to public finances. While strategic and economic outcomes may initially be modest and uncertain, health considerations – particularly for essential medicines – assume paramount importance. Feasibility, meanwhile, is contingent upon factors such as integration into GVCs and economies of scale, with the latter being a pivotal determinant.

Given prevalent importation practices and the scale economies of established global pharmaceutical exporters, tailored industrial policies play a crucial role in enhancing the appeal of local production in Africa. These policies should be finely calibrated to suit the individual country's industry landscape and market dynamics.

The readiness for local pharmaceutical production across Africa varies significantly on the basis of factors such as population size, industry development and presence of FDI. High-level analysis in this report warns that many African countries, especially the smaller ones, face a narrow pathway to industrialization.

A case study on local antibiotic production in East African countries – with a specific focus on Ethiopia, Kenya and Uganda – confirms the need to integrate a top-down African framework with bottom-up, country-specific solutions. While these countries share common challenges, each faces unique policy dilemmas shaped by its industrial maturity and market size. This highlights that while a broad, strategic approach is necessary, equally crucial are tailored, localized policies for driving sustainable growth in pharmaceutical production.

Tying these insights together, this report outlines 10 policy recommendations to promote investment in local pharmaceutical production in Africa. These recommendations address critical factors such as health imperatives, economic feasibility and the policy measures required to foster sustainable and impactful investments. The recommendations in this report align with the priorities outlined by

African countries in the recent Framework for Strengthening Local Production of Medicines, Vaccines and Other Health Technologies in the WHO Africa Region 2025–2035, adopted by African Member States in July 2024.[20] The Framework targets increasing local production to cover 55 per cent of the market share for medicines and ensuring that 50 per cent of vaccine doses are produced locally by 2035. It also emphasizes strengthening regulatory systems to achieve WHO Maturity Level 3 for at least 15 national regulatory authorities, establishing 3 sustainable regional pooled procurement mechanisms, developing 9,500 skilled industry professionals and facilitating at least 11 technology transfer partnerships and 250 R&D projects by 2035.

These policy priorities align with this report's emphasis on investing in specialized infrastructure, strengthening regulatory systems, fostering regional integration, and addressing workforce and technology gaps. The shared focus on regional collaboration and strategic investments highlights the complementarity between the Framework objectives and the recommendations proposed for advancing local pharmaceutical production in Africa.

Ten policy recommendations

a. Strategic priorities

1. Address the health imperative: Local pharmaceutical production is first and foremost a means to improve access to essential medicines for the people of Africa, supporting the achievement of SDG 3 (target 3.b). Although the strategic and economic benefits of local production may be gradual and uncertain, achieving the immediate health benefits of access to critical drugs such as vaccines or antibiotics is imperative. Policymakers should prioritize investments in areas with significant public health impacts where local production can strengthen the African public health system and make it more resilient to crisis (such as pandemics or AMR).

2. Promote a comprehensive approach: While addressing health challenges is imperative, supporting local pharmaceutical production is a multidimensional policy goal that goes beyond the health sphere. It involves integrating health, economic and business priorities. The comprehensive investment framework outlined in this report provides a strong foundation, addressing the three main analytical and policy dimensions of local production – impact, feasibility and incentives. By effectively balancing these three dimensions, African investment policymakers can boost sustainable investment in pharmaceutical production.

3. Balance incentives with feasibility and impact: State support through incentives should be assessed carefully on the basis of impact and feasibility. Policymakers must strategically evaluate how incentives can enhance feasibility while delivering meaningful impacts, ensuring the best use of public resources. In countries where local production is not viable – owing to factors such as market size or regulatory barriers – import-enhancing strategies, such as pooled procurement, tenders and pricing mechanisms, may offer better outcomes in the short- to medium-term than pursuing local production without the necessary conditions in place.

4. Tailor policy responses to country-specific conditions: The mapping of Africa's readiness highlights significant heterogeneity across countries. This diversity requires tailored approaches to local pharmaceutical production. For example, regional manufacturing hubs with more developed industries can focus on scaling up production and attracting FDI, while countries that are starting to build their manufacturing capacity may need to prioritize addressing key market and regulatory challenges and building foundational infrastructure.

[20] Available at https://iris.who.int/handle/10665/378851.

Tailoring policies to fit each country's unique circumstances will be essential for fostering sustainable growth across the continent.

b. Investment promotion strategies

5. Enhance incentive scheme: To accelerate pharmaceutical production, African countries should adopt a balanced approach combining production-facilitating measures (e.g. fiscal incentives) with market-shaping policies (e.g. preferential procurement). These incentives must be carefully designed to reflect each country's specific feasibility profile, addressing unique challenges while capitalizing on local opportunities. Measures should also distinguish between general pharmaceutical manufacturing and specialized segments, such as antibiotics, ensuring alignment with critical public health priorities, including combating AMR.

6. Leverage FDI: The report highlights the limited use of FDI to advance local pharmaceutical production in Africa and emphasizes the need for greater efforts to attract such investment. MNEs bring critical contributions, including technology transfer, access to capital and integration into global supply networks and markets. Policymakers should prioritize strategies to attract and leverage FDI effectively, focusing on strengthening local production capacities and fostering integration into GVCs.

7. Invest in specialized infrastructure and SEZs: To enhance local pharmaceutical production, national governments should focus on building dedicated infrastructure, such as industrial parks and SEZs, which offer conducive environments with incentives such as tax breaks, streamlined regulations and facilities essential to attract FDI and support clustering and manufacturing hubs.

c. Operational and regulatory enablers

8. Foster regional integration and cross-country collaboration: The report emphasizes the importance of regional integration to overcome market fragmentation and achieve economies of scale. Beyond market expansion, regional integration provides additional benefits, such as harmonized regulatory frameworks, pooled procurement mechanisms and coordinated investment strategies.

9. Incorporate API supply chain strategies: A key challenge for local pharmaceutical production in Africa is the heavy reliance on imported APIs. Fully localizing API production may not be feasible for most African countries in the medium term because of the significant costs, technical expertise and infrastructure required, so this report emphasizes the importance of a phased approach. Policymakers should prioritize immediate opportunities by fostering investment in local formulation capacity and strengthening the stability of API supply chains. At the same time, they should develop strategies to build the foundations for sustainable API production over the longer term.

10. Strengthen investment facilitation: UNCTAD analysis and field experience suggest that complex regulatory processes and administrative red tape are major barriers to investment, particularly in highly regulated sectors such as pharmaceuticals. In such industries, where costly incentives are often necessary, investment facilitation provides a promising cost-effective alternative to standard investment promotion. Digital platforms and e-regulation tools can significantly reduce administrative bottlenecks, speed up approvals and enhance overall efficiency. For instance, digital solutions for drug registration can streamline the regulatory framework for local pharmaceutical production. The UNCTAD investment facilitation and digital government programme is well positioned to help countries strengthen these areas, improving the investment climate and reducing time and cost barriers that often deter investors.

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Annex

Annex table 1
Mapping of African countries

Country	Subregion	Number of plants, 2022 (Banda et al., 2022)	Population, 2023 (World Bank Development Indicators)	Number of announced greenfield projects in pharmaceutical manufacturing, 2013–2024 (fDi Markets)
Algeria	North Africa	55	45’606’480	5
Angola	Southern Africa	2	36’684’202	0
Benin	West Africa	1	13’712’828	0
Botswana	Southern Africa	0	2’675’352	0
Burkina Faso	West Africa	0	23’251’485	0
Burundi	Central Africa	2	13’238’559	0
Cameroon	Central Africa	15	28’647’293	0
Cabo Verde	West Africa	1	598’682	0
Central African Republic	Central Africa	..	5’742’315	0
Chad	Central Africa	..	18’278’568	0
Comoros	East Africa	..	852’075	0
Congo	Central Africa	..	6’106’869	0
Congo, Democratic Republic of	Central Africa	..	102’262’808	1
Côte d I›voire	West Africa	5	28’873’034	6
Djibouti	East Africa	0	1’136’455	0
Egypt	North Africa	120	112’716’598	7
Equatorial Guinea	Central Africa	..	1’714’671	0
Eritrea	East Africa	2	3’748’901	0
Eswatini	Southern Africa	0	1’210’822	0
Ethiopia	East Africa	11	126’527’060	8
Gabon	Central Africa	0	2’436’566	0
Gambia	West Africa	0	2’773’168	0
Ghana	West Africa	30	34’121’985	3
Guinea	West Africa	1	14’190’612	0

Country	Subregion	Number of plants, 2022 (Banda et al., 2022)	Population, 2023 (World Bank Development Indicators)	Number of announced greenfield projects in pharmaceutical manufacturing, 2013–2024 (fDi Markets)
Guinea-Bissau	West Africa	0	2'150'842	0
Kenya	East Africa	35	55'100'586	2
Lesotho	Southern Africa	0	2'330'318	3
Liberia	West Africa	0	5'418'377	0
Libya	North Africa	0	6'888'388	0
Madagascar	East Africa	..	30'325'732	0
Malawi	Southern Africa	3	20'931'751	0
Mali	West Africa	2	23'293'698	1
Mauritania	West Africa	0	4'862'989	0
Mauritius	East Africa	..	1'261'041	0
Morocco	North Africa	33	37'840'044	7
Mozambique	Southern Africa	2	33'897'354	0
Namibia	Southern Africa	0	2'604'172	1
Niger	West Africa	0	27'202'843	0
Nigeria	West Africa	150	223'804'632	1
Rwanda	Central Africa	0	14'094'683	2
Sao Tome and Principe	Central Africa	..	231'856	0
Senegal	West Africa	5	17'763'163	0
Seychelles	East Africa	..	119'773	0
Sierra Leone	West Africa	..	8'791'092	0
Somalia	East Africa	0	18'143'378	0
South Africa	Southern Africa	122	60'414'495	3
South Sudan	North Africa	0	11'088'796	0
Sudan	North Africa	25	48'109'006	2
Togo	West Africa	3	9'053'799	0
Tunisia	North Africa	39	12'458'223	0
Uganda	East Africa	11	48'582'334	3
United Republic of Tanzania	East Africa	4	67'438'106	2
Zambia	Southern Africa	5	20'569'737	0
Zimbabwe	Southern Africa	5	16'665'409	1

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