Accelerating Progress towards Equal Access to Health Products

A CALL FOR INCLUSIVE AND SUSTAINABLE DEVELOPMENT OF THE HEALTH INDUSTRY
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ABBREVIATIONS

AIR
Fourth Industrial Revolution

CAR-T
Chimeric Antigen Receptor-Therapy

COVID-19
Coronavirus Disease 2019

CO2
Carbon dioxide

CRP
Conference Room Paper

EAC
East African Community

ECOWAS
Economic Community of West African States

EMIP
Enterprise Modernization and Innovation Programme

GAVI
Global Vaccine Alliance

GC
General Conference

GMP
Good Manufacturing Practice

HCFCs
Hydrochlorofluorocarbons

ILO
International Labour Organization

ISO
International Organization for Standardization

ITPO
Investment and Technology Promotion Office

mRNA
Messenger Ribonucleic Acid

MSME
Micro, Small and Medium-sized Enterprise

NGO
Non-governmental organization

PPE
Personal protective equipment

SME
Small and medium-sized enterprise

TRIPS
Trade Related Aspects of Intellectual Property Rights

UN-Women
United Nations Entity for Gender Equality and the Empowerment of Women

UNAIDS
Joint United Nations Programme on HIV/AIDS

UNCTAD
United Nations Conference on Trade and Development

UNFPA
United Nations Fund for Population Activities

UNICEF
United Nations International Children's Emergency Fund

UNIDO
United Nations Industrial Development Organization

WHO
World Health Organization

WIPO
World Intellectual Property Organization

WTO
World Trade Organization

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SPEED READ THE ESSENTIALS

WHO CAN MOST BENEFIT FROM THIS PUBLICATION?

This publication represents a call for action, urging a sustainable and unified response to some of the main challenges and obstacles that stand in the way of equal access to health care globally. As such, it is directed to all parties, whether in the public or in the private realm and regardless of scale of action (global, regional, national or local), that have an interest, mission or mandate in furthering the improvement of health. More specifically, these potential parties include those listed below:

NATIONAL GOVERNMENTS
FINANCIAL INSTITUTIONS, ESPECIALLY INTERNATIONAL DEVELOPMENT BANKS
POLICYMAKERS AND REGULATORS WITH A MANDATE ON HEALTH CARE OR THE PHARMACEUTICAL SECTOR
PRIVATE COMPANIES AND ASSOCIATIONS OF PRODUCERS
INTERGOVERNMENTAL ORGANIZATIONS AND NON-GOVERNMENTAL ORGANIZATIONS (NGOs)

THE INTERNATIONAL COMMUNITY AT LARGE

WHAT SPECIFIC BENEFITS CAN THIS PUBLICATION BRING?

By emphasizing the unique contribution of UNIDO to the development of the health-care industry in low and middle-income countries, enshrined in the organization’s Strategic Framework for Health Industry Development 2022–2030, this publication outlines innovative methodologies and approaches to the development of the pharmaceutical sector that can be replicated across the globe. These approaches, well-tested throughout the decades-long experience of UNIDO in the sector and complemented by relevant project examples, can serve as a useful guide for a number of activities related to the development of the health and pharmaceutical industry. Such activities involve technology transfer, investments, access to catalytic finance, industrial production, infrastructure and regulatory frameworks, research and development capacity, and market access. All new methodologies and approaches are showcased with the ultimate goal of achieving health and well-being for all.

Equal access to health products is a human right.

We need a more even global distribution of the production of essential health products to ensure a more equitable access to health products worldwide.

Moreover, strengthening local production is key to being better prepared for future pandemics.

Gerd Müller
Director General, UNIDO

The COVID-19 pandemic reminded the world of the centrality of equitable access to health care, and in particular equal access to health products such as vaccines and essential medicines, for all people regardless of where they live.
Health equity strives to give everyone the same chance to achieve optimal health outcomes, regardless of their circumstances such as socioeconomic status, gender, age, religion, disability or geographical location. This implies that no one should be disproportionately burdened by limited access to essential health-care services or products. It is also in line with the United Nations Sustainable Development Goals for 2030, specifically with target 3.8 “achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all”. The COVID-19 pandemic reminded the world of the centrality of equitable access to health care, and in particular equal access to health products such as vaccines and essential medicines, for all people regardless of where they live. At the same time, health security plays an increasingly important role as climate change, environmental degradation, population growth, migration and global mobility are affecting human health and posing new threats. More frequent natural disasters, air and water pollution, and an increased spread of certain diseases, owing to ease of travel and the misuse of antimicrobials constitute new challenges to health systems. Preparedness for sudden catastrophic events plays an ever more important role in the architecture of health care provision to ensure health security of global and national populations. Reliable and continuous access to essential health products has an important role to play here, too.

FIGURE 1: Factors contributing to improve access to medicines and other health products in developing countries.

In low-income countries, only 50 per cent of the population have access to the medicines needed to lead a healthy and productive life. A number of factors play an important role in improving access to medicines and other health products in developing countries:

- Adequate health financing and medicines procurement
- Resourced and functional health-care systems with well-trained staff and adequate infrastructure
- Supportive regulation to facilitate trade and generic medicines use
- Conducive environment for research and development and investment, including intellectual property rights
- Local manufacturing of health-care products for shorter and resilient supply chains

To achieve progress in these areas many national, regional and international participants have important and complementary roles to play in their efforts to improve access to medicines. Partnerships and collaborations are critical success factors. UNIDO systematically engages with other international organizations (such as the World Health Organization (WHO), the United Nations Children’s Fund (UNICEF), the World Trade Organization (WTO), the World Bank Group, the United Nations Conference on Trade and Development (UNCTAD), the Joint United Nations Programme on HIV/AIDS (UNAIDS), the United Nations Population Fund (UNFPA), the International Labour Organization (ILO), the World Intellectual Property Organization (WIPO) and others) as well as with foundations (the Bill and Melinda Gates Foundation, Open Society Foundations, the Rockefeller Foundation and others) and relevant non-governmental organizations (Drugs for Neglected Diseases Initiative, FIND, PATH and others), each working in their specialized domains but jointly towards the same goal (see figure 2).

Local production of medicines, closer to where they are needed, is one building block within the access to medicines universe. In itself, however, strengthening local production is a cross-cutting endeavour. Sustainable local production requires effective multi-sectoral cooperation to promote enabling investment, legal and technical environments. A commitment to work in a collaborative, strategic and holistic manner with Governments and other stakeholders was hence reiterated by six international agencies, WHO, UNIDO, UNCTAD, UNAIDS, UNICEF and the Global Fund to Fight AIDS, Tuberculosis and Malaria, in a joint Interagency Statement.

FIGURE 2: Some of the leading international organizations in the global arena working on improving access to health products.
Boosting the contribution of local manufacturing to well-being for all

Experience has shown that economies with higher technology manufacturing and stronger health industries prove more resilient in times of crisis.
Global manufacturing has rebounded from the sharp decrease during the pandemic. Experience has shown that economies with higher technology manufacturing and stronger health industries prove more resilient in times of crisis. Accordingly, strengthening local manufacturing with a focus on health products can help to "build back better" and contribute towards the achievement of Sustainable Development Goals 3, on good health and well-being, and 9, on industry, innovation and infrastructure, in particular target 9.1 “develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all”. Beyond that, more diversified production of essential health products globally, especially in least developed countries and middle-income countries, can generate many additional benefits, including those listed below.

FIGURE 3: Main additional benefits of a more diversified production of essential health products globally.

- Improved availability of health products and national or regional supply chain resilience by manufacturing in proximity to the point of use.
- Improved outreach to hard-to-reach populations: locally produced medicines have been found to be more available to vulnerable and geographically remote populations than imported products.
- Tailoring of products to local needs in terms of research and development and final product specifications.
- Economic development, job creation, opportunities for knowledge transfer in the country of production.
- Increased regulatory oversight to improve the quality of medicines in-country and curb the influx of substandard or counterfeit medicines.
- Better emergency and pandemic preparedness, as local production allows for a faster and more appropriate response to health crises caused by, for example, disease outbreaks or natural disasters.

Many countries are therefore becoming increasingly interested in developing the local production of quality-assured medicines and other health products. In this regard, opportunities for least developed countries may also arise from the extension of the transition period of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) until 2034.

Promoting local production requires a holistic approach that takes into account policy coherence, strengthening regulatory systems and the business environment, overcoming market fragmentation, access to finance for sustainable production, assessment of the business cases, development of skilled human resources, and access to innovation-based technology for production, packaging and distribution. All these elements have the objective of enabling local manufacturers to build up facilities and comply with international quality standards, be competitive, and engage in sustainable manufacturing: accordingly, the UNIDO contribution in these areas has been substantial for many years.

The UNIDO strategic framework for health industry development aims to assist Member States in increasing the contribution of inclusive and sustainable industrial development policies and practices to good health and well-being for all.
By 2030, the UNIDO strategic framework for health industry development aims to assist Member States in increasing the contribution of inclusive and sustainable industrial development policies and practices to good health and well-being for all. The framework also supports Member States in adapting their local production strategies to new environmental health challenges such as those resulting from climate change.6

All UNIDO activities related to the health industry are directed towards the ultimate goal of realizing the full potential of local health industries in developing countries, thus contributing to healthy lives and promote well-being for all ages and Sustainable Development Goal 3 “Ensure healthy lives and promote well-being for all ages” and Sustainable Development Goal 9 “Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation”, in that promoting the health industry furthers industrialization in an innovation-driven sector. In line with the Sendai Framework for Disaster Risk Reduction 2015–2030, production of essential health products in closer proximity to their use can increase the resilience of the health system to provide basic health services in exceptional situations.

Figure 4 illustrates the theory of change and shows UNIDO interventions to strengthen manufacturing of health products in developing countries.

By 2030, the UNIDO strategic framework for health industry development aims to assist Member States in increasing the contribution of inclusive and sustainable industrial development policies and practices to good health and well-being for all. The framework also supports Member States in adapting their local production strategies to new environmental health challenges such as those resulting from climate change.6

Advocacy for a regional approach to local production of health products wherever possible, in order to foster a spirit of exchange and collaboration while using comparative advantages and economies of scale to service both national and regional markets.

Attaining international standards as a guideline in production and environmental practice.

Commitment to combating illicit trade of medicines.

Promoting advanced technologies and innovation, with a special focus on the twin transition. To make the health industry smarter, more efficient, more responsive to needs, and at the same time greener and more circular to limit its effects on the environment.

Gender mainstreaming and consideration of the specific health needs of women as well as men.

Emphasis on social inclusion along the value chain, paying special attention to creating opportunities for women and young people whenever possible.

Partnerships at all levels (global, inter-agency, regional, national) to change the global vision for health industry development towards a more diverse production landscape and to build back better.
### 3.3 OUR STRENGTHS

UNIDO provides its support through four mandated functions: technical cooperation; action-oriented research and policy-advisory services; normative standards-related activities; and fostering partnerships for knowledge and technology transfer. Figure 5 shows UNIDO strengths in each field with regard to health industry development.

#### FIGURE 5: UNIDO strengths in health sector development in line with the core functions of the organization.

<table>
<thead>
<tr>
<th>1</th>
<th>TECHNICAL COOPERATION</th>
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<tbody>
<tr>
<td>Vast technical expertise, relevant experience and pertinent knowledge to support environmentally sustainable health industry based on economic competitiveness and the circular economy.</td>
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<tr>
<td>Transfer and retention of knowledge, experience and skills from the global health industry sector to local pharmaceutical and medical development and production.</td>
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<tr>
<th>2</th>
<th>ACTION-ORIENTED RESEARCH AND POLICY-ADVISORY SERVICES</th>
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<tbody>
<tr>
<td>Partner for pharmaceutical sector strategy development at the national, regional- and continental levels.</td>
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<tr>
<td>Advise on health industry readiness, such as optimizing local and regional manufacturing to increase pandemic and disaster preparedness.</td>
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<th>3</th>
<th>NORMATIVE STANDARDS-RELATED ACTIVITIES</th>
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<tr>
<td>Promote strengthening of regulatory capacities at the national and regional level.</td>
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<tr>
<td>Support the development of Quality Infrastructure.</td>
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<tr>
<td>Accompany development of pharmaceutical industry towards internationally accepted Good Manufacturing Practice (GMP) standards. Lead national or regional efforts to devise GMP Roadmaps.</td>
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<th>4</th>
<th>FOSTERING PARTNERSHIPS FOR KNOWLEDGE AND TECHNOLOGY TRANSFER</th>
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<tr>
<td>Strong network of partners and successful collaboration with a large group of stakeholders and strategic partner organizations, including international organizations, academia, regulators, spin-off companies, small and medium-sized enterprises (SMEs), associations, clusters, industrial parks and financial institutions.</td>
<td></td>
</tr>
<tr>
<td>Mandate and experience in collaborating with the private sector and developing entrepreneurship, as well as supporting the creation of business associations and improving the business environment within the health industry sector.</td>
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### 3.4 EMBEDDED IN A NETWORK OF PARTNERS

In recent years, multiple crises like the COVID-19 pandemic and emergency situations worldwide have reinforced the need for international organizations to establish strategic alliances and partnerships with a variety of collaborators. Partnerships with multilateral institutions, the private sector, NGOs, foundations, financial institutions and academia prove the crucial role of UNIDO in bringing together the relevant and complementary partners and leveraging them to enhance development impact.

UNIDO strongly believes in collaboration with the private sector and financial institutions, and in their crucial role in development and economic advancement. Adequate representation of the private sector in associations is important in this context. UNIDO played a key role in facilitating the establishment of the Southern African Generic Medicines Association and the Federation of African Pharmaceutical Manufacturers Associations, two major pharmaceutical manufacturers’ associations. The organization has longstanding relationships with relevant associations, including the Partnership for African Vaccine Manufacturing, other organizations, and interest groups on the African continent. It also maintains an active network in the global health industries.

When it comes to project implementation, UNIDO has ongoing cooperation with WHO, the United Nations Entity for Gender Equality and the Empowerment of Women (UN-Women) and ILO in Nigeria (see project example “Strengthening the capacity of local MSMEs and manufacturers to produce high-quality personal protective equipment and health care products”, on page 51) and the German Agency for International Cooperation (GIZ), in the field of vaccine regulation and manufacturing in Senegal. Regular exchanges with WHO and other pertinent international organizations are an important part of UNIDO convening and partnership activities. UNIDO is, for example, an active contributor to the World Local Production Forum hosted by WHO. Moreover, the organization has been invited to participate as an observer and relevant stakeholder in the works of the intergovernmental Negotiating Body of the WHO, whose purpose is to negotiate and draft an international instrument on pandemic prevention, preparedness and response.

UNIDO is firmly committed to collaboration with United Nations organizations such as WHO, UNICEF, WTO, UNCTAD, WIPO and others, to utilize synergies and draw on their specific expertise in fields such as health system governance, regulatory frameworks, and intellectual property rights. UNIDO also joins forces with agencies specialized in medicines procurement, such as the Global Vaccine Alliance (GAVI), The Global Fund, and UNICEF, to explore how procurement mechanisms can contribute to diversifying sources of quality health products. Working together in other areas like business dynamics and financial services, staff education and training, research and development and technology transfer with other entities such as the Bill and Melinda Gates Foundation and PATH will also be necessary to respond effectively to the multidimensional challenges of improving access to health products.

Finally, UNIDO’s Health Industry interventions have benefited over time from a wide range of donor support, including from Cuba, the EU, GEF, Germany, Japan, Slovenia, Switzerland, UAE and the UN, with more development partners currently joining in.
3.5 CONTRIBUTIONS TO FOCUSED PRODUCT AREAS WITHIN THE HEALTH INDUSTRY

3.5.1 VACCINES AND BIOLOGICALS

UNIDO contributes to strengthening manufacturing capabilities for local production of vaccines and biologicals in developing countries. By means of advisory and capacity-building support, UNIDO fosters industrial innovation and the implementation of advanced technologies, promotes investments and increases market transparency, taking into consideration international Good Manufacturing Practice, Good Distribution Practice and Good Clinical Practice standards.

Vaccines play a crucial role in public health. Developing countries need a stable supply of vaccines to protect the population from infectious diseases. Biologicals play an increasing role in treating non-communicable diseases. The production and distribution of both vaccines and biologicals has very high requirements to ensure quality and are very tightly regulated. In fact, every batch of vaccine produced needs to be released by the regulatory authority. These technological and institutional requirements are among the reasons why vaccine production in the majority of developing countries is very low. Along the distribution chain, most vaccines and biologicals require a reliable cold chain with refrigeration at a constant temperature of 2–8°C to stay effective. For some next-generation vaccines (messenger ribonucleic acid (mRNA), vector-based deoxyribonucleic acid (DNA)), storage at -15 –90°C is required. This poses particular challenges for developing countries where generally the surrounding temperatures are above the worldwide average.

During the pandemic, in an unprecedented effort, vaccines against COVID-19 were developed, tested, approved, and made available within a comparatively short time frame. Nevertheless, at a global level the distribution of these new vaccinations shows dramatic inequities. New technologies like mRNA and small interfering RNA (siRNA) allow for a new generation of vaccines and gene products that can be used against diseases that mainly burden developing countries. Building sustainable vaccine manufacturing and delivery capacities in developing countries can contribute to reducing this imbalance of global supply and research.

In order to strengthen vaccines and biologicals production in developing countries, UNIDO can support both the industry and its regulatory environment through advisory services and capacity-building along the whole value chain. UNIDO can also use its convening power to bring relevant participants together and bridge information gaps that inhibit the development of this important industry, with a strategic focus on pandemic preparedness. It can also help to limit the negative effects on the environment that refrigeration of vaccines might have through the use of substances that are harmful to the environment in cooling devices and their high energy consumption.
UNIDO leverages collaboration, partnership, and innovation to move towards a more decentralized production pattern of essential medicines, thus increasing access to quality medicines and contributing to health security.

Essential medicines are commonly defined as medicines that fulfil the priority health care needs of the population. Access to essential medicines, however, remains a worldwide health challenge. Up to 50 per cent of the population in low-income countries does not have reliable access to quality essential medicines.8

Local production of these essential medicines in closer proximity to where they are needed can reduce dependencies and stabilize supply in times of crisis and emergencies. Local production faces complex challenges, however. Relatively small markets in individual countries, quality requirements, as well as regulatory, technology, human resource and financial challenges need to be tackled to ensure sustainable production. UNIDO relies on partnerships and innovation to overcome these challenges:

**3.5.2 ESSENTIAL MEDICINES**

UNIDO fosters partnerships at the national and regional level to develop a comprehensive and multisectoral approach that can address several key challenges simultaneously. It also involves policymakers (Governments), the pharmaceutical industry, donors, procurement agencies and other international organizations at the international level to leverage their expertise in complementary fields of work.

UNIDO promotes innovation by linking academia and stakeholders from the public and private sectors to facilitate research and development and investment. UNIDO also supports the dissemination of new technologies to enable companies to use these technologies to become more efficient, flexible and reduce the negative effects on the environment.

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UNIDO supports the manufacturing of personal protective equipment (PPE), diagnostics and medical devices with the objective of securing the supply of these products, reducing their environmental impact, generating employment, and protecting the health of health-care workers, patients and the general population.

As a result of the immense pressure that the COVID-19 pandemic put on the health-care systems worldwide, local companies in many countries have jumped in and produced essential health products that were in short supply, such as PPE, disinfectant and even ventilators. Supporting the efforts to increase pandemic preparedness, UNIDO can help countries to identify subsectors or value chains within the health industries where there is potential for sustainable higher local manufacturing value added, and strengthen these sectors.

According to the national priorities and baseline, the choice of sector can vary. Countries with a strong preference for security of supply of essential health products and a strong health impact will consider a different set of products to countries that prefer to emphasize employment and local content considerations. UNIDO offers established approaches and methodologies, which can be employed to strengthen local production of health products with an emphasis on different elements, as listed below.

### 3.5.3 PERSONAL PROTECTIVE EQUIPMENT, DIAGNOSTICS AND OTHER MEDICAL SUPPLIES

- Clusters and industrial parks that focus on a specific geographic area.
- Strengthening a sector along the value chain, which can involve enabling quality infrastructure to offer the services required by the industry.
- Industrial modernization, furthering the competitiveness of companies in a defined subsector.
- Creating employment and integrating vulnerable groups, such as women and young people, into the labour force.
- Avoiding waste, saving energy and ruling out harmful substances such as hydrochlorofluorocarbons (HCFCs) by introducing innovative production processes and promoting circular economy approaches.

From its extensive experience in implementing industrial development projects, UNIDO can tailor an approach that fits the individual countries’ needs and priorities with regards to health products and pandemic preparedness.

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9) The phase-out of these ozone depleting substances is regulated by the Montreal Protocol on Substances that Deplete the Ozone Layer.
UNIDO strengthens sustainable production of plant-derived health products in order to improve the quality of these products and minimize the depletion of natural resources and protect the environment.

In recent years, there has been growing interest in marketing finished products based on herbal medicine in industrialized as well as in developing countries. Natural compounds extracted from plants are widely applied as processed raw material for the manufacture of finished herbal products or plant-derived medicines, such as the strong painkiller alkaloid morphine (from poppies), antimalarial active component artemisinin (from sweet wormwood), and the anti-cancer active compound taxol (from Pacific yew).

Many medicinal plants grow in developing countries. Planting, growing, harvesting, and selling them can be a source of income and employment for the local communities and for the population at large. UNIDO can work along the value chain to improve the quality of production of medicinal plants and the quality of herbal medicines to access new export markets: figure 6 shows some possible interventions. Such interventions are best accompanied by adapting quality infrastructure to cater for the needs of the sector. Working with farmers on good agricultural and collection practices (GACP), UNIDO can also improve the environmental sustainability of the cultivation of medicinal plants and avert negative consequences for the environment such as loss of biodiversity, land degradation and deforestation.

Considering this, UNIDO emphasizes the four reasons listed below for working on the value chain of medicinal plants and herbal medicines.

1. Creating additional jobs and income opportunities for the rural population, including women and young people.
2. Using opportunities for trade, accessing expanding markets and meeting demand for higher quality or organic products.
3. Increasing awareness regarding biodiversity conservation, sustainable and protective use of plant resources, minimization of land degradation, and benefit-sharing for traditional knowledge in line with the Nagoya Protocol.
4. Search for novel potential pharmacological activities of plants and their extracts for the prevention or cure of diseases.

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**UNIDO ACTIVITIES**

- Disseminate the use of sustainable practices in farming and collecting medicinal plants to preserve the environment and, more specifically, protect biodiversity and prevent deforestation and land degradation.
- Facilitate exports by strengthening compliance with international standards and technical norms along the value chain, including farming, harvesting, transport, extraction, and processing.
- Strengthen quality infrastructure and assist in establishing conformity assessment services along the value chain.
- Work towards a quality culture along the value chain.
- Explore synergies and collective efficiencies using cluster approaches, in line with geographical distribution of enterprises along the value chain.
- Explore the use of new advanced and digital technologies to increase quality and efficiency along the value chain.

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3.6 SELECTED PROJECTS IN THE HEALTH INDUSTRY

FIGURE 7: Map of selected UNIDO projects in the health industry.

- **Cuba** and **Slovenia**: Establishing and internationalizing the Slovenian-Cuban innovation cluster for biopharma, medical sectors. (Project ID: 200007, 220227)

- **Ghana** and **Japan**: Promoting public health and social resilience against COVID-19 by strengthening the domestic supply chain of personal protective equipment under a risk-based approach. (Project ID: 200215)

- **Africa** and **Germany**: Increasing African production of vaccines and essential medicines through business linkages and technology transfer. (Project ID: 220179)

- **Albania** and **Switzerland**: Global Quality and Standards Programme (GQSP) Albania: Strengthening quality and standards compliance capacity for selected value chains. (Project ID: 200309)

- **Nigeria** and **UN BASKET Fund**: Strengthening the capacity of local MSMEs and manufacturers to produce high-quality PPE and healthcare products. (Project ID: 200194)

- **Cuba** and **Slovenia**: Establishing and internationalizing the Slovenian-Cuban innovation cluster for biopharma, medical sectors. (Project ID: 200007, 220227)

- **Cameroon** and **Japan**: Promoting public health by improving the national supply chain capacity for medical products for increased resilience against COVID-19. (Project ID: 200214)

- **Gambia** and **Japan**: Promoting public health and social resilience against COVID-19 by strengthening the domestic supply chain of personal protective equipment. (Project ID: 200232)

- **Madagascar** and **Japan**: Promoting increased production of vaccines and essential medicines through business linkages and technology transfer. (Project ID: 200230)

- **India** and **GEF**: Promoting market transformation for energy efficiency in MSMEs. (Project ID: 100345)

- **India** and **GEF**: GEF UNIDO Cleantech Programme for SMEs in India. (Project ID: 100350)

- **India** and **GEF**: Promoting energy efficiency and renewable energy in selected MSME clusters in India. (Project ID: 100369)

- **India** and **GEF**: Facility for low carbon technology deployment. (Project ID: 100378)

- **Philippines** and **Switzerland**: Global Quality and Standards Programme (GQSP) Philippines: Standards and Conformity Assessment for PPE and Medical Devices. (Project ID: 200219)

- **Philippines** and **GEF**: Reduction of uPPOs and Mercury through an environmentally-sound approach on health care waste management. (Project ID: 200323)

- **India** and **GEF**: Promoting business models for increasing penetration and scaling up of solar energy. (Project ID: 100369)

- **Cameroon** and **Japan**: Promoting public health by improving the national supply chain capacity for medical products for increased resilience against COVID-19. (Project ID: 200213)

- **Ghana** and **Japan**: Promoting public health and social resilience against COVID-19 by strengthening the domestic supply chain of personal protective equipment under a circular economy approach. (Project ID: 200222)

- **Gambia** and **Japan**: Promoting public health and social resilience against COVID-19 by strengthening the domestic supply chain of personal protective equipment. (Project ID: 200212)

- **Madagascar** and **Japan**: Promoting increased production of vaccines and essential medicines through business linkages and technology transfer. (Project ID: 200230)

- **India** and **GEF**: GEF UNIDO Cleantech Programme for SMEs in India. (Project ID: 100350)

- **India** and **GEF**: Promoting energy efficiency and renewable energy in selected MSME clusters in India. (Project ID: 100369)

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- **Cameroon** and **Japan**: Promoting public health by improving the national supply chain capacity for medical products for increased resilience against COVID-19. (Project ID: 200213)

- **Ghana** and **Japan**: Promoting public health and social resilience against COVID-19 by strengthening the domestic supply chain of personal protective equipment under a circular economy approach. (Project ID: 200222)

- **Gambia** and **Japan**: Promoting public health and social resilience against COVID-19 by strengthening the domestic supply chain of personal protective equipment. (Project ID: 200212)
Proven methodologies and approaches

UNIDO offers tailored technical assistance and can rely on a toolbox of well-established and tested methodologies in private sector development and in the preservation of a liveable environment.
UNIDO offers tailored technical assistance and can rely on a toolbox of well-established and tested methodologies in private sector development and in the preservation of a liveable environment. Combining this with in-depth expertise on many important health products, the organization can tailor the best solution for strengthening local production to each country’s needs. Figure 8 gives an overview of the project examples outlined in this brochure, and shows which approaches are currently employed in the respective product areas.

**Figure 8: Selected project examples categorized by approach and product area.**

<table>
<thead>
<tr>
<th>UNIDO current project landscape</th>
<th>PRODUCT</th>
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<td>Essential medicines</td>
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<tr>
<td>Health industry strategy development</td>
<td>Zimbabwe</td>
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<tr>
<td>Industrial readiness and emergency response</td>
<td>United Arab Emirates</td>
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<tr>
<td>Innovation, clusters and industrial parks</td>
<td>Cuba, Slovenia</td>
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<td>Energy transition and climate change</td>
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<tr>
<td>Chemicals management and health care waste</td>
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4.1 HEALTH INDUSTRY STRATEGY DEVELOPMENT

Health-care products make a real difference in people’s lives and access to the right medicines of the right quality at the right time can be lifecasing. The impact that health products, including medicines, can have on people’s lives gives them a different status from other products. This causes the market for health products to be remarkably different from the market for less critical goods in several ways, as listed below.

1. As the quality of health-care products is crucial, markets for health products are strictly regulated, and market access is linked to meeting strict quality criteria.
2. At the same time, the market is split into private and institutional markets. The latter are dominated by large buyers such as hospitals, health insurance schemes, national procurement agencies or even international organizations. These buyers have a significant influence.
3. The nature of manufacturing requires large investments in facilities and equipment because of the benefits of economies of scale in production. As quality in production is key, the requirements for mastery of technology, human resources, and know-how in a wide range of skill sets are high. This makes it very difficult, at least in some segments of the health industry like essential medicines and vaccines, to start small and grow.

In order to still reap the benefits of production closer to where they are needed, multiple issues need to be addressed at the same time for the production to be competitive, sustainable, and in line with the required quality standards. A holistic approach is therefore required, involving many different participants and coordinating their complementary actions at the company, institutional and policy levels, not only in-country, but also regionally and internationally. The UNIDO approach to health industry strategy development acknowledges both demand and supply side bottlenecks, as well as challenges regarding the sector’s operating environment. It takes into account the salient points listed below.

- Rigorous sector assessments as a sound foundation.
- Active stakeholder participation and dialogue.
- Focused strategy development processes.
- Experience with established UNIDO tools tailored to fit.
- UNIDO as a partner to facilitate regional and international dialogue.

UNIDO led the process of developing pharmaceutical sector development strategies in five countries across three continents: Ghana, Kenya, Panama, Viet Nam, and Zimbabwe. Furthermore, UNIDO substantially contributed to the African Union Pharmaceutical Manufacturing Plan for Africa Business Plan that sets a framework for the promotion of local pharmaceutical production on the continent. These past experiences in this area of work are summarized in the guidance document “Pharmaceutical Industry in sub-Saharan Africa: A guide for promoting pharmaceutical production in Africa”. 
4.2 INDUSTRIAL READINESS AND EMERGENCY RESPONSE

The recent COVID-19 pandemic has had an enormous influence on peoples' lives around the world: no part of human activities, from production to commercialization, from education to social interactions, has been spared from its rippling consequences. This experience has sparked the development of the concept of industry readiness and preparedness.

Industry readiness and preparedness is an approach to emergency response to crises of various natures, including health crises. Its main objective is to develop a practical, flexible, responsive and resource-conscious system of actions aimed at preparing for potential health emergencies. The need for effective and holistic responses is widely acknowledged by industrial policymakers and the international community.

Emergency response readiness uses a tool to develop the understanding of risks and a system to monitor those risks, ensuring that preventive actions are performed as early as possible.

The primary aim of the UNIDO approach to industrial readiness and emergency response is to optimize the quality, speed and volume of production of critical health products after the onset of an emergency. On the basis of past experiences, external support in most emergencies can take days or even weeks. Therefore, it is crucial to prepare an emergency response plan leveraging from the capacity and resources available at the local and regional levels. UNIDO has formulated an approach to help its Member States recover from the recent pandemic and prepare themselves against future such events, in coherence with its mandate rooted in Sustainable Development Goal 9. The UNIDO approach is structured along the four key dimensions listed below.

1. Strengthening local and regional value chains.
2. Improving flexibility to scale-up manufacturing capacity.
4. Promoting agile response through innovation and digital transformation.

These dimensions are meant to address systemic weaknesses of the health product industry, while at the same time exploring opportunities to enable prompt, flexible and effective responses to future pandemics and health emergencies.
4.3 INNOVATION, CLUSTERS AND INDUSTRIAL PARKS

In the context of industrial development, the term “cluster” is understood to refer to a sectoral and geographical concentration of enterprises that produce or support the production of a similar range of goods or services and face similar challenges and opportunities. A cluster thus encompasses a critical mass of comparable enterprises: mostly micro, small and medium-sized enterprises (MSMEs), but also larger firms, as well as their support institutions from the public and private sectors and from civil society. It enables companies to benefit from collective efficiencies that would not be accessible for individual entities.

Industrial parks share similar functions, but concentrate these around a geographical location, and often focus on shared infrastructure and service provision. Vibrant clusters and successful industrial parks are home to innovation-oriented firms that reap the benefits of an integrated support system and dynamic business networks.11

Over the past 30 years, UNIDO has been involved in the implementation of cluster and network development projects in several countries around the globe. Focusing on the specific challenges faced by developing countries, UNIDO has formulated a modular approach to guide the formulation and implementation of cluster development initiatives. This approach is based on the four core principles listed below.

1. Focus on existing clusters to unlock their unrealized potential rather than creating new ones.
2. Promote private sector-based inclusive growth. UNIDO aims at a broad-based growth that is inclusive, sustainable and gender balanced, and therefore contributes to reducing poverty.
3. Encourage collective efficiency through joint actions. The approach focuses on initiatives that encourage enterprises and institutions to undertake joint action that can yield benefits to the cluster as a whole and to the communities in which they are embedded.
4. Strengthen cluster governance mechanisms: cooperation can be strengthened by investing in trust-building activities.

Innovation plays a key role in the development of health industries in developing countries. New technologies and new ways of doing things can give local companies an edge over the established players and enable economies to reap the benefits of increased local production. Clusters and industrial parks can be an effective way to enable companies to embrace innovation. They bring together and mobilize interrelated MSMEs, development finance institutions, governmental bodies, regulators, and academia (see Figure 9). Interaction, cooperation and trust will be especially emphasized, as these components can help facilitate innovative transformation processes and the adoption of new technologies by member MSMEs.

11) Clusters and networks development. UNIDO
FIGURE 9: UNIDO approach to and methodology for initiation, formulation and implementation of cluster-based platforms and industrial parks to foster innovation and digital transformation.

- Facilitate progress and collaboration
- Create value-added service
- Enhance regional health products and services development
- Promote innovation and digital transformation in the health industry
- Support health product development life cycle
- Reduce gap between academia and industry

FIGURE 10: Leading partner organizations within the Slovenian-Cuban Innovation Cluster for Biopharma and Medical Sectors.
4.4 INVESTMENT PROMOTION, BUSINESS LINKAGES AND TECHNOLOGY TRANSFER

Investment and technology are fundamental requirements for producers of health products in developing countries to build or strengthen their production capacity. Health products manufacturing tends to be technology intensive: coupled with the high-quality requirements discussed previously, this makes investments to set up and expand facilities larger than in many other industries.

Markets are often relatively non-transparent in many developing countries, which makes it difficult for potential investors to gauge expected returns. This uncertainty about market potential deters investors. In addition, the public market often outweighs the private one in the health sector, yielding market power to certain institutional buyers; namely, national procurement agencies, health insurances, hospitals, and international procurement entities, like GAVI in the field of vaccines and UNICEF or The Global Fund in the field of medicines.

UNIDO investment promotion interventions aim to facilitate the process of motivating, identifying and mobilizing knowledge, technological and financial resources for a more targeted investment development impact. With its global reach and network of partners, UNIDO has a unique role in helping entrepreneurs, businesses, investment institutions and countries to mobilize and accompany investment at all steps in the process. With special regard to the health industry, UNIDO can help facilitate investments essentially in the three ways listed below.

1. Motivate potential investors and technology providers by increasing the transparency of markets and providing market data and other relevant business information.
2. Train entrepreneurs in developing countries to better define their technological needs and present their business case to potential investors in specialized partnership mentoring programmes.
3. Identify and facilitate business-to-business contacts between companies and potential investors.

UNIDO uses different formats like on-line platforms, investment and technology forums, exhibitions and investment promotion events. UNIDO can also rely on a network of 10 Investment and Technology Promotion Offices (ITPOs) with longstanding experience to support partnership, investments and technology transfer.

PROJECT EXAMPLE 4

PROJECT SCOPE
Increasing African production of vaccines and essential medicines through business linkages and technology transfer, East African Community (EAC), Economic Community of West African States (ECOWAS), Ethiopia.

DONOR
German Federal Ministry for Economic Cooperation and Development, Germany.

OVERVIEW AND MAIN OBJECTIVES
The project seeks to enhance African capacities for health product manufacturing by facilitating business linkages with the international private sector, in order to unlock requisite technology transfer and investment. It comprises two components dedicated to vaccines and essential medicines, respectively.

VACCINES: The project will prepare at least one rationalized production and marketing plan for the ECOWAS and EAC regions based on current and projected demand and supply patterns to inform and promote opportunities for investment and technology partnerships.

ESSENTIAL MEDICINES: The project will broker arrangements for the transfer of product manufacturing capabilities to qualified African producers in Ethiopia, Kenya and Nigeria.

WHY IS THIS PROJECT EFFECTIVE?
The project mobilizes the largest manufacturers of vaccines and essential medicines in Germany to work with some of the leading companies in Africa on developing investment proposals, transferring production technology, and broadening the product portfolio of qualifying African manufacturers for health security and pandemic preparedness in Africa. UNIDO can draw on the ITPO in Bonn, Germany, as a hub in this regard. For more information on the UNIDO ITPO Network, please see Figure 11.
UNIDO Network of Investment and Technology Promotion Offices (ITPOs)

UNIDO can count on a worldwide network of ITPOs. These specialised offices contribute to reducing development imbalances by brokering investment and technology agreements between developed countries, developing countries, and countries with transition economies. Located in both hemispheres, the specialized network of UNIDO ITPOs opens up opportunities for investors and technology suppliers to find potential partners and investment-ready projects, facilitate their engagement with local producers, and help them explore new cooperation mechanisms for technology transfer and investment promotion. It also offers unique services to both entrepreneurs and business institutions, like continuous and tailor-made consultancy support for industrial projects, as well as company visits and exchanges with research and financing institutions to promote efficient and sustainable industrial upgrading.

FIGURE 11: The UNIDO ITPO Network.
4.5 QUALITY INFRASTRUCTURE AND VALUE CHAINS

Countries planning to foster local production of health products need a rigorous quality infrastructure in order to offer the level of regulation and services that these industries require. Quality infrastructure consists of a set of institutions that offer standardization, metrology, accreditation, conformity assessment and market surveillance services. In the field of health products, strong regulatory authorities and affiliated institutions need to ensure that all products on the market meet the prevailing quality standards in terms of safety and efficacy. All products failing these criteria, that are substandard or counterfeit products, need to be excluded from the market effectively. Moreover, when it comes to the facilitation of regional trade in essential health products, demands on services provided by quality infrastructure are particularly high.

As part of UNIDO interventions directed at health industries, activities concerning the quality infrastructure system can be essentially structured in the three ways listed below.

1. Along a specific health product value chain.
2. As targeted support to selected institutions that provide services to the industry.
3. As regional trade facilitation, that is, the removal of non-tariff barriers to trade.

PROJECT SCOPE

DONOR
Swiss State Secretariat for Economic Affairs, Switzerland.

OVERVIEW AND MAIN OBJECTIVES
Albania is one of Europe’s leading producers of medicinal and aromatic plants like sage, lavender, and cornflowers. Exports of these plants to the European Union can create significant development opportunities. The project will facilitate exports to this important market by:

- Improving the National Quality Information System and conformity assessment services.
- Improving SME compliance with international standards and technical norms.
- Developing a quality culture for the medicinal and aromatic plants value chain.

These efforts are directed at increasing the participation of small producers in international trade, thereby improving income opportunities for the rural population, in accordance with the Government’s priorities.

WHY IS THIS PROJECT EFFECTIVE?
The project takes a market approach for sustainable provision of quality services by strengthening the supply side and stimulating demand for quality services at the same time. Together with creating a culture of quality, another important dimension is the provision of support to the private sector in order to increase productive capacities, with focus on digitalization and innovation.

RESULTS OBTAINED
A value chain study assessed the current capacities of quality infrastructure institutions (standardization, metrology, accreditation) and service providers (conformity assessment bodies) to respond to the needs of the selected value chains. The Standards Analytic Compliance report for Albania identified the use of prohibited pesticides as well as other pollutants as a substantial hindrance to exports. Furthermore, in line with ISO 37000 Anti-bribery management systems, an in-depth assessment of governance in the quality infrastructure institutions resulted in an action plan for training and capacity-building in this area.
4.6 INDUSTRIAL UPGRADING THROUGH SME MODERNIZATION AND JOB CREATION

Enhancing local production in the health industry can serve multiple goals. Most importantly, it can contribute to enhancing security of supply with essential health products and creating opportunities for employment and increased local manufacturing value added. UNIDO has employed its well-established, comprehensive and multidisciplinary Enterprise Modernization and Innovation Programme (EMIP) in this context: it can be readily applied to the health industry. EMIP carefully interlocks measures at three levels of UNIDO intervention (macro-, meso- and micro-level) to ensure the effectiveness and sustainability of interventions.

1. On the macro level, EMIP assesses the general policy framework as well as specific operating conditions for the selected sector. Activities will aim at removing specific regulatory bottlenecks, but also include measures that are targeted at improving the general business environment.

2. On the meso level, EMIP addresses the institutional support infrastructure available to companies to ensure that technological upgrades, knowledge sharing, access to finance, capacity building and other services are provided by meso-level organizations.

3. On the micro level, where the real focus lies, EMIP provides support to improve enterprise performance, enhance growth, and strengthen the ability of companies to adapt and innovate. The approach combines different technical assistance measures that are tailored based on the results of an enterprise functions diagnostic assessment.

PROJECT SCOPE
Strengthening the capacity of local MSMEs and manufacturers to produce high-quality personal protective equipment and health care products, Nigeria.

DONOR
One-UN COVID-19 Response Basket Fund.

OVERVIEW AND MAIN OBJECTIVES
In collaboration with UN Women, WHO and ILO, UNIDO led efforts to enable local MSMEs to produce PPE, including cloth facemasks, disposable surgical masks, alcohol-based hand rubs, gowns, aprons and coveralls, for the local market and export to the ECOWAS region. UNIDO focused on enabling the private sector to adopt standards and adhere to technical regulations by combining normative functions, SME and cluster development, and quality infrastructure approaches. Utilizing the specialized expertise of the participating agencies, the overall impact of the project was to increase the resilience of MSMEs in the context of the COVID-19 pandemic and support the creation of decent jobs, the improvement of supply chains, and the promotion of transformative economic recovery and growth.

WHY IS THIS PROJECT EFFECTIVE?
The project has been a flagship example of how partnerships between United Nations agencies can deliver outstanding results by combining expertise and resources. It is also an example of how several UNIDO project approaches can be combined to achieve a defined result in health sector promotion.

RESULTS OBTAINED
UNIDO assisted and trained 162 Nigerian MSMEs (70 per cent of which were owned or led by women, and over 50 per cent of which were owned by youths aged 18-35) to comply with market requirements, standards and technical regulations. The project procured over 320 pieces of machinery and testing equipment for 124 beneficiary MSMEs and for the laboratory of the Standards Organization of Nigeria. It was accompanied by an awareness campaign for quality of locally produced health products. As a result of these interventions, employment in participating companies increased by more than 30 per cent and revenues by 25 per cent.
4.7 ENERGY TRANSITION AND CLIMATE CHANGE

Manufacturing processes and cooling are major factors in the consumption of energy along the health industry value chain. In many developing countries energy generation largely relies on fossil fuels, which are responsible for CO2 emissions and thus contribute to climate change. Reducing energy consumption along the value chain and moving towards renewable sources of energy at the industry level are very valuable contributions to curbing harmful CO2 emissions. At the same time, energy consumption is a cost factor in any process; saving energy therefore reduces costs. Next to the general utilities in the production facilities, automated production processes are the main consumers of energy. In the distribution of medicines and vaccines, a reliable cold chain is critical to ensuring that effective products reach patients. Ensuring adequate conditions for transportation and storage, however, can be energy intensive and use refrigerants that can have harmful effects on the environment.

Within the health industry, specific catalytic processes used in the synthesis of active pharmaceutical ingredients are among the most energy-intensive processes. UNIDO has experience in realizing significant energy efficiency improvements in pharmaceutical manufacturing units. Potential for such savings at the factory level can be actualized through the measures listed below.

1. Heating and cooling applications in the production area.
2. Optimizing use of equipment, that is, adopting various new technologies, preventive maintenance and optimum utilization.
3. Replacing old equipment with new energy efficiency alternatives.
4. Changing production processes through process control and optimization, automation, process integration or implementation of new and more efficient processes.

Often, energy efficiency measures implemented at the plant level not only reduce energy consumption, but also yield better results in terms of productivity and quality. UNIDO has in-depth technical knowledge in the field of renewable energy systems in pharmaceutical manufacturing operations and in the use of biomass-fired boilers. UNIDO can also provide technology, policy advice, technical training and financial solutions to improve cold chains in the distribution of medicines and vaccines in a way that saves energy and promotes the use of climate friendly natural refrigerants.

PROJECT SCOPE
Promoting energy efficiency and renewable energy in selected MSME clusters in India.

DONOR
Global Environmental Facility.

OVERVIEW AND MAIN OBJECTIVES
The activities in the Medak pharmaceutical cluster are part of a wider programme to improve energy efficiency and promote the use of renewable energy in several clusters in the MSME sector in India. The Medak cluster consists of 47 companies mainly active in the manufacturing of bulk drugs and pharmaceutical starting materials. The project aims at identifying possible uses of energy efficient technologies that have a maximum potential for replication and demonstrate their application. Furthermore, it promotes an innovative financing model based on the principle of using monetized energy savings to repay investments in new energy efficient technologies over a stipulated period of time.

WHY IS THIS PROJECT INNOVATIVE?
The project uses innovative technologies and processes to reduce the energy consumption of companies in the bulk drug cluster in India and promotes an innovative model to finance these investments.

RESULTS OBTAINED
At least six effective technologies were identified that show significant potential for energy savings and can be replicated in a majority of the firms in the cluster. The opportunities are described in detail in the UNIDO "Technology Compendium for Energy Efficiency and Renewable Energy Opportunities in the Pharma Sector". This publication lists many effective possibilities to replace equipment and change processes to realize substantial energy savings. It specifically points at technologies where the energy savings quickly outweigh the investment for the new equipment. In some cases, the payback period is as short as 5 to 6 months. Such eye-opening interventions can convince company owners and investors to embark on energy efficiency measures that make real business sense.
4.8 CHEMICALS MANAGEMENT AND HEALTH-CARE WASTE

Looking at the health-care industry in a holistic manner, one cannot ignore harmful substances used in production processes and along the value chain as well as health-care waste. Responding to the increased generation of health-care waste during the COVID-19 pandemic and a growing urgency to protect human health and the environment, UNIDO can have an impact in the areas listed below.

1. Cutback on harmful and ozone depleting substances such as HCFCs in the production processes of medical devices (such as syringes).
2. Promotion of climate friendly natural refrigerants in the cold chain that safely delivers medicines and vaccines to patients.
3. Improved handling of health-care waste to avoid infections of medical personnel and waste handlers.
4. Specialized handling of health-care waste to prevent the release of harmful substances to the environment such as persistent organic pollutants and mercury added products.

Fifteen per cent of waste from health-care facilities is considered hazardous waste and requires special management. This includes chemical, radioactive and infectious waste; infectious materials; sharps (like needles and blades); pathological, pharmaceutical, cytotoxic and chemical waste (especially mercury and mercury added products). Mismanaging these materials poses high risks of infections, toxic effects and injuries to health-care workers and waste handlers; to the communities who live around dumping sites or incineration facilities12 and to the environment, through the release of unintentionally produced persistent organic pollutants. Special attention is paid to mercury-added products and mercury wastes from the health-care sector, to which the Minamata Convention on Mercury applies.

Both combustion and dumping prevent the utilization of recyclable fractions of health-care waste, like plastic. UNIDO therefore promotes techniques that maximize recycling, as well as the use of innovative, regenerative materials as part of the circular economy approach.

FIGURE 12: Product redesigning and replacing plastic raw material (production of face mask as example) with circular materials.

4.8.2 CUTBACK ON OZONE DEPLETING SUBSTANCES

Policy advice and financial mechanisms to complement these measures can ensure that the use of alternative sustainable technologies is rolled out and promoted across the sector.

UNIDO can, furthermore, provide technology and technical training to reduce the use and diminish the impact of substances that deplete the ozone layer along the health industry value chain. Technical advice can be offered, for example, to replace HCFC-based solvents with less hazardous alternatives or swap refrigeration devices used in the distribution of temperature-sensitive medicines and vaccines to those with more climate friendly natural refrigerants. Workers can be trained on the alternative technologies. Policy advice and financial mechanisms to complement these measures can ensure that the use of alternative sustainable technologies is rolled out and promoted across the sector.

PROJECT SCOPE

Reduction of unintentionally produced persistent organic pollutants and mercury through an environmentally-sound approach on health-care wastes management in the Philippines with a special focus on the Pandemic, Philippines.

DONOR

Global Environmental Facility, Department of Environment and Natural Resources, Department of Health, Philippines.

OVERVIEW AND MAIN OBJECTIVES

The main objective of the project is to support the Philippines in reducing the release of persistent organic pollutants and mercury into the environment. Main project components are:

- Improving policies and regulations to enable environmentally friendly management of hazardous health-care waste, including the management of mercury according to the Minamata Convention.
- Demonstrating environmentally sound technology for treatment and recycling of health-care waste.
- Building capacities in segregation, collection, storage, transport, treatment, and disposal according to best environmental practices at health-care facilities and MSMEs in the health-care waste sector.
- Increasing awareness and disseminating knowledge on environmentally friendly management of health-care waste.

WHY IS THIS PROJECT INNOVATIVE?

The project uses experience from the recent pandemic and builds flexibility into the health-care waste management system to increase pandemic preparedness in this field. It also encompasses a life cycle impact assessment of PPE to reduce its environmental impact and increase circular economy elements in its production, use and disposal.
Proven tools and expertise

UNIDO has built a set of practical tools and methodologies to deal with common bottlenecks in the development of the health care sector: these have been tried, tested, and are continuously improved.
UNIDO has rich experience in promoting the health industry in developing countries. Since 2006, UNIDO has been especially active in the field of supporting pharmaceutical manufacturing. During this period, UNIDO has built a set of practical tools and methodologies to deal with common bottlenecks in the development of the sector: these have been tried, tested, and are continuously improved.

5.1 GOOD MANUFACTURING PRACTICES ROAD MAP

The quality of medicines is critical for the safety of patients. Local production of health products should never compromise on quality. The UNIDO GMP Road Map is a unique tool that charts a realistic path for the development of a country’s pharmaceutical sector towards production that adheres to internationally recognized standards of good manufacturing practices (GMP).

The GMP Road Map is an effective tool because it is tailored to country-specific needs, sets achievable goals, cuts back on risks for patients quickly, and breaks down the upgrading process to international standards into attainable steps. Compliance is controlled by the pertinent regulatory authority.

The GMP Road Map has been successfully devised for 16 countries: in Kenya at the national level and in the West African Region, ECOWAS, at the regional level, with 15 underlying national plans for all Member States. The Regional GMP Road Map Framework and the National Road Maps can be accessed on the UNIDO Knowledge hub.

5.2 PHARMACEUTICAL MARKET INFORMATION SYSTEMS

Having access to reliable pharmaceutical market information is a key requirement for the development of this sector. It forms the basis for any well-informed policy and investment decision, and is therefore imperative for driving change. UNIDO offers a sustainable solution to systematically capture market information and make it available to companies, potential investors and public health actors alike. Establishing smart connections between existing systems that already collect data for other purposes is the key to creating a sustainable and reliable market information system.

UNIDO has set-up a Pharmaceutical Market Information System in five countries in the East African Community (EAC) region.
5.3 TRAINING PHARMA 4.0

The training “Application of Advanced Technologies and New Business Models in the Biopharma and Medical Sectors” provides insights into how fourth industrial revolution technologies change research and development, production processes, and the way of doing business in the health industry. While innovations present great opportunities, developing countries may find it hard to stay on top of them, as changing business models can turn solid certainties upside down. The training covers the application of seven selected technologies: robotics, big data, cloud computing, 3D printing, Internet of Things, digital twin, and artificial intelligence. It also encompasses a module on the effect that technology has on business models and market trends.

The training, available to everyone free of charge, can enable participants in developing countries to exploit opportunities that arise from these technological innovations (see Figure 13). No prior knowledge is required to access it.

5.4 ARTIFICIAL INTELLIGENCE AND THE PHARMACEUTICAL INDUSTRY

There is little doubt that artificial intelligence will change the way the economy works. Former certainties will be turned upside down and new business opportunities can arise for SMEs using artificial intelligence to complete resource-intensive tasks formerly dominated by multinational companies. In the pharmaceutical industry, artificial intelligence applications could lower barriers for SMEs to engage in research and development, and decrease costs involved in process validation. This can increase the agility and competitiveness of smaller firms and facilitate their market entry. Artificial intelligence can further provide benefits when employed in pharmacovigilance where it can contribute to more easily discovering adverse drug reactions and contribute to making medicines safer.

The guide on Artificial Intelligence “Empowering SMEs through 4IR Technologies” was published by UNIDO, the International Telecommunications Union and the International Trade Centre.
UNIDO is a well-placed partner with its wealth of experience and hands-on ability to work directly with the private sector and forge a coalition of Governments, industry and other UN Agencies for healthier lives.
The world has a long way to go to achieve equitable access to affordable health care for all people. One lesson learned from the COVID-19 experience is that a more decentralized system of production of essential health products can be an important stepping stone towards a more secure supply of health products, and in preparing for future pandemics in line with the Bangkok Principles.

In strengthening sustainable local production systems to achieve individual countries’ goals, action by a number of stakeholders is required, as depicted below.

UNIDO is a well-placed partner with its wealth of experience and hands-on ability to work directly with the private sector and forge a coalition of Governments, industry and other UN Agencies for healthier lives. As outlined in this document, the organization offers a wide range of methodologies, approaches and tools that can be tailored to address the specific needs of its Member States, and provide a custom-made solution for an inclusive and sustainable private sector contribution to improved access to medicines.

Therefore, UNIDO remains committed to building a shared global vision and agenda for development of the health industry. This advocacy effort, together with its engagement to develop trade frameworks and markets for local products, and to strengthen local product development and manufacturing capacities, constitute the systemic transformations that will realize the long-term goal of healthy lives and well-being for all.

Health is a basic human right. Collective efforts in the provision of technical support, knowledge and intersectoral coordination should always have the ultimate goal of reaching equal access to preventive and curative health products for the whole population, regardless of socioeconomic status, gender, age, religion, disability and geographic location, and increase health security for everyone.

The way ahead is long and requires coordinated action by all of us: start together! And start now!

Governments and the international community at large should overcome the strict separation between the health and economic development domains, and start using their purchasing power to steer the market for health products in a more sustainable direction.

Policymakers and regulators all over the world need to strengthen regulatory systems to combat falsified health products, including medicines, and create a regulatory and business environment that enables the sector to thrive.

The private sector is called upon to invest in local manufacturing capacity and facilitate faster dissemination of advances in technology to developing countries.

Financial institutions could collaborate in the development and implementation of innovative financial mechanisms supporting sustainable investments and enhancing the impact of technical cooperation interventions.

International organizations and NGOs should follow a shared global vision, work together, and use their individual strengths and expertise to spot synergies, forge partnerships, and increase their positive impact on health for all.

UNIDO is a well-placed partner with its wealth of experience and hands-on ability to work directly with the private sector and forge a coalition of Governments, industry and other UN Agencies for healthier lives. As outlined in this document, the organization offers a wide range of methodologies, approaches and tools that can be tailored to address the specific needs of its Member States, and provide a custom-made solution for an inclusive and sustainable private sector contribution to improved access to medicines.

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