

The next frontier for the public health medicines market

Advancing local pharmaceutical production
to improve access to essential medicines

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Acknowledgments

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About USP

USP is an independent nonprofit organization that collaborates with the world's top health and science experts to develop high-quality standards that set the bar for manufacturing and distributing safe and effective medicines, supplements, and food around the globe. Through its global public health programs, the organization strengthens medicines quality assurance systems, increases the supply of quality-assured medicines, and develops capacity to detect and remove poor-quality medicines from the market. By sharing scientific expertise and providing technical support and leadership, USP helps local regulators improve and sustain local health systems and enables manufacturers to supply quality-assured essential medicines for years to come. Through these efforts, USP is able to help prevent and treat diseases like HIV/AIDS, tuberculosis, malaria, and neglected tropical diseases, and improve maternal, newborn, and child health.



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Foreword



Access to safe, effective, quality-assured, and affordable medicines are essential in achieving global health goals and improved health outcomes for populations everywhere. However, ensuring access to these lifesaving medicines in low- and middle-income countries remains a persistent and complex challenge—one that the African Union Development Agency (formerly, the New Partnership for Africa's Development Planning and Coordinating Agency) and many others are working to address. Despite an urgent need for these essential medicines, increasingly, their production is

being consolidated to a handful of manufacturers. Additionally, manufacturing capacity in the countries where these medicines are needed most has generally lagged behind that of high-income countries. Ultimately, these factors leave the world's poorest and most vulnerable populations—nearly 2 billion people globally—without access to essential and life-saving medicines.

AUDA-NEPAD has been acutely focused on this issue for over a decade. Since the publication of the *Pharmaceutical Manufacturing Plan for Africa* in 2007, significant progress has been made in advancing the state of local pharmaceutical production. Several countries in Africa are investing to become pharmaceutical hubs that can help respond to the demand and needs on the continent and elsewhere.

However, there is more to be done. New approaches, investment, and coordinated action are needed to continue nurturing pharmaceutical sectors in Africa, Asia, and elsewhere. This becomes especially critical as many low-income countries are transitioning to middle-income countries that will begin procuring medicines on their own without the assistance of the Global Fund, GAVI, and other donor-led procurement agencies. This shift points directly to the need for concomitant strengthening of national regulatory systems and regional regulatory harmonization efforts, such as AUDA-NEPAD's African Medicines Regional Harmonization Initiative and the Africa Medicines Agency, to deter negligent or fraudulent manufacturers while creating an enabling environment for manufacturers who abide by international standards.

The publication of this white paper is timely as the issue of local manufacturing continues to gain momentum. The issue was a central topic at the 72nd session of the World Health Assembly and the focus of AUDA-NEPAD's first-ever 2019 Africa Pharma Conference in Johannesburg, South Africa. It is my hope that these collective efforts move Africa into a new frontier of pharmaceutical development—one that ushers in equitable access to medicines for all people, everywhere.

A stylized, handwritten signature in black ink, belonging to Dr. Ibrahim Mayaki. The signature is fluid and cursive, with a large loop at the top and a long, sweeping tail.

Dr Ibrahim Mayaki, CEO of AUDA-NEPAD

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2 Billion People Lack Access to Medicines

We are at a crossroads. Never before has the world benefited more from advances in the fields of medicines and technology. The development and availability of vaccines and medicines that cure diseases and prolong life have helped millions of people live healthier and more productive lives.

But the benefits of these advances have not been shared across the board. Nearly 2 billion people, many of whom reside in low- or middle-income countries, still lack access to medicines that could prevent unnecessary illness and death.¹

Reaching those 2 billion people with the essential medicines, vaccines, and health products they need is fundamental in meeting the health-related Sustainable Development Goals, supporting the Global Health Security Agenda, and attaining universal health coverage.

Even and reliable access to medicines also protects societies from health emergencies by ensuring that existing medicines to help contain or combat epidemics are readily available and accessible and that medicines shortages or stock-outs do not enable epidemics to spread. At present, antimicrobial resistance is one of the most pressing global health emergencies, one that is exacerbated by the overuse and misuse of antibiotics and other antimicrobials. Therefore, efforts to expand access to medicines must also be accompanied by efforts to ensure those medicines are used rationally and responsibly.

Additionally, as countries continue to strive to make progress against infectious diseases, many are increasingly facing a dual burden in which noncommunicable diseases are becoming a rising threat to their populations.

At the current crossroads, the challenge is not only to reach the 2 billion who currently do not have access to lifesaving medicines, but also to ensure medicines markets are capable of responding to the needs of low- and middle-income countries and meeting critical and evolving challenges like antimicrobial resistance and noncommunicable diseases.

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Why Medicines Remain out of Reach

Universal access to medicines, though simple in concept, remains a serious challenge in many parts of the world due to myriad complex issues that affect when, where, and how people use medicines. Access is typically understood as the consistent availability of safe, effective, and appropriate medicines (and other health products) of assured quality and at an affordable cost to the populations that need them.*

Medicines shortages and stock-outs are disturbingly commonplace. While shortages persist in high-income countries,² the problem is magnified in low- and middle-income countries where commonly prescribed and affordable medicines are often absent from pharmacy shelves. A recent study showed that 41 percent of countries surveyed had experienced one or more shortages of a critical antibiotic used to treat syphilis among pregnant women.³ Shortages of medicines for the treatment of HIV/AIDS and tuberculosis have commonly been reported in low- and middle-income countries,^{4,5,6,7} as have shortages of medications for chemotherapy and pain management.⁸

Medicines shortages can lead prescribers or dispensers to switch patients to unapproved treatment regimens or force patients to seek medicines from informal and unregulated markets where medicines quality may be compromised. Some evidence shows that when stock-outs of key antimicrobials occur, increases in drug-resistant mutations also occur.⁹ Medicines shortages also mean procurement agencies must procure substitute medicines, often at much higher prices, to help cover the gap, which can eat away at already limited health budgets.¹⁰

Barriers to Availability, Quality, and Affordability

The complex and increasingly globalized supply chain is often seen as a key contributing factor to the short supply of medicines. In low- and middle-income countries, this is compounded by supply chains that frequently suffer from fragmented and opaque

*The World Health Assembly defines “access” as the reliable and consistent availability of appropriate essential, quality medicines at health facilities, the rational prescribing and dispensing of such medicines, and ensuring that they are affordable. Out-of-pocket payments, if any, should be well within patients’ capacity to pay, and protection against catastrophic expenditure should be ensured. Definition available at: http://apps.who.int/gb/ebwha/pdf_files/EB142/B142_13-en.pdf

procurement and distribution processes that may be prone to corruption, pilferage, and product degradation.

A lack of effective regulatory capacity also impedes the availability of medicines in many low- and middle-income countries. The World Health Organization (WHO) estimates that at least 30 percent of national regulatory authorities (NRAs) globally are operating with limited capacity to perform core regulatory functions.¹¹ In Africa, more than 90 percent of NRAs are operating with minimal capacity.¹² As a result, medicines may be delayed in reaching patients due to registration backlogs or, conversely, relatively lax registration policies may lead to the approval of substandard or falsified products on the market.^{13,14} Additionally, many regulatory authorities in low- and middle-income countries do not have enough regulatory staff and resources to carry out inspection and quality assurance activities effectively.¹⁵ Ineffective or absent governance mechanisms and information management systems contribute to a lack of accountability and transparency and the mismanagement of regulatory information and data.

Troublingly, medicines that are available in poorly regulated environments may be of variable or questionable quality which may actually harm patients. WHO estimates that 10.5 percent of medicines available in low- and middle-income countries are substandard or falsified.¹⁶ Other studies estimate the overall prevalence of poor-quality medicines is between 14 percent and 30 percent, skewing higher when sampling from unlicensed or informal drug outlets, which are often the first stop for many patients seeking care.^{17,18,19,20,21}

Therefore, access must not be centered solely on the availability of medicines but also on ensuring that the medicines that are available are safe, effective, *and* of assured quality. In fragile or poorly regulated systems, medicines that are of poor quality can cause treatment failure and adverse drug reactions, can increase morbidity and mortality, and may contribute to antimicrobial resistance. These medicines also have negative fiscal implications on patients, health systems, and national economies. Further, they undermine current advances in public health, confidence in health systems, and decades of investments in health and development. When medicines shortages occur, problems at the manufacturing site, which often are related to product quality issues, are the leading cause.²²

If safe, effective, and quality-assured medicines are available, many people in low- and middle-income countries find themselves unable to afford them. An absence or lack of effective insurance schemes and medicines benefit programs means that many households pay for medicines out of pocket. In fact, WHO estimates that as many as 90 percent of households in low- and middle-income countries pay for medicines out of pocket.²³

Access must not be centered solely on the availability of medicines but also ensuring that the medicines that are available are safe, effective, *and* of assured quality.

Challenging Market Dynamics

Market forces also limit access to medicines in a number of ways. Increasingly, the manufacture of generic medicines is being consolidated to fewer and fewer pharmaceutical companies. In some cases, there is only one or a handful of manufacturers producing either the active pharmaceutical ingredients or final pharmaceutical products for essential and lifesaving medicines. When production disruptions occur at these manufacturers, major medicines shortages and interruptions often result.

Generic essential medicines that are of critical importance in low- and middle-income countries often have low profit margins, are used for a relatively short amount of time by people who may not be able to pay for them, and have a smaller overall market. Thus, many generic manufacturers, which are facing increasing labor costs and shrinking price advantages, are switching to specialized products with higher markups. In India, one of the world's major hubs for the production of generic medicines, national price controls have made it untenable for some manufacturers to continue producing generic essential medicines, forcing them to exit the market for some essential medicines and make changes to product lines.^{24,25}

Overall, global pharmaceutical markets are becoming less able to respond to the needs of low- and middle-income countries. This trend was recognized first with neglected tropical diseases and more recently—and of particular concern—with the lack of new antibiotics being developed to continue fighting infectious diseases and combat antimicrobial resistance.²⁶

Even for smaller local companies that may otherwise be interested in producing essential medicines with relatively less profitability, numerous disincentives exist that crowd out smaller manufacturers and discourage growth of the manufacturing sector, particularly in developing countries. The procurement policies of many international donors and suppliers typically require WHO prequalification as a sign of a product's quality. However, a company's lack of prequalification may not necessarily mean its products are of poor quality.^{27,28} Some companies may be operating at a high level of compliance with current good manufacturing practices (cGMP) and choose not to seek WHO prequalification for a variety of reasons. Efforts should be made to invest in local manufacturers to ensure a high level of compliance and, concurrently, strengthen the capacity of local regulatory authorities to be able to accurately assess the compliance of local manufacturers. This would help support local companies to compete with foreign companies and expand the pool of suppliers beyond those approved through prequalification.²⁹ This is especially important for manufacturers in low- and middle-income countries, only a few of which have sought and achieved WHO prequalification.

At the same time, policies related to procurement, importation, and regulation of medicines act as powerful disincentives and deterrents for many pharmaceutical companies that operate at local, national, or regional levels. For example, procurement policies may inadvertently favor foreign companies that have better regulatory or trade arrangements or the human and financial resources to pursue prequalification for products.

Additionally, when donor-procured products are provided to countries at prices only achieved through economies of scale, local manufacturers may find it difficult to compete, especially when they are excluded from portions of the market that require WHO prequalification. This was the case for manufacturers of antiretrovirals and antibiotics.^{30,31}

Overall, global pharmaceutical markets are becoming less able to respond to the needs of low- and middle-income countries.

The Untapped Potential of Local Production

To expand access to quality-assured medicines, it is imperative that the the global health community, including donors and procurement agencies, remain committed not only to a robust prequalification scheme but equally to strengthening local markets and regulatory systems so that countries and regions can become increasingly capable and self-reliant in addressing local needs. This means that global development efforts to increase access to medicines should be accompanied by greater investment and targeted efforts to ensure that regions like sub-Saharan Africa are able to develop the capacity to produce, regulate, and procure priority essential medicines, for everything from maternal and child health conditions to common infectious and chronic diseases.

That capacity is especially important for middle-income countries that are graduating from development assistance and beginning to procure medicines on their own, particularly as the epidemiological burden in these countries continues to transition from infectious diseases to noncommunicable diseases. The markets in developed countries for chronic disease medicines will make them unaffordable to most people in low- and middle-income countries, and these medicines are not often covered by international donor programs.

Despite infrastructural, policy, and human resource capacity challenges presented when considering expanding manufacturing capabilities in low- and middle-income countries, analyses and practical experience suggest that competitive pharmaceutical production in these settings is both feasible and economically viable while maintaining the goals of universal access (an example is described in box 1).^{32,33}

First, the proximity to market of local pharmaceutical production confers several possible benefits in terms of increasing access to medicines. Local manufacturers are better positioned and motivated to respond to local needs than larger foreign pharmaceutical companies. Local pharmaceutical production can also shorten and simplify supply chains, making the journey from manufacturer to patient more easily identified and transparent. This may have the added positive effect of minimizing opportunity for pilferage, alteration, and expiration of a product along the supply chain. Additionally, local manufacturers may help increase the reliability of medicine supply for a local population, as supply is less dependent on a few international producers.^{34,35}

Second, local production fills an important market gap for essential medicines that may have relatively low profit margins and be less attractive for larger foreign companies to produce. The introduction of local production of essential medicines can diversify the market and increase competition that can influence and in some cases drive down the price of medicines, making them more affordable for local populations.

Third, there is some evidence that local production helps to increase local production quality standards and medicines regulation, as the emerging industry can help drive improvements in both manufacturing and regulatory capacity.^{36,37}

Finally, when local production leverages knowledge and technology transfer opportunities, significant benefits have been documented in terms of “spillover” knowledge. Companies that gain capacity in new areas can apply those competencies to additional product lines and business decisions.

Momentum for investing in and supporting local production of medicines has been growing. In 2008, the World Health Assembly adopted the Global Strategy and Plan of Action on Public Health, Innovation and Intellectual Property. Among other things, the strategy acknowledged “a need to frame and develop and support effective policies that promote the development of capacities in developing countries related to health innovation. One of the agreed-upon key areas for investment was local production of pharmaceuticals.”³⁸ Following the adoption of this resolution, WHO and its partners, with support from the European Commission, launched a Local Manufacturing Initiative to increase access to essential medicines, vaccines, medical devices, in vitro diagnostics, and blood products.

The Pharmaceutical Manufacturing Plan for Africa (PMPA) and the associated Business Plan for the PMPA, developed by the African Union Commission with support from the United Nations Industrial Development Organization, helped to lay the groundwork for this type of large-scale investment to grow the pharmaceutical industry on the continent. Progress is being made at the country level as well. For example, in 2015, the Government of Ethiopia solidified its vision of development in the pharmaceutical sector with the launch of the *National Strategy and Plan of Action for Pharmaceutical Manufacturing Development in Ethiopia*. The plan outlines several specific and time-bound objectives designed to enhance access to medicines through quality local production. These include strengthening the regulatory system, providing appropriate incentives and attracting foreign direct investment, producing active pharmaceutical ingredients, creating a research and development platform, and developing human resources.³⁹ The plan has been endorsed and is supported by the highest levels of the national government. When countries or regions are firm in their commitment, it can spur other partners in industry to act, especially those that may be interested in setting up subsidiaries to reap local manufacturing benefits.

Strategies for Developing Local Pharmaceutical Markets

Multidisciplinary, coordinated, and systemic investment and development of local pharmaceutical sectors in low- and middle-income countries can yield the untapped potential that can help make access to medicines more feasible and sustainable while increasing the self-reliance of low- and middle-income countries and regions. Interventions that help foster an enabling environment, strengthen pharmaceutical regulatory and quality assurance systems, and encourage market growth can result in more advanced development of local production of pharmaceuticals.

Creating an Enabling Political Environment

A strong commitment from governments and high-level leaders to prioritize the development of local industry can provide the necessary momentum to jumpstart the sector. It is imperative that leaders establish a clear long-term vision as part of their commitments, as pharmaceutical sectors can take several years or decades of investment to become sustainable.

While basic infrastructure (e.g., roads, power, water, and waste management) are fundamental requirements for strengthening local manufacturing, governments can create an enabling environment through legislative and policy decisions. Policymakers can take a number of steps to incentivize the growth of local manufacturing. This includes relying on voluntary licensing agreements provided through the Medicines Patent Pool, creating industrial parks or favorable land zoning arrangements, implementing tax incentives to help create an even playing field, and investing in advanced degree programs and basic research that help develop in-country research, regulatory, and manufacturing capacity. While these actions can help support the growth of local pharmaceutical industries, it is critical that they are accompanied by efforts to strengthen regulatory systems and ensure that the industry meets international quality standards. Table 1 describes in more detail these and other policy-level actions that governments can take to help foster the local production of pharmaceuticals.

Table 1. Interventions that support an enabling political environment for local production

Intervention	Potential Impact	Examples
Land zoning for active pharmaceutical ingredients (API) and finished pharmaceutical products (FPP)	Subsidize land and provide assistance with infrastructure development. Co-locate facilities to allow for common facilities for waste processing and disposal. Reduce cost of setting up new plants.	China, Algeria, Bangladesh, India
Ownership rules and regulations	Incentivize local participation and investment in the sector. Increase local ownership with concomitant skills development.	Foreign ownership limited to 75% in Indonesia (United Nations Conference on Trade and Development, 2011)
State-owned manufacturers	Provide government funding to support adoption of modern technology, technology and foster collaboration with international partners, academia, and research institutions.	India, China, Bangladesh, Algeria (Pharma Boardroom, 2015) (Dr Reddys Laboratories, 2009)
Public-sector research	Support the private sector in developing new products and technologies and diffusing them at a nominal cost to the private sector. Strengthen academic training programs to support industry.	India, China, Bangladesh, Ethiopia
Tax and other incentives	Lower the production cost base of local companies, reduce tax burden on profits (which are reinvested), and promote exporting.	Uzbekistan, Malaysia, Ethiopia, China, Algeria, India, Bangladesh, Russia
Facilitate business linkages and joint ventures to build capacity and strengthen GMP standards and enforcement	Build local know-how and skills; increase product portfolios and access to modern technologies through partnership.	Joint venture between the Government Pharmaceutical Organization of Thailand and Sanofi Pasteur Ltd. to build capacity to produce vaccines ⁴⁰
Access voluntary sublicensing agreements such as those made available through the Medicines Patent Pool	Local manufacturers may be able to produce generic versions of patented medicines at lower costs; increasing access to patented medicines in low- and middle-income countries.	24 generic manufacturers received sub-licensing agreements via the MPP ⁴¹

Strengthening Regulatory Systems

Although many efforts are ongoing to strengthen regulatory systems in low- and middle-income countries, most of them have not focused on how effective regulatory systems and processes can help support local pharmaceutical production. When regulatory processes are clear, transparent, predictable, and accountable, manufacturers can better plan their dossier submissions and have reasonable expectations about when approvals may be granted. Manufacturers have a greater incentive to register their products in countries where the approval process is straightforward and timely. National governments can further incentivize local production by providing stipulations that prioritize, as appropriate, product dossier submission for essential medicines produced by local manufacturers.

Efforts to achieve regional regulatory harmonization, such as those being advanced by the African Medicines Regulatory Harmonization program, can also incentivize local pharmaceutical production by aligning regulatory requirements and processes across multiple countries in a region. Additionally, for national markets that may be too small to achieve the economies of scale that would promote local pharmaceutical production, regulatory harmonization across multiple countries in a region can provide an opportunity to expand market access by tapping into larger regional markets.

One clear example of harmonization is in the use of the Common Technical Document format for submission of product dossiers. The standardized format allows for a more streamlined review of dossiers and provides manufacturers with one single format for submissions (rather than different submission formats for different regulatory authorities).

The WHO Prequalification Programme has been working to expedite the registration of essential medicines through such measures as the WHO collaborative registration procedure, which has resulted in markedly shortened registration timelines due to sharing of assessment and inspection reports. This has led to a reduction in average time to registration (78 days) for more than 110 products that were granted marketing authorizations.⁴² Additionally, collaborative procedures such as those used by ZAZIBONA—a regulatory cooperation project among the governments of Zambia, Zimbabwe, Botswana, and Namibia—have led to the successful joint assessment and registration of many essential medicines and have reduced registration times.⁴³

Table 2 highlights additional key regulatory measures that can facilitate or incentivize local production of pharmaceuticals.



Table 2. Regulatory measures that support local production of pharmaceuticals

Intervention	Impact	Examples
Expedited/prioritized registration for locally produced essential medicines	Promote investment in local production by giving local manufacturers a market advantage through assured first-to-file (FTF) and first-to-market (FTM) scenarios.	Ethiopia has a 1-month registration target for products to be locally manufactured.
Regulatory harmonization, convergence, and reliance	Align regulatory requirements and processes across multiple countries in a region and increase reliance on collaborative registration procedures.	ZAZIBONA, East African Community, South African Development Community
Pre-service capacity-building	Enhance and strengthen the training programs and opportunities for university and graduate-level students.	A Master of Regulatory Sciences program was introduced at Addis Ababa University in Ethiopia.
Prescribing practices	Healthcare professionals must fill in prescriptions by indicating only the international nonproprietary names (INN). Pharmacies are encouraged to offer patients locally made medicines prior to offering foreign-made products. At the hospital level, reimbursement policies limit physicians' ability to prescribe higher priced off-patent international brands.	Uzbekistan, China



Stimulating Local Markets

In addition to creating an enabling policy environment and strengthening regulatory and quality assurance systems, a number of other interventions can stimulate the growth of local pharmaceutical sectors. This includes setting differential or preferred procurement and/or pricing practices for local companies, facilitating the import of raw materials and packaging, and supporting technology and knowledge transfer from countries with well-developed pharmaceutical sectors to emerging markets. These types of interventions can help to level the playing field for local companies, helping to make them more competitive in a global marketplace. These and other interventions are described in additional detail in Table 3.

Table 3. Market incentives and other measures to cultivate local pharmaceutical production

Intervention	Impact	Country Examples
Supportive procurement policies A portion of the tender is set aside for local companies, or products are designated for procurement from local companies. May include advanced purchase commitments, sustainable procurement models, and framework contracting.	Support local manufacturers to secure a strong market position and recoup investment in new plant and equipment, as well as dossier acquisition costs. Assure price and volume (e.g., in procurement of API, in production). Encourage and catalyze investment in domestic manufacturing capacity. If multiple local manufactures bid on a tender, governments may disallow consideration of imported medicines (Deloitte, 2015).	Government of Uganda committed to annual purchases of \$30 million for 7 years from Quality Chemicals (United Nations Conference on Trade and Development, 2011).
Price controls Prices of certain medicines are controlled.	Ensure that local manufacturers produce quality medicines efficiently and at low cost to promote access.	In Jordan, the price of imported medicines is determined based on the price of the medicines in the home country, plus cost and profit margin for the importer/distributor. This allows for competitive profit margins for Jordanian companies (United Nations Conference on Trade and Development, 2011).
Restricted lists	Guarantee volume for local manufacturers and encourage and promote investment in new products and technology.	In Algeria, when a generic is manufactured by three companies locally, its importation is banned. Local manufacturing has grown substantially since this rule was introduced (Pharma Boardroom, 2015).
Technology transfer	Assist local companies to access best-in-class technologies to attain technological economies of scale, upgrade to international GMP, and improve their competitiveness.	Foreign firms importing drugs into Indonesia are classified as wholesalers. Only local companies can import drugs with written consent from the foreign IP owner, but all such agreements are to include technology transfer within 5 years (Decree No. 1010) (United Nations Conference on Trade and Development, 2011).



Leveling the Playing Field:

How Bangladesh Reshaped Its Local Pharmaceutical Market

Prior to the 1980s, Bangladesh was home to only about 20 small national pharmaceutical companies, most of which produced mainly tonics, multivitamins, or cold and flu preparations. Very few lifesaving medicines were produced locally. At the time, Bangladesh had one of the lowest medicines per capita consumption rates, and nearly two-thirds of expenditures were on non-essential or even potentially harmful medical products (Government of the People's Republic of Bangladesh, 1982). Nearly 75 percent of the demand for pharmaceuticals was met by multinational corporations that imported products from developed countries at exorbitant prices. Of the 25 percent of pharmaceutical produced locally, most were manufactured by multinational pharmaceutical companies.

Pushing for Local Production: Key Policy and Regulatory Changes Support a Nascent Industry

Recognizing the serious challenges the country was facing in providing affordable medicines for its population and after consulting extensively with experts, the Government of Bangladesh decided to introduce the National Drug Policy (NDP) and the Drug Control Ordinance in 1982. Although foreign pharmaceutical companies and governments resisted the development of the NDP, some even threatening legal action, the government remained firmly committed to implementing these new policies.

The principal aims of the NDP were to promote the local production of pharmaceuticals (including raw and packaging materials), reduce the cost of pharmaceuticals, and remove harmful or useless products from the market. The related Drug Control Ordinance prohibited the sale of certain medicines, limited pharmaceuticals from being imported if foreign firms did not have a manufacturing plant in Bangladesh or if the drug or its equivalent was already produced in Bangladesh, and allowed the government to fix drug prices.

To further stimulate local pharmaceutical production, the government also made it a priority for the new Drug Administration Directorate (now known as the Directorate General of Drug Administration) to provide technical support to generic drug manufacturers and offer registration support to expedite marketing authorizations for local companies. The government also established a state-owned pharmaceutical company to focus on the production of essential medicines. In addition, the government created two banks

whose purpose was to provide financial support that would promote industrial growth in Bangladesh through preferential loan approvals and better rates. Finally, the government implemented a VAT tax waiver for locally produced products and developed restricted production and procurement lists to help create space in the market for local companies.

A Sector Revolutionized: The Local Pharmaceutical Market Takes Off

The introduction of key market incentives, combined with the policy changes introduced by the NDP and the Drug Control Ordinance, acted as a catalyst that sparked rapid investment and development of the local pharmaceutical sector. These changes led to the following transformational changes in the sector:



Approximately 1,700 products that were clinically ineffective, useless, or harmful were banned from the market.⁴⁴ Part of the rationale for banning these products was to free up capacity for companies to produce much needed essential medicines.



More than 150 manufacturers actively produce medicines in Bangladesh.^{45,46}



Market share of local companies increased from ~20% in 1970 to 80% in 2002

(Government of the People's Republic of Bangladesh, 2005), and **98% in 2018**. Import volumes dropped dramatically (EBL Securities Ltd, 2016).

Generic products were not imported if those products could be manufactured locally in sufficient quality and quantity. Additionally, imported products were not allowed on the market unless they were registered in the United States, United Kingdom, Germany, Switzerland, France, Japan, or Australia. This restriction remains in force today.



The industry recorded a compound annual growth rate of 15% between 2010 and 2015 and now produces 98% of the local demand for essential medicines.



150,000 jobs were created, and the sector now contributes 1.85% to the country's GDP.^{47,48}



Local pharmaceutical companies have received certification and product registration from regulatory authorities in the United States, Australia, New Zealand, United Kingdom, Europe, Canada, Singapore, Taiwan, Turkey, and Brazil.

The industry now exports products to 151 countries, with export revenue growing from just under \$70 million in 2013–14 to \$131 million in 2016–17.⁴⁹

While the industry initially concentrated on simple-to-manufacture essential medicines, a number of **local companies are now producing complex products, including biologics.**

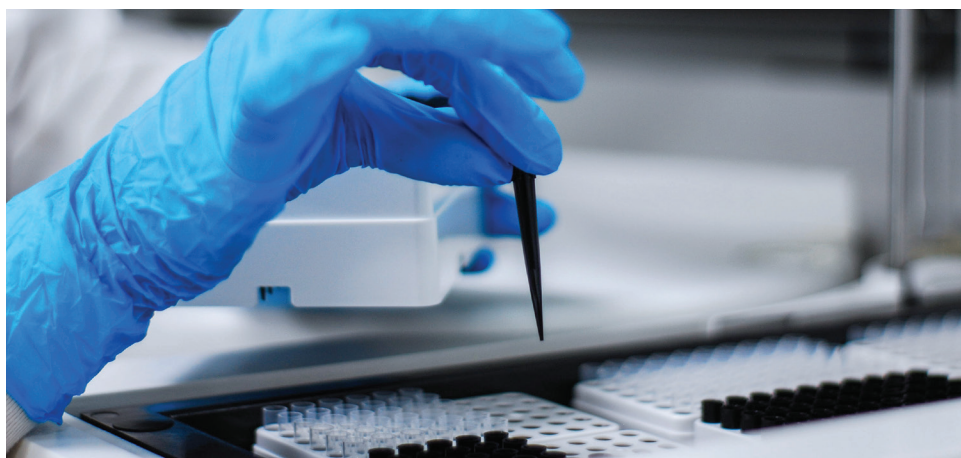


Recommendations:

Moving Local Pharmaceutical Markets Forward to Improve Access to Medicines

Access to quality-assured essential medicines is fundamental in supporting the Global Health Security Agenda and moving toward universal health coverage. However, access relies on a healthy pharmaceutical market that is responsive not only to the needs of people in high-income countries, but to people in all countries. Local production of pharmaceuticals and health products can help address the market deficiencies and support more even and equitable access to medicines.

This paper has reviewed key strategies and examples of how local pharmaceutical production can help develop markets for medicines in low- and middle-income countries that are more responsive to local contexts, needs, and demands. Based on these strategies, the following recommendations are proposed to support the development of local pharmaceutical sectors. The authors acknowledge that there is no one clear strategy or formula to strengthen local markets due to the complex, specific, and unique contexts of each country that demand locally relevant and custom-tailored approaches and strategies. The recommendations below require careful consideration of local factors before and during their implementation. Additionally, because local pharmaceutical production is a crosscutting issue with implications for health, trade, education, and other sectors, extensive and regular engagement with stakeholders—including inter-ministerial, inter-sectoral, and international coordination—is critical to the success of each of the following recommendations.



Policy planning
and coherence

1. Develop national pharmaceutical sector roadmaps to guide national local pharmaceutical production strategies.

2. Ensure policy coherence exists across key government agencies (including ministries of health, finance, trade, science and technology, and education), and revise policies as needed.

Aligning
financial incentives

3. Create financial instruments (including raising capital, offering low interest loans, and providing other funding options) to spur domestic and international investment.

4. Increase the ability of local companies to compete by introducing financial incentives (e.g., creating trade zones, reducing taxes on raw materials and packaging) and establish mechanisms for supportive registration, procurement, and prequalification.

Strengthening
Regulatory Systems

5. Accelerate regulatory reliance, convergence, and harmonization efforts, particularly those that expedite registration of locally manufactured products and facilitate joint inspection and review activities.

6. Invest to strengthen the capacity of manufacturers and regulators in tandem (e.g., including strengthening manufacturer compliance with current good manufacturing practices and capacity for conducting and evaluating bioequivalence studies).

Stimulating Local Markets

7. Support local pharmaceutical companies in accessing market data and analytics (including purchasing information from donors and procurement agencies) and manufacturing information on generic products to support product line and market entry decisions.

8. Develop and participate in regional pooled procurement mechanisms to increase production volumes for manufacturers and allow procurement agencies to benefit from volume-based pricing.

9. Create business linkages and public-private partnerships that promote technology transfer and advance research and development.



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