FEASIBILITY **REPORT**

TAIFA PHARMACEUTICAL TANZANIA LIMITED

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FEASIBILITY **REPORT**

Section 1 Executive Summary

THE COMPANY

Taifa Pharmaceutical Tanzania Ltd. is established on 20th September 2019 vide Certificate of Incorporation number 139972538 under the Companies Act 2002 as limited liability company. The main objective is to set up for manufacturing and distributing pharmaceutical, nutraceutical, external, and FMCG products, in Dar-es-salaam, Tanzania. The Company will be owned by Tanzanian.

Project Promoters

The promoters are Mr. Jeangir Aziz Abdul Rasool and Mr. Akram Aziz Abdul Rasool. Both are well-established businessmen, with experience spanning over 35 years in running successful businesses across The Republic of Tanzania. They are well-known industrialists with a sound capital and business base in diverse industries. They identified a substantial gap in the market in terms of availability of low cost quality medicines and decided to venture into establishing a pharmaceutical manufacturing facility in Tanzania. They wish to produce world class products at affordable prices for the local population.

Project Proposal

Taifa Pharmaceuticals will be focussing on the manufacture of Generic and over the counter (OTC) medicines in Tanzania. The Company envisages to be a major manufacturer of oral solid and liquid formulations and injectables over a wide therapeutic range consisting of analgesics, anti-malarial drugs, antibiotics, anti-fungals, pain-killers, anti-diabetics, anti-hypertensives, anti-retrovirals, multivitamins, cough and cold preparations, etc. In the foreseeable future, Taifa Pharmaceuticals aims to venture into production of Insulins in the form of pre-filled syringes. The Company is aiming at installing a state-of-the-art manufacturing facility consisting of multiple product lines adhering to the most current Good Manufacturing Practices (cGMP), complying to the most stringent WHO guidelines. The facility will be equipped with machinery and equipment using the most modern and advanced technology in order to enhance the Company's competitiveness in the local and export markets.

A wide range of diseases afflicting the developing world can be cured or are preventable through the use of inexpensive off-patent medicines. The health sector

is one of the targeted beneficiaries of Tanzania's new economic policy under the 5th Phase Government. It is the policy of the Government of Tanzania to encourage the local manufacture of pharmaceuticals, as exemplified by abolishing the import duty and Value Added Tax (VAT) on raw materials, and the preference given where possible to local manufacturers by the Government's Medical Stores Department (MSD).

The market for Pharmaceuticals in Tanzania was estimated at US$ 500 million in the year 2017, of which approximately 12% was manufactured locally. This implies expenditure per capita of US$8, which is at the lower end of the range for developing countries. The current per capita expenditure on health in Kenya is estimated to be twice that of Tanzania. With the Tanzanian economy now growing at rates in excess of 6%, it is expected that Tanzania will begin to close the gap with Kenya, implying a significant opportunity for local manufacturers of producing cost effective generic medicines. Recent estimates suggest the market has already surpassed US$600 million p.a.

The project involves establishment and construction of new pharmaceutical manufacturing facilities compliant to Current Good Manufacturing Practices (cGMP) laid down by the World Health Organization (WHO). The proposed manufacturing facilities will produce the following categories of pharmaceuticals for human consumption:

- Tablets
- Capsules
- Syrups and Suspensions
- Creams and Ointments
- ORS & other sachets
- Ear / Eye / Nasal Drops
- Small and Large Volume Parenterals
- Dry Powder Injections
- External products
- Dis-infectants

The proposed facility will be built on a plot admeasuring 20 acres with a built up area of approx. 30,000 sq. m and consisting of the following production blocks.

- **General Block :** Tablets, Capsules, Syrups & Suspensions, Creams & Ointments, Eye / Ear / Nasal drops, Externals & Dis-infectants
- **Beta-lactam Block :** Tablets, Capsules, Dry syrups and Dry Powder Injections

- **Cephalosporin Block :** Tablets, Capsules, Dry syrups and Dry Powder Injections
- **Injectable Block:** Liquid Ampoules and Vials
- **I. V. Fluids Block:** Large and Small Volume Parenterals

Proposed Investment

The total investment requirements for the project are USD 101.6 million. The shareholders are seeking to secure financing for up to 70% of the total investment requirements. Taifa Pharmaceuticals will be investing USD 30.47 million as shareholders's equity and is seeking a debt financing of nearly USD 71.10 million as long-term loans and overdraft facility in order to complete the establishment of the proposed pharmaceutical manufacturing facilities.

Cost of the project and means of the finance are as follows (in US$):

Cost of project:

Particulars	**In US$**
Land	7,000,000
Civil Works & Buildings	19,500,000
Machinery & Equipment	60,420,000
Furniture & Fixtures	1,440,000
Motor Vehicles	1,200,000
Office Equipment	160,000
Computers	80,000
Pre-Operative Expenses	3,457,286
Interest during Construction	5,120,000
Raw & Pkg. Materials for Regn. Batches	3,000,000
Software - ERP	200,000
Sub-Total	**101,577,286**

Means of finance :

Particulars		**(US$)**
Equity Share Capital	30%	30,473,186
Long-Term Loan	70%	71,104,100
Total		**101,577,286**
Disbursement		
Year 1	20%	20,315,457
Year 2	80%	81,261,829

Proposed Key Financials

Shown below are the financial projections for 10 years starting from 2020.

ITEM / YEAR	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
Revenue	0	0	24,448,932	46,897,863	59,877,436	76,440,666	91,728,800	106,808,119	117,488,931	129,237,825
Cost of goods sold	(468,946)	(828,746)	(14,981,209)	(27,391,106)	(34,378,887)	(43,434,179)	(53,418,919)	(62,077,944)	(68,432,543)	(75,444,623)
Gross profit	**(468,946)**	**(828,746)**	**9,467,723**	**19,506,757**	**25,498,549**	**33,006,487**	**38,309,881**	**44,730,175**	**49,056,388**	**53,793,202**
Operating expenses	(438,668)	(874,118)	(3,439,612)	(4,127,648)	(4,354,158)	(4,740,350)	(5,152,520)	(5,560,355)	(5,997,012)	(6,446,880)
EBIDTA	**(907,614)**	**(1,702,864)**	**6,028,112**	**15,379,108**	**21,144,392**	**28,266,136**	**33,157,361**	**39,169,820**	**43,059,377**	**47,346,322**
Depreciation	0	0	(19,579,322)	(14,940,116)	(11,462,509)	(8,854,645)	(6,898,278)	(6,842,610)	(7,295,091)	(7,146,404)
Interest	0	0	(4,266,246)	(4,266,246)	(3,839,621)	(3,199,685)	(2,559,748)	(1,919,811)	(1,279,874)	(639,937)
Profit before tax	**(907,614)**	**(1,702,864)**	**(17,817,456)**	**(3,827,254)**	**5,842,261**	**16,211,807**	**23,699,335**	**30,407,399**	**34,484,412**	**39,559,981**
Tax	0	0	0	0	0	0	(4,739,867)	(6,081,480)	(6,896,882)	(7,911,996)
Profit after tax	**(907,614)**	**(1,702,864)**	**(17,817,456)**	**(3,827,254)**	**5,842,261**	**16,211,807**	**18,959,468**	**24,325,920**	**27,587,529**	**31,647,985**

The project will start commercial production form the year 2022 and registering profit in the third year of business operation.

The key project financial information is projected as follows :

Particulars		Results
Discount Rate - p.a.		10%
Interest Loan - p.a.		6.00%
Repayment years	Years	8.00
Taxation		20%
Project IRR		10.79%
NPV 10% - USD		$ 3,508,661
Equity IRR		14.43%
ROI		3.45%
Payback (Years)		7.74
Discounted Payback (Years)		9.77

Strategic Drivers :

The **Strategic Drivers** that will be driving the success of the project will be

- **Branding** of the Company that will build the brand image of “Taifa Pharmaceuticals“ with its quality products and state-of-the-art manufacturing facility

- **Competitive Advantage** by building capabilities to allow the Company to build innovative products, cost leadership through technology and economies of scale

- **Technology** that will enable the Company to bring the newer and innovative products of research to the market

- **Economies of Scale** that will be achieved through large batch sizes, high speed, high output machines and equipment

- **Governance** by the management team in directing the organization in the interests of all stakeholders - promoters, creditors, employees, customers and communities within which it will operate including the Government

- **Markets** including the local, regional and international markets and strong competition in terms of products, pricing, marketing and distribution

- **Values** and respect of the Company towards its stakeholders such as employees, customers, communities and the environment.

Critical Success Factors :

The most **Critical Success Factors** that will impact the sustainability of the project are

- **Sales Turnovers** that will not only influence the bottom lines but also absorb any kind of cost escalations in raw and packaging materials or operations

- **Government Support** in terms of orders from Medical Stores Department that will result in optimal capacity utilization of the Company”s resources

- **Cost Reduction** through economies of scales and technology

- **Risk Factors** that have been identified and the measures been devised to mitigate them

- **Productivity** measures through robust production planning and technology that will enhance efficiency and outputs

Social Economic Benefits :

- The Project will provide and import substitution as the Project will set up the plant for manufacturing locally pharmaceutical facilities in Tanzania.

- The Project will reduce the dependence on imports and whereby have an indirect saving on forex exposure on foreign currency.

- Being produced locally, the project will generate direct as well as indirect Employment for Tanzanian national.

- During the process of Project establishment and during the operation of the Project the required technical knowl how will be transferred to Tanzania in term of the local skills can be developed through capacity built up locally for running the operation locally.

- The project has capacity for futuer expensantion that can be carried out locally which will further benefit people in general at mass level.

Conclusion :

The East African Community (EAC) market size makes it an attractive investment in the light of the fact that local governments are pushing to enhance local pharmaceutical manufacturing in the region. Moreover, the gap between the demand and supply of quality generic medicines in the country provides for a sizeable growth opportunity to the Company. The facility will be cGMP and regulatory compliant and will be striving to have certifications by the EAC joint inspection and other neighbouring National Medicines Regulatory Authorities (NMRAs). The project will have sufficient and acceptable operational capabilities, systems and processes governing production, procurement, logistics, Quality Control and Quality Assurance. Taifa Pharmaceuticals will also have a very capable and qualified management team that will take the Company to greater heights.

Thus, following careful analysis of the market research and first hand facts, figures and data that was collected during the process of the feasibility study, it can safely be concluded that there will be minimal risk for the promoters of Taifa Pharmaceutical Tanzania Limited in investing into the project so far as the sustainability and the bottom lines of the project are concerned and the project appears to be viable.

The most critical factor for the project to be viable and sustainable in the long run, would be the achievement of sales projections year after year. This may demand policy interventions and special incentives from the Government of Tanzania such as purchases from the Company in terms of volumes, price preference, applying tarrif barriers to imports, availability of low cost financing mechanisms, etc.

DESCRIPTION OF BUSINESS

Taifa Pharmaceutical's main focus will be on the manufacture of Generic and OTC (over the counter) medicines. It has the vision to be a major manufacturer of oral solid and liquid formulations as well as injectables covering a wide therapeutic range consisting of analgesics, anti-malarial drugs, antibiotics, anti-fungals, anti-retrovirals, dietary supplements and medicines for non-communicative disease segments. In the foreseeable future, Taifa Pharmaceuticals also aims to venture into production of Insulins in the form of pre-filled syringes. The Tanzanian pharmaceutical market is estimated to be at US$ 600 million (2019), of which approximately 12% is manufactured locally and the remaining being imported, with India and Kenya as the major exporters to Tanzania. Hence, there is a sizeable market potential available for the Company not only in the country as well as in the neghbouring countries.

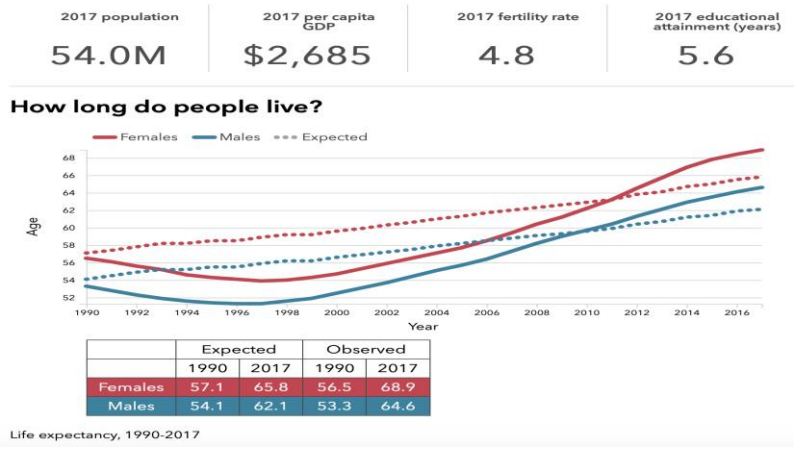
MAJOR DEMOGRAPHIC, ECONOMICAL, SOCIAL AND CULTURAL FACTORS

Demographics

Republic of Tanzania, is 13th largest country in East Africa with a land size of 945,203 square kilometres that shares its borders with many countries, including Kenya, Uganda, Rwanda, Zambia, Malawi, Mozambique, Burundi and the Democratic Republic of the Congo. Zanzibar is an archipelago off the coast of Tanzania and a semi-autonomous part of the country. Of this total population, 1.3 million reside on the islands of Zanzibar.

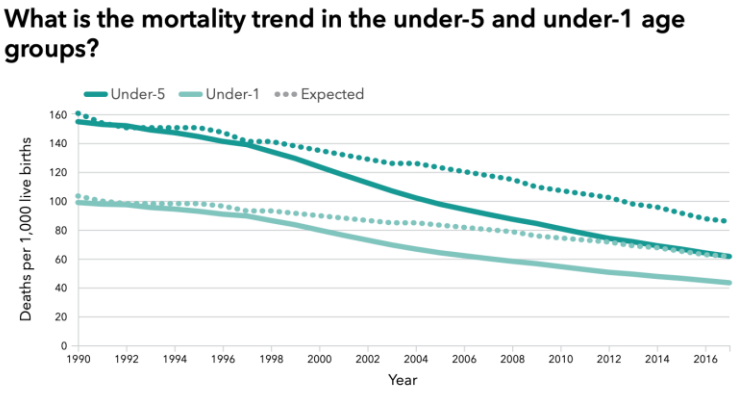
The estimated 2019 population of Tanzania is 58.01 million, up from the 2014 estimate of 50.8 million, ranking 25th in the world.

The last official census recording the population of Tanzania, occurred in 2012 and showed there were 44,928,923 people living in the country.



	Expected		Observed	
	1990	2017	1990	2017
Females	57.1	65.8	56.5	68.9
Males	54.1	62.1	53.3	64.6

Tanzania's youthful population, about two-thirds of it, is under 25, and is growing rapidly because of the high total fertility rate of 4.8 children per woman. Progress in reducing the birth rate has stalled, sustaining the country's nearly 3% annual growth. The maternal mortality rate has improved since 2000, yet it remains very high because of early and frequent pregnancies. Tanzania has made strides in reducing under-5 and infant mortality rates. Malaria is a leading killer of children under 5, while HIV is the main source of adult mortality.



	Expected		Observed	
	1990	2017	1990	2017
Under-5	160.6	85.7	154.8	61.5
Under-1	103.4	61.6	98.9	43.3

A wide range of diseases afflicting the developing world can be cured or are preventable through the use of inexpensive off-patent medicines. The health sector is one of the targeted beneficiaries of Tanzania's new economic policy under the 5th Phase Government. It is the policy of the Government of Tanzania to encourage the local manufacture of pharmaceuticals, as exemplified by abolishing the Import Duty

and Value Added Tax (VAT) on raw and packaging materials, and the preference given where possible to local manufacturers by the Government's Medical Stores Department.

The expenditure per capita of US$8 on health in Tanzania is at the lower end of the range for developing countries. The current per capita expenditure on health in Kenya is estimated to be twice that of Tanzania. With the Tanzanian economy now growing at rates in excess of 6%, it is expected that Tanzania will begin to close the gap with Kenya, implying a significant opportunity for local manufacturers of producing cost effective generic medicines.

Market overview

In Tanzania, main competition to pharmaceutical manufacturers of generics comes from low cost imports mainly from India, China and Kenya. In addition to these, pharmaceutical imports from developed nations such as Europe and the Americas cater to the branded medications market along with supply of tenders, which stipulate that the local manufacturers meet the international quality standards. The stringent controls and scrutiny on overseas manufacturers by Tanzania Medicines and Medical Devices Authority (TMDA), and the high costs of registration has given local pharmaceutical industries an opportunity to gear up and be competitive against imports.

The pharmaceutical manufacturing sector in Tanzania is small comprising of only ten companies. Out of 10 companies, 6 produce pharmaceutical products for human consumption where as the other 4 produce veterinary, external products and disinfectants. Local companies manufacture products from imported raw materials and, for the most part, manufacture a wide variety of prescription and over-the counter liquid and solid oral generic products.

NATURE OF INDUSTRY

In Tanzania, the market structure is simply divided into two major markets the public market that caters mostly 60-65% of the market demand and private market that caters nearly 35-40% of the market demand.

Public and mission hospitals are the major providers of health care, especially in rural areas where almost 70% of the population resides.

Public facilities rely heavily on the MSD for supplies. Mission facilities also purchase from the MSD, but they have access to alternate, private sector resources when the MSD is out of stock, helping them better to meet patient needs.

Although the MSD is financially secure and is an experienced purchaser and distributor of essential drugs and medical supplies, demand for these commodities in the public and church based health sectors is outpacing the MSD's supply capacity, regardless of planned improvements. When the MSD is unable to meet demand, clients resort to using local private wholesalers and distributors, which often sell products at less favourable prices and sometimes of dubious quality.

When Primary Healthcare Centers run out of the required medication, there is a tendency to refer patients to the main Referral Hospitals, resulting in overload for these main hospitals and a further cost escalation due to the supply of pharmaceutical products by private sector.

The increase in local manufacture of low cost generic medicines under regulation of TMDA and the Pharmacy Board should facilitate Government's efforts to control the availability and inflow of quality products.

Trends in Industry

As is the case for most developing countries, the manufacturing private sector suppliers in Tanzania play a limited role in helping to supply essential health commodities within the public sector, and their share of public sector business is therefore minimal; estimated to be less than 20%. As would be expected, the largest percentage of sales (about 80%) goes to private, for-profit clients, including smaller wholesale distributors and health care providers, with a smaller percentage to not-for-profit groups (average of less than 10%).

As per TMDA, at the end of 2013, there were 2397 pharmacies and 3872 registered Accredited Drug Dispensing Outlets (ADDOs). There are more than 200 wholesalers registered with the TMDA. They are located in 14 of the country's 20 regions, with over 60% located in Dar-es-Salaam and over 30% based in Arusha, Kilimanjaro, Mwanza, Mbeya and Tanga regions. The Tanzania Association of Pharmaceutical Industries (TAPI), which represents wholesalers and pharmacies, reported similar numbers.

Wholesalers import 80 to 90 % of their products from India, China, Egypt, Europe, Kenya, USA, Korea and Thailand. The wholesaler / importers and to some extent manufacturers are principally responsible for wholesale drug distribution to the private health care sector.

The MSD has now been mandated to procure and monitor the buying process for 16 member states of South Africa Development Community (SADC) using the System of Pooled Procurement Services (SPPS).

MSD Delivers medicines, medical supplies and laboratory reagents directly to 7519 hospitals, health centres and dispensaries across the country.

Government Regulation

The Tanzania Medicines & Medical Devices Authority (TMDA) established originally as Tanzania Food and Drugs Authority (TFDA) under the Tanzania Food, Drugs and Cosmetics Act (TFDCA), 2003, is responsible for protecting and promoting public health by ensuring quality, safety and effectiveness of food, drugs, cosmetics and medical devices. TMDA regulates the importation, manufacture, labelling, marking or identification, storage, promotion, sale and distribution of food, medicines, cosmetics, herbal drugs and medical devices, diagnostics or any materials or substances used in the manufacture of products regulated under TFDCA. TMDA approves and registers products regulated under the TFDCA, manufactured within or imported into, and intended for use in the United Republic of Tanzania. TMDA prescribes standards of quality in respect of products regulated under this Act, manufactured or intended to be manufactured or imported into or exported from the United Republic of Tanzania.

Pharmacy Council, a body corporate established under the Pharmacy Act Cap. 311 is responsible for regulation of pharmacy practices including issuance of licenses and permits to pharmacy businesses in Tanzania and registration and approval of pharmacists, pharmacy technicians and personnel engaged in pharmaceutical sales and marketing activities.

THE MARKET

Economic Factors

With a Gross National Income of US$ 47.34 billion at the end 2016 (*World Bank database, 2017*), Tanzania has seen a significant increase in its rate of GDP growth during the last decade, averaging 6-7% a year. The GDP is forecasted to average 6.0% per year for 2019-23. This growth trend reflects relatively sturdy domestic demand driven by a gradual liberalization of the economy and investment in the Mining, Agricultural, Tourism and Service industries as well as growth in the construction and planned public investments in infrastructure. Manufacturing is also expected to continue registering steady growth, aided by a more reliable power supply, the availability of domestic gas, Tanzania's growing integration into regional markets and more emphasis on industrialization drive by the current government.

The forecasted GDP growth rates as per BMI Research are as follows:

GDP / Year	2019f	2020f	2021f	2022f	2023f	2024f	2025f
Nominal GDP, USDbn	56.6	62	67.9	73.9	80.9	88.6	96.8
Real GDP growth, % y-o-y	5.9	6.1	5.9	5.9	5.9	6.1	6.1

Source : National Sources, BMI

To assess the impact of economic changes over the period 2013 - 2018 it is useful to note a selection of significant economic indicators:

Economic indicators	2013	2018
Population (million)	50.636	56.318
Urban population (% of total)	30.20%	33.8%
Annual inflation	7.87%	3.49%
Exports of goods & services (% of GDP)	17.65%	15.14%
Imports of goods & services (% of GDP)	31.07%	17.10%
Gross capital formation (% of GDP)	30.32%	34.02%
Foreign Direct Investment (US$ million)	$2087	$1105
Current account balance (BoP US$ million)	-$4988	-$1634

Source: World Bank database of World Development Indicators, April 2019

Significant annual growth in the national economy, combined with a growing economic sophistication, has major implications for the availability of funding for the healthcare sector, indirectly by increase in the Government's budgets, and directly in the increased purchasing power in the hands of Tanzanian population.

Market Segment

EAC Market Landscape

In East Africa, the outlook of the healthcare environment is similar to that of the rest of Africa. The countries generally share similar climate conditions, language, and disease prevalence. While significant strides have been made in healthcare provision, funding, infrastructure development and technology, the pharmaceutical sector in the region as a whole in East Africa is still much smaller than that of other regions in Africa, even though it has a higher population.

The pharmaceutical industry in EAC is estimated to be US$ 1.9 billion and is growing at a good pace of 10% p.a. Kenya market size is approx. US$ 900 million, and both Uganda and Tanzania close to US$ 500 million each. The market is characterized mainly by imports from various countries, India and China being major exporters to EAC. Even multinationals enjoy a good market share and generally operate through local distributors that market and distribute their products. The imports range from 72% in Kenya, 78% in Uganda to almost 88% in Tanzania.

There are approx. 60 local manufacturers in the EAC region. Local manufacturing comprises of essential drugs of non-complex nature and high volume generics, mainly oral solids & liquids. The private market is close to 40% and public procurement about 60%.

The governments at the EAC level are now promoting the local manufacturing of pharmaceuticals and trying to support existing investments and at the same time trying to attract new investments in the region. They are emphatically providing special incentives to the local manufacturers to improve access to the essential drugs at affordable prices meeting the basic quality norms.

The regulatory systems have been harmonized for the entire EAC already and one needs single dossier for all partner states for registration of products as well as similar standards of cGMP evaluation for manufacturing facilities.

There also exists an EAC Regional Pharmaceutical Manufacturing Plan of Action (RPMPOA 2017-2027) that is fostering better quality infrastructure in the region and

improved training of the pharmaceutical personnel as well as promoting innovation, R & D in pharmaceutical sector and sensitization of local manufacturers to TRIPS flexibilities.

There exists Federation of East African Pharmaceutical Manufacturers (FEAPM) that is an association of country-wise manufacturers' associations, which is pushing the agenda of promoting local production through policy interventions at EAC level. The position paper of FEAPM is attached herewith with regards the pharmaceutical policy incentive package that has been presented to the EAC Secretariat as ***Annexe I.***

In the context of Sustainable Development Goal (SDG) 3 and international commitments to Universal Health Coverage (UHC), international intervention finances large-scale international procurement of medicines and supports health system strengthening. Meanwhile, pharmaceutical manufacturing in Sub-Saharan Africa (SSA) is long established, and is currently being promoted by African governments and other actors including the African Union Commission (AUC), the New Partnership for Africa's Development (NEPAD) and the East African Community (EAC), and supported also by external actors including Germany's Federal Ministry for Economic Cooperation and Development (GIZ) and United Nations Industrial Development Organization (UNIDO).

The Tanzania Market

Pharmaceutical markets in Sub-Saharan Africa (SSA) are experiencing rapid growth as governments and healthcare providers battle with their respective burdens of disease. The continent has one of the highest burdens of disease, such as HIV, malaria, and tuberculosis, yet has limited healthcare resources and spending. As such there are great opportunities for growth in the pharmaceutical sector. While control and eradication of communicable diseases has been an on-going priority area for governments, non-communicable diseases notably lung cancer, stroke, hypertension, neuro-psychiatric disorders and diabetes have now become an area of concern for the entire continent.

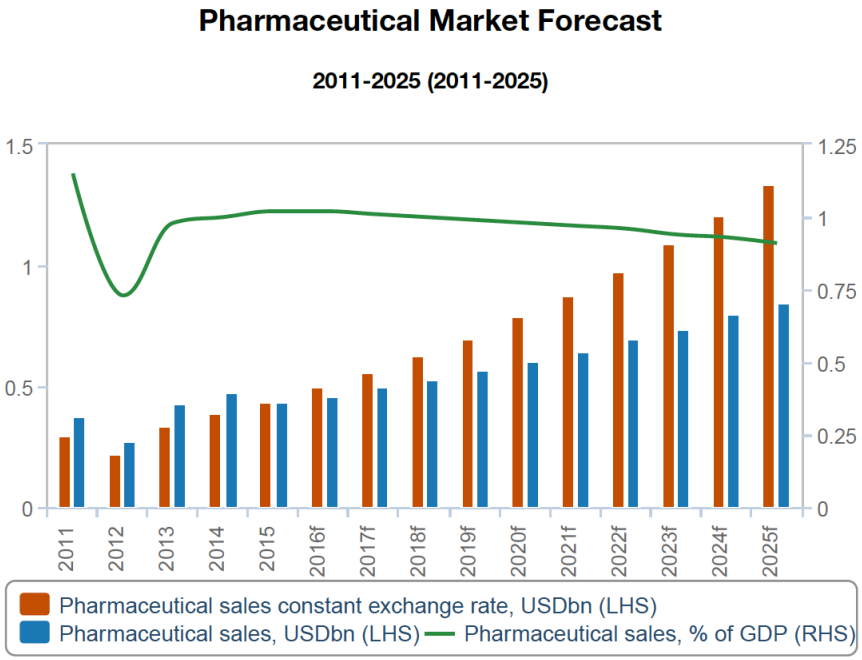
Significant investments by multinational companies are driving growth using different proven business models. The focus on universal healthcare, providing coverage for each citizen, particularly the poor and vulnerable, is a focal point for governments. With multiple participants in the region, including emerging leaders with high growth rates in the continent, pharmaceuticals in the region will now become more important than ever in the drive for better healthcare and the effort to meet millennium development goals. A number of therapeutic areas in these countries are now growing, giving an indication of future pharmaceutical opportunities.

There is a remarkable resurgence of interest in pharmaceutical sector investment from local and international investors in the region, and also increased focus by new investors on gap filling in response to identified and important national needs. The current active investment and proposals include creating more high-quality regional sources of combination antimalarial medication (ACTs) and of antiretroviral medication (ARVs) for HIV; also producing more key medication for Non Communicable Diseases (NCDs) including hypertension and diabetes; and increasing regional suppliers of intravenous drips and parenteral preparations. All of these items are currently largely being imported. Simultaneously, local investors in Tanzania have started to invest in production facilities for medical supplies such as bandages, in severe short supply, using locally produced inputs such as cotton.

Small-scale surveys and qualitative evidence from Tanzania in 2008-9 showed that a high proportion of rurally available medicines had been made locally (*Mackintosh and Mujinja 2010*). Small sample survey data from 2013 confirm that, even in Tanzania where local manufacturing output had been falling, a significantly higher proportion of essential medicines used as tracers and found on rural shelves (in facilities and shops) had come from local rather than imported sources.

The pharmaceutical market in Tanzania was estimated to be US$500 million in 2017, of which US$ 440 million was imported. With a population estimated at 55 million, this represented a per capita expenditure of US$8 (although the actual figure may be slightly higher due to undeclared imports). It is estimated that the market has since grown to US$ 600 million p.a.

The WHO estimates total expenditure on health to be US$137 per capita (2014: using average exchange rates). The WHO estimate for Kenyan expenditure on health is US$169 per capita, or 1.25 times the level in Tanzania.



f = BMI forecast. Source: UN Comtrade, National Sources, BMI

Allocations to the health sector by the Government of Tanzania have grown over 65% in the past five years, in terms of budgeted and 29% in terms of actual amounts for the FY 2012/13 - 2015/16. In FY 2015/16, the health sector allocated over TShs 1.5 trillion, representing a 32.5 % nominal increase (26.6% in real terms) over the sector's actual spending in FY 2014/15. The year-on-year increase between Fys 2011/12 -2015/16 averaged 20.2%. The allocation for healthcare sector for the FY 2017/18 was TShs 2.22 trillion.
Source : Tanzania Health Budget Brief FY 2011/12-FY2015/16 : Unicef

The allocation of the budget to be spent on drugs and medical supplies, from 32% in FY 2013/14 has risen to 38% in the FY 2017-18.

Public health expenditure per capita is also on the rise. It increased from TShs 20,228 (US$9.2) in FY 2012/13 to TShs 31,948 (US$ 14.7) in FY 2015/16, however still well below the WHO recommended target of US$54 per capita to address health challenges. The average growth rate for the period was 17%.

Assuming firstly that the ratio of expenditure on drugs to total health expenditure is similar for Kenya as for Tanzania; and secondly that, as the Tanzanian economy strengthens, expenditure on health will tend to increase to a level closer to that of Kenya; this implies that there is potential for the Tanzanian pharmaceuticals market to increase in size by somewhere in the region of 120% in the relatively near future.

With the market for pharmaceuticals in Tanzania poised to increase rapidly as the country begins to realize some of its economic potential, and given the benefits that can be provided by low cost, effective generic medicines, there is very significant potential for the domestic manufacturing industry.

Government Policy

The pharmaceutical market in Tanzania over recent years has seen many changes in terms of buying habits of the consumers. The regulatory environment has also reformed significantly over the last decade whereby **Tanzania Medicines and Medical Devices Authority** (**TMDA**) has shifted the emphasis on international quality standards as laid down by World Health Organization in terms of current Good Manufacturing Practices (cGMP) for the local manufacturers.

According to the figures provided by the trade journals, the total market size of pharmaceutical products in Tanzania during 2017 was estimated to be over US$ 500 million per annum. Imports were estimated to be US$ 400 million p.a., which in itself demonstrates a vast gap between domestically produced pharmaceuticals and market demand. The annual per capita expenditure on medicines comes to approximately US$ 8 for the population of Tanzania of 55 million.

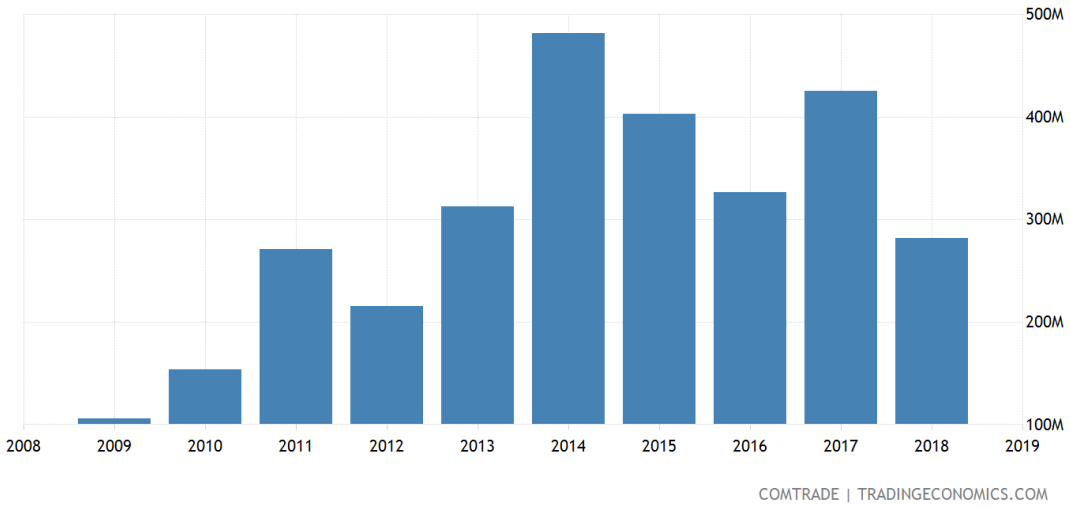
The health sector has been nominated as one of priority sector in Tanzania"s new economic policy under the 5th Phase Government. The health sector is also funded by donor nations to improve the quality of life and life expectancy for the Tanzanian population. It is therefore, anticipated that the resources directed to government hospitals will be increased and they will be able to afford to buy more medicines, thus increasing the per capita expenditure on medicines, and in effect further expanding the pharmaceutical market. Thus, for any aspiring quality pharmaceutical manufacturers this indicates a substantial untapped market opportunity.

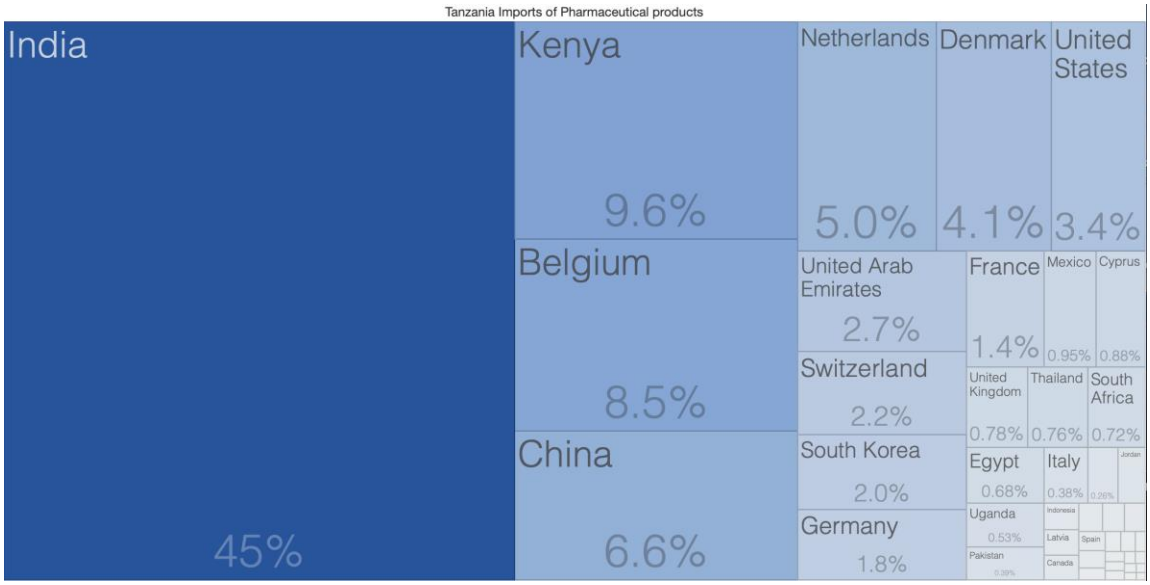
The Government of Tanzania has initiated a variety of programs that are aimed at improving the healthcare infrastructure.

"Tanzania's pharmaceutical market is valued at USD 496 mn, with per-capita drug expenditure at just over USD 8.7 in 2017. Forecast show that it would reach $730 million by 2022 with CAGR of 8%.....With regards to imports, it is forecasted an increase from USD 325.7 mn in 2017 to USD 424 mn in 2022 - with a CAGR of 5.4%."

Source : PHARMEXCIL Report on Regulatory and Market Profile of Tanzania

Tanzania Imports of Pharmaceutical products was US$281.83 million during 2018, according to the United Nations COMTRADE database on international trade.

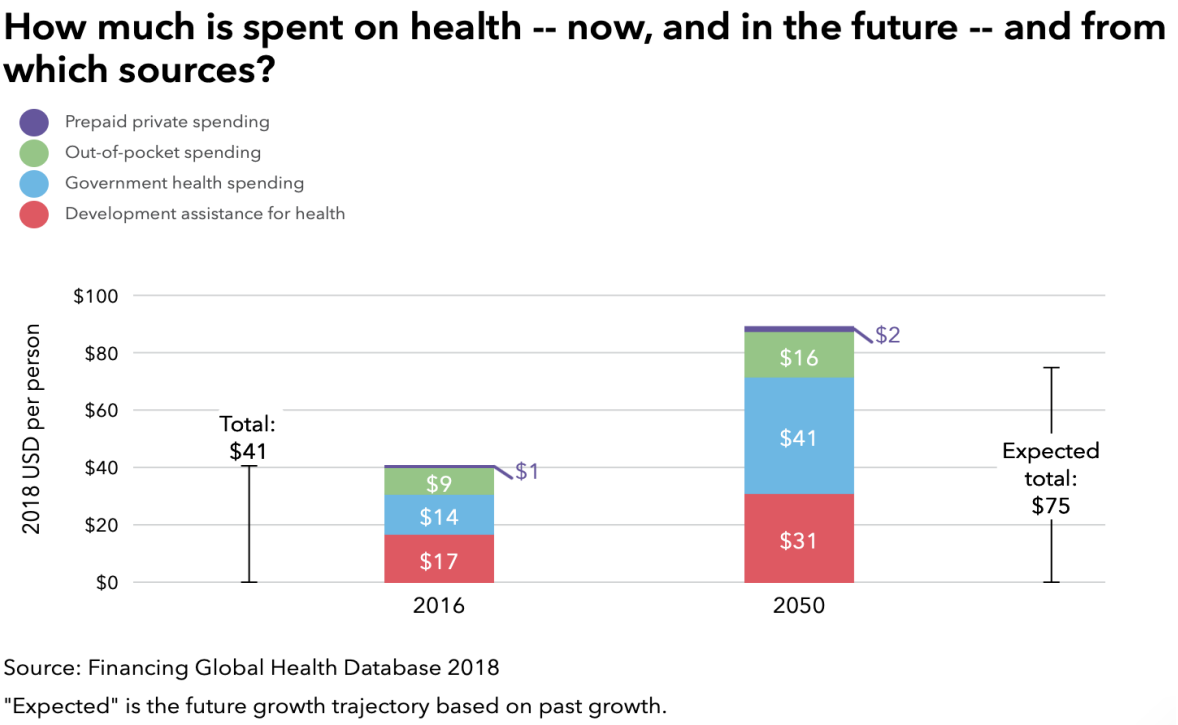




The Government's national procurement body Medical Stores Department (MSD), responsible for over 50% of national expenditure on pharmaceuticals and surgical equipment, has indicated that companies in Tanzania will be given special concessions in the tendering process. Local manufacturers are given a 15% price preference over equivalent overseas bidders for all purchases made by MSD. Combined with the Government investment incentives such as Import Duty and VAT exemptions with respect to the import of raw and packaging materials and capital equipment, provides a clear statement of Government commitment to the development of a domestic pharmaceutical manufacturing base, and a powerful incentive for local manufacturers to become cGMP compliant.

A recent major shift in national policy focus in Tanzania, towards industrial development has included rebuilding pharmaceutical production (*URT 2016; 2015*) as a major element. Furthermore, this has been associated with sharply increased domestic funding commitments to purchase medication for the public sector. Thus, the Tanzanian government has committed to greatly increase domestic funding for local procurement of essential medicines and health sector supplies, announcing a planned annual allocation of USD 112 million for 2016-17 *(BMI 2016a, 2017; and interviews)*, a huge increase on the previous year's USD 36 million. The Treasury has also repaid much of its debt to the MSD, and the Government has directly linked that funding commitment to objectives of local purchasing and industrial development, including increased domestic investment in MSD's distribution infrastructure. The Ministry of Health therefore, far from perceiving the national policy emphasis on industrialization as competing with health care for tax funding, has embraced the scope for mutual benefit through increased local procurement. A mutual benefit lobby is emerging in Tanzania between health system actors anxious to reduce public supply shortages and arguing for higher public funding, and local industrialists looking for larger markets.

Source: Local Production of Pharmaceuticals and Health System Strengthening in Africa – Federal Ministry for Economic Cooperation and Development, Germany



Source: Financing Global Health Database 2018

"Expected" is the future growth trajectory based on past growth.

Following are some excerpts from *"SUSTAINABILITY IMPLICATIONS FOR TANZANIA'S FOURTH HEALTH SECTOR STRATEGIC PLAN, 2015/16–2019/20"* representing the wealth of opportunities that will be available to the local manufacturers to work upon.

The Government of Tanzania (GOT) aims to rapidly scale up coverage of Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCAH) services to meet targets for maternal, child, and newborn health. As a result, RMNCAH services and activities represent a significant portion of the total Health Sector Strategic Plan IV (HSSP IV) resource requirements. By 2019/20, RMNCAH is the third highest-cost program, following HIV/AIDS and NCDs, and represents 12% of health service costs.

Tanzania faces a rising burden of NCDs. As a result, the costs of NCD and mental health services grow at a faster rate than any other program, with costs nearly doubling from 2015/16 to 2019/20. In 2015/16, NCDs and mental health represent 17% of total health services costs. By 2019/20, the NCD and mental health program is the highest-cost program and accounts for 27% of total health services resource requirements.

The HIV program requires more financial resources than any other health program from 2015/16 to 2019/20. About one-quarter (28%) of total health service costs under the HSSP IV are for HIV services. NACP plans to rapidly scale up ART coverage over the next five years. Although this initiative will avert deaths, it requires significant resources and the estimated resources available for the multi-sectoral HIV response are not sufficient to meet the country's HIV-related targets.

Under the HSSP IV, nutrition interventions are scaled up rapidly. Across all health programs, nutrition interventions and support activities represent just 2% of the total health service costs. Investments in preventive and curative services for under-nutrition will contribute to Tanzania reaching its child health goals while also improving economic productivity. UNICEF estimates Tanzania loses 2.65% of GDP in revenue each year due to vitamin and mineral deficiencies.

Tanzania has seen a rise in the prevalence of overweight, a leading risk factor for non-communicable diseases, in recent years. The country will need to address the double burden of under-nutrition and over-nutrition during development of the National Nutrition Action Plan.

The malaria program is estimated to be the third highest-cost health program in 2015/16, representing 13% of total health service costs. By 2019/20, it is the fifth highest-cost program and accounts for 8% of total health service costs. Significant resources are also needed for uncomplicated malaria treatment ($41 million from 2015/16 to 2019/20).

Commodity costs that are earmarked for vertical programs and primarily financed externally (i.e., commodity costs for HIV/AIDS, immunization, malaria, TB/L, and NTDs) account for TZS 761 billion (Year 1) and remain much the same in Year 5 at TZS 772 billion. Costs for RMNCAH commodities and other essential medicines and health products are TZS 718 billion in Year 1, increasing to TZS 1,230 billion in Year 5.

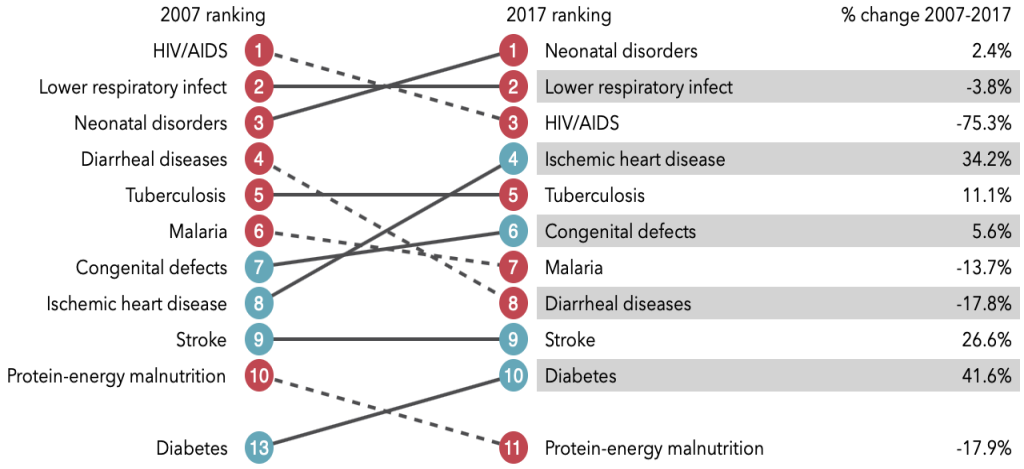
Tanzania Health Statistics

HIV is the leading cause of death (17%) in Tanzania, followed by lower respiratory infections (11%), and malaria (7%). Infectious diseases are emerging health concerns especially those related to poor sanitation. Non-communicable disease incidence is slowly rising in the country with over 10% of the population dying from diet-related cases. Life expectancy is 56 years, 58 years for females and 53 for males. Only 8% of all births are registered yearly. About 73% of people aged 15+ are literate, and 75% of the population lives in rural Tanzania with 57.8% of the population living under the poverty line.

HIV/AIDS

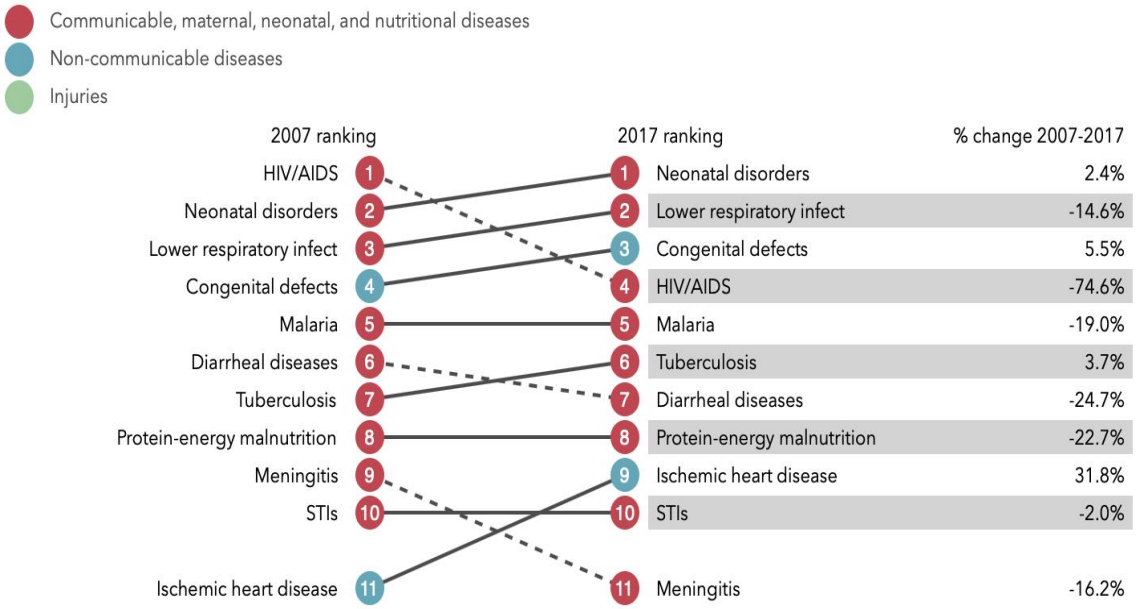
HIV in Tanzania accounts for 5% of the deaths in the country. Around 1.4 million people live with HIV in Tanzania. 50,000 new infection cases are reported annually, and 53% of adults are on antiretroviral treatment. The prevalence is higher in females (7%) and males, (5%). About 53.3% of the male population engages in high-risk sexual behaviour and does not use any condom during sex. Gender inequality is the leading cause of high infection rates among women. The female population is unable to negotiate for safer sex with their male counterparts. Besides, women are infected earlier in life because they have older partners and get married earlier. The concept of sugar daddy is still widespread in Tanzania. Zanzibar prime location along drug routes is another cause of the high prevalence and incidence rates of HIV. About 35%-42% of people who inject drugs are infected with the virus with females being at greater risk of contracting HIV. In the last decade, Tanzania has increased efforts to get more people to test for HIV. The numbers of testing sites are available all over the country with 90% knowing where to get an HIV test.

What causes the most deaths?



Top 10 causes of death in 2017 and percent change, 2007-2017, all ages, number

What causes the most premature death?



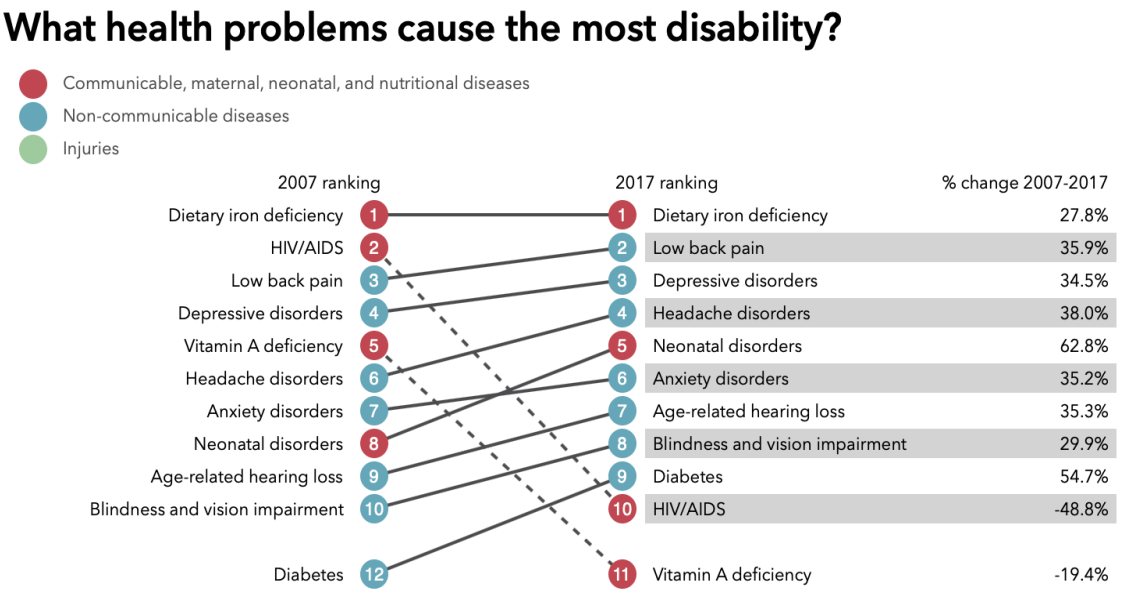
Top 10 causes of years of life lost (YLLs) in 2017 and percent change, 2007-2017, all ages, number

Malaria

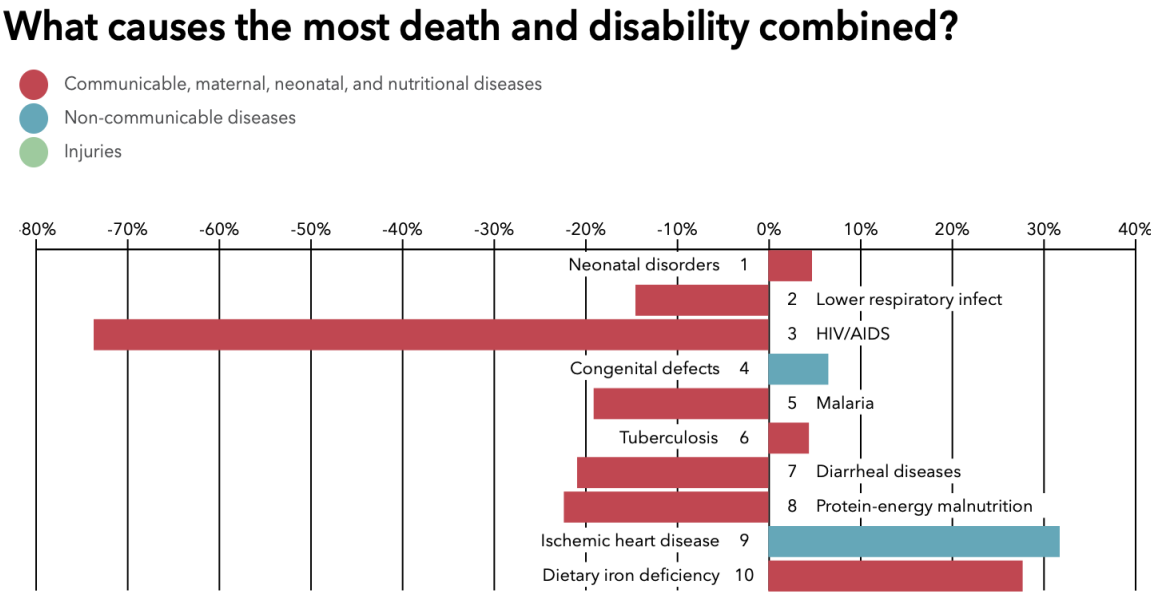
Malaria has caused a serious public health problem in mainland Tanzania. It is the leading cause of death in children below five years. Malaria is responsible for 36% of all deaths in children. Zanzibar indicates a decline in malaria incidence after the introduction of Long Lasting Insecticide Nets to people in endemic areas. The spread of indoor residual spraying has also contributed to the reduced cases of malaria in the Island of Zanzibar. Like other tropical countries, Tanzania geographical position puts it in malaria endemic region.

TB

By 2013, 65,000 people had contracted TB in Tanzania compared to 11000 in 1984. Dar-es-salaam has the highest incidence rate with 13,983 people making 22% of the population. WHO ranks Tanzania number 15 among 22 countries with the largest number of TB cases. The increased prevalence of HIV in the country is the primary cause of high TB incidence rates. WHO indicate that TB is a high burden disease in the country.



Top 10 causes of years lived with disability (YLDs) in 2017 and percent change, 2007-2017, all ages, number



Top 10 causes of disability-adjusted life years (DALYs) in 2017 and percent change, 2007-2017, all ages, number

STDs

Zanzibar is a gateway to the African continent and people on the island are at a greater risk of suffering from Sexually Transmitted Diseases (STDs) than those in mainland Tanzania. 3% of the population in the country dies from STDs. The number is likely to be high in drug injecting people due to the tendency of addicts to have multiple sexual partners, needle sharing, 'flash-blood' practices and increased unprotected sex. These factors also predispose victims to HIV.
Tanzania has one of the worst doctor-patient ratios in the world. WHO estimates that 0.0031 physicians were available per 10,000 patients in 2013. The situation is worse in rural Tanzania with only nurses available in the health facilities. 40% of all doctors in the country work in the private sector while the rest are in urban hospitals.

Non-Communicable Diseases

In recent years deaths from NCDs have been alarmingly rising. Deaths from cancer, diabetes, cardiovascular diseases, and road deaths are perceived to be on the rise. Poor sanitation and shortage to safe drinking water are the key contributing factors among children dying from NCDs. Malnutrition is common in the country because 58% of the population lives above the poverty line. Currently, 6% of all deaths are caused by diarrheal diseases, 5% from cancer, 3% from Ischemic Heart Disease and another 3% stroke.

Leading Causes Of Death In Tanzania

Rank	Cause of Death	% Of Total Deaths
1	HIV	17%
2	Lower Respiratory Infections	11%
3	Malaria	7%
4	Diarrheal Diseases	6%
5	Tuberculosis	5%
6	Cancer	5%
7	Ischemic Heart Disease	3%
8	Stroke	3%
9	STDs	3%
10	Sepsis	2%

PRODUCTS & SERVICES

The aim of Taifa Pharmaceuticals is to be the best state-of-the-art facility not only in Tanzania and the EAC but in the whole of Africa which would be 100% WHO cGMP compliant. With this recognition, the Company anticipates gaining leverage over its competitors in the market with institutional clients and international donors.

Shown below is the data from the research article “Pharmaceutical imports in Tanzania: Overview of private sector market size, share, growth and projected trends to 2021“ published in August 2019 by Wande et al.

Rank	ATC level 2	Sum of Total Amount (USD)	% Share
1	Antibacterial for systemic use	179,629,941.67	24.30%
2	Analgesics	131,569,045.62	17.80%
3	Antimalarials	97,378,220.21	13.17%
4	Antimycotics for dermatological uses	42,277,818.30	5.72%
5	Cough and cold preparations	29,685,354.44	4.02%
6	Anthelmintic	27,270,042.56	3.69%
7	Drugs for acid related disorders	21,760,639.42	2.94%
8	Antimycotics for systemic use	15,361,238.79	2.08%
9	Calcium channel blockers	14,851,010.57	2.01%
10	Drugs used in diabetes	14,823,456.99	2.01%
11	Antithrombotic agents	14,224,839.52	1.92%
12	Agents acting on the renin-angiotensin system	12,711,606.47	1.72%
13	Antivirals for systemic use	10,881,054.17	1.47%
14	Anti-asthmatics	8,644,265.96	1.17%
15	Anesthetics	8,181,669.03	1.11%
16	Multivitamins, combination	7,953,668.72	1.08%
17	Mineral supplements	7,687,668.47	1.04%
18	Cardiac therapy	6,403,215.40	0.87%
19	Corticosteroids for topical use	6,397,225.75	0.87%
20	Anti-inflammatory and antirheumatic products	6,084,449.92	0.82%
	Total	663,776,431.98	89.78%
	Other ATC categories	75,539,374.09	10.22%
	Grand Total	**739,315,806.07**	**100.00%**

https://doi.org/10.1371/journal.pone.0220701.t003

The above chart shows the top 20 pharmaceutical products imported in Tanzania by the private sector during the year 2013-2016.

The following table shows the top 20 generic products respectively, imported in Tanzania during the period 2013-2016:

Rank	Generic Medicine	Sum Total Amount	% Share
1	Artemether + Lumefantrine	89,840,781.40	12.15%
2	Paracetamol	79,124,851.94	10.70%
3	Chlordiazepoxide + Clinidium	77,618,440.00	10.50%
4	Ketoconazole	33,328,831.86	4.51%
5	Albendazole	26,327,246.13	3.56%
6	Metronidazole	26,009,350.47	3.52%
7	Diphenhydramine	23,782,107.25	3.22%
8	Chloramphenicol	23,694,352.13	3.21%
9	Miconazole	17,380,083.43	2.35%
10	Meloxicam	15,537,828.59	2.10%
11	Amoxicillin	14,117,702.19	1.91%
12	Amoxicillin and enzyme inhibitor	12,624,374.13	1.71%
13	Amlodipine	11,808,450.16	1.60%
14	Enoxaparin	11,385,473.24	1.54%
15	Omeprazole	11,137,234.04	1.51%
16	Metformin	10,249,127.08	1.39%
17	Aceclofenac	9,836,274.58	1.33%
18	Acyclovir	7,259,622.42	0.98%
19	Ketamine	7,191,101.50	0.97%
20	Mefenamic Acid	6,437,027.08	0.87%
	Total	514,690,259.60	69.6%
	Other Generics	224,625,546.47	30.4%
	Grand total	**739,315,806.07**	**100.0%**

https://doi.org/10.1371/journal.pone.0220701.t008

For the purpose of this study to determine the potential of the market as well as to determine the most potential products worth producing, we have considered the top products for most common therapeutic segments imported during the period January - October 2019 that are enlisted in the ***Annexe II*** and the purchase of the most common products in terms of dosage forms by the Medical Stores Department for the year 2017-18 that are enlisted in the ***Annexe III.***

The proposed manufacturing facilities will produce the following categories of pharmaceuticals for human consumption:

- Tablets
- Capsules
- Syrups and Suspensions
- Creams and Ointments
- ORS & other sachets
- Ear / Eye / Nasal Drops
- Small and Large Volume Parenterals
- Dry Powder Injections
- External products
- Dis-infectants

Subsequent to careful analysis of the health statistics, the data of importation from TMDA and the actual consumption of MSD (data attached as Annexe II and Annexe III); and identifying the opportunities and gaps in the type of products and evaluation of cost of production of these products (data attached as Annexe IV), the Company has finalized a product mix. This product mix will be dynamic and will keep changing from time to time based on the market demand.

Pricing & Distribution

The largest customer for the domestic industry is MSD. In the year 2000, it purchased US$ 13.00 million from the local industries, which was about 50 % of the manufacturing sector sales. Margins were reported to be varying between 15 and 33 % (SGC Consulting 1995; SEAM interviews) depending upon product and purchase quantity. In the year 2017, the purchase by MSD from the local manufacturers was reportedly to the tune of US$ 5.00 million which represents a mere 10% of the total manufacturing sector sales.

Source : Interviews with manufacturers' representatives.

Apparently, the pricing for all the local manufacturers seem to be around the same level as is evident from the selling prices from the private market as well as from the MSD tendering.

As per the calculations of the most common formulations the costing of products is well within the prevalent industry norms of 55%-65%. For the purpose of financial projections it has been taken at 57%, as the element of MSD sales could not be ruled out and the profits for sales to MSD are generally lower than that for the private market.

Although any domestic manufacturer has to benchmark itself against its local competitor manufacturers, the main competition comes from imported products, notably from India and Kenya.

To be viable in the long term it is essential that the direct cost of local production should be competitive with the landed cost of imported products before import duties.

If the average Indian cost FOB is taken as being 100, import costs add up to 10% being charges and levies (freight & insurance, clearing charges, local transportation and port charges, TMDA import fees, etc.) resulting in a final average cost of 110.

The direct costs of domestic production estimated by Taifa Pharmaceuticals amount to 65% of the Indian FOB value. While this will be increased by an allocation of indirect overheads, marketing costs and a profit margin, taking the final sales value of domestic production above that of the landed cost of Indian product (at least before the clearing charges), this nonetheless indicates that domestic production will be competitive with imported products. This is more particularly the case, given that the Company will focus attention on products where they enjoy more rather than less competitive advantage with India.

As an example, this is summarized in the table below for Paracetamol 500 mg 10 x 10 tablets:

Particulars	FOB / COGS	Cl. Costs @ 10%/Mfg OHDs @ 30%	Landed cost	Selling Price	Gross Profit	Margin
Paracetamol 500 mg 100 tablets (Imported)	0.49	0.049	0.539	0.60	0.061	10%
Paracetamol 500 mg 100 tablets (Produced locally)	0.32	0.096	0.416	0.60	0.184	31%

As can be seen above, taking an average of all products being considered by Taifa Pharmaceuticals, it will be able to produce at a cost that enables a final selling price, including an adequate profit margin, that is well below the landed cost of Indian products including clearing costs, and still be competitive compared to Indian products. Focusing on products where local manufacturers have a greater advantage, such as Paracetamol, provides an even greater competitive edge.

An analysis of the cost of imported Indian products as compared with the cost of domestic production is presented as ***Annexe IV.*** This provides an indication of the products that can be produced economically in Tanzania.

THE COMPETITION

Competitors and Type of Competition

The main competition to pharmaceutical manufacturers of Generics in Tanzania comes from low cost and sometimes substandard imports mainly from India, China and Kenya. In addition to these, pharmaceutical imports from developed nations such as Europe and the Americas cater to the branded medications market along with supply of tenders, which stipulate that the manufacture of the products should be in a cGMP compliant facility.

With the changing times and the Government's focus on health sector development being a priority, international institutions such as the WHO were requested to provide guidance to the TMDA in order to better govern, and watch over the import and manufacturing practices of pharmaceuticals being sold in the country. As a direct positive result, new harmonized regulations were put in place insisting on the registration of all products, including prior inspection and approval by the TMDA inspectors, for any facility wishing to export to or manufacture its products in Tanzania. The stringent controls and scrutiny on overseas manufacturers, and the cost of registration has given local pharmaceutical industries an opportunity to gear up and be competitive against imports.

The pharmaceutical manufacturing sector in Tanzania is small; ten major companies share the market. Out of 10 companies 6 produce pharmaceutical products for human consumption where as the other 4 produce veterinary, external products and disinfectants. Local companies manufacture products from imported raw materials and, for the most part, manufacture a wide variety of prescription and over-the counter liquid and solid oral generic products, including analgesics, anti-malarials, and antibiotics. A number of companies also import generic products for wholesale trading.

"Tanzania's pharmaceutical market will continue to be dominated by generic medicines, with local drug-makers limited to basic production capabilities. As such, Indian drug-makers will be especially well placed to gain a foothold in the Tanzanian market given their drug-makers' cost-competitiveness. Although government encouragement of domestic pharmaceutical production will increase domestic output, the majority of the country's pharmaceutical needs will remain sourced from abroad."

Source : Tanzania : Pharmaceuticals & Healthcare Report Q3 2016, BMI

Table 1. Estimated Market Share of Major Local Manufacturers

Market Percentage share	**2015**	**2016**	**2017**
Shelys Pharm. Co. Ltd.	79.0	74.0	70.0
Tanzania Pharm. Industries Ltd.	0.0	0.0	0.0
Zenufa Laboratories Ltd.	7.5	9.0	10.0
Prince Pharmaceuticals Ltd.	3.5	5.5	6.0
Keko Pharm. Industries Ltd.	5.0	6.5	8.0
Mansoor Daya Chemicals Ltd.	5.0	5.0	6.0

Sources: Sales figures – interviews with manufacturer representatives

Government and Donor Funded Tenders

All pharmaceutical manufacturers can participate in pharmaceutical tenders issued by the Government through MSD. Local manufacturers enjoy 15% preferential treatment and have to comply with Tanzanian Good Manufacturing Practice Standards. Highlighting further opportunities for companies, donor funding accounts for a large proportion of healthcare finances in Tanzania and if local manufacturers of drugs comply with international quality standards they can participate in tenders issued by the donor community in the country (and the region) - thereby gaining increased access to the ARV, anti-TB and anti-malarial pharmaceutical market in Tanzania.

Sources of donor funds for ARVs, anti-TB and anti-malarial procurement in Tanzania include multilateral partners (such as NORAD, the Norwegian Agency for Development Co-operation), bilateral partners (such as UNITAID, the international facility for the purchase of drugs against HIV/AIDS, Malaria and Tuberculosis, World Bank, USAID), NGO partners (such as AXIOS, an international philanthropic organisation) and private partners (such as Crown Agents, a global procurement agent).

Competitors' Strengths & Weaknesses

Shely's Pharmaceutical Industry

Shelys is wholly owned and operated by the Aspen group from South Africa. Shelys was the original Elys (Tanganyika), which was bought out by Sumaria holdings (where the SH in the name comes from). Aspen Pharma acquired Shelys in the year 2011. Today Shelys is the largest pharmaceutical manufacturer in the country with a facility, which is GMP certified. Out of the few manufacturers, Shelys has by far the largest market share of the locally produced products, close to 70%. Due to Aspen's company policy, the share of Shelys in supplies to MSD is practically zero. Though, recently, Shelys has started participating in the MSD tenders due to pressure from MSD. Although it has sufficient capacity, Shelys nonetheless faces difficulty in supplying the market consistently, especially during the months they are busy trying to fill the export orders. Even though, Shelys dominates the market, the high costs associated with having 20 plus expatriates and a substantial bureaucracy combined with their focus on the high margin products to the neglect of the private sector market, provides competitors with significant opportunities for market penetration.

Tanzania Pharmaceutical Industries Ltd

TPI is a company, majority owned by Mr. and Mrs. Madabida, with the Government of Tanzania holding a 40% stake. TPI has not been in operation now for over 7 years and has been facing difficulty in production and logistics due primarily to a lack of working capital. TPI generally concentrates most of its efforts during the year to filling MSD orders for their kits, which equate to almost 65-70 percent of the business they do. The balance of goods when produced, normally sporadically, are sold on to the open market. Prior to closing down the manufacturing operations they were the only manufacturers of ARVs and supplying to MSD over US$ 5.0 million a year. The ARV producing facility was GMP approved by TMDA.

Zenufa Laboratories Ltd.

Zenufa Laboratories Ltd. started in 2007 as a fully GMP facility and used to have a good hold on both the private and public markets. Catalyst Principle Partners, a private equity firm based in Kenya, in the year 2016, acquired the company. Since the acquisition, the company has been focusing more on building their brands, but has not been very effective in doing so. Their share of the MSD market has also declined following some product recalls a few years back. Recently, it has been learnt that Catalyst Principle Partners is in advanced stage discussions with a Company named Africure Pharmaceuticals for a potential take-over. The outcome of the same is awaited.

Prince Pharmaceuticals Ltd.

Prince Pharmaceuticals in the new entrant to local manufacturing market. GMP certified by TMDA, the company started their operations in the year 2015 and is producing some liquid formulations along with external products and disinfectants. Prince has a small market share but is growing well and creating a market for itself by way of adding new products to its product range every year.

Keko Pharmaceuticals Industries (1997) Ltd.

Keko Pharmaceuticals is party owned by Mrs. Mercy Marielle with the Government of Tanzania owning 40% stake in the company. Although, considered small scale, Keko has also modernized its production facility to semi GMP standards and does command a good hold in the supplies to MSD. Struggling with management and quality issues, Keko is still trying to find a strong foothold in the market.

Mansoor Daya Chemicals Ltd.

Mansoor Daya Chemicals Ltd. has been around for almost five decades and was the first ever, pharmaceutical manufacturing unit in the whole of East Africa. Manufacturing a wide range of products from cosmetics to balms to air fresheners to mosquito repellants and pharmaceuticals, Mansoor Daya markets most of the products through a limited number of distributors in to the private market. Primarily concentrating on liquid formulations he has a few brands, which have found a place in the pharmaceutical market.

Only four local manufacturers (one producing veterinary vaccines and three pharmaceutical manufacturing companies) currently meet GMP standards as laid down by TMDA. TMDA is attempting to assist and offer guidance to pharmaceutical manufacturers in upgrading the level of compliance to GMP guidelines.

New Pharmaceutical Manufacturing Projects in Pipeline:

There are at least five greenfield pharmaceutical manufacturing facilities under construction at the moment of preparation of this report, which are as follows:

Kairuki Pharmaceuticals: In the process of constructing a large and small volumes parenterals. The equipment is from China and will be received by the company in January 2020. The capacity of production will be 14.40 million bottles per annum.

Vista Pharmaceuticals: In the process of constructing a facility for oral and liquid general products. The construction is in advanced stage and the equipment will be received by them over the next six months.

Alpha Pharmaceuticals: In the process of constructing a facility for small and large volume parenterals. The equipment is from Rommelag, Europe and the production capacity will be 9.6 million bottles per annum.

Hester Biosciences Ltd.: In the process of constructing a facility for manufacturing of vaccines in collaboration with Clinton Health Access Initiative.

Biotech Laboratories Ltd.: In the process of constructing a facility for manufacturing of veterinary products.

Competitive Advantage

Amongst the main pharmaceutical manufacturers Taifa Pharmaceuticals has identified its main competitors to be Shelys Pharmaceuticals Ltd. and Zenufa Laboratories Ltd. Both these companies currently manufacture a sufficient range of basic generic products, with Shelys being the stronger of the two in terms of product range and market penetration.

Keko Pharmaceuticals, Mansoor Daya Chemicals and Prince Pharmaceuticals currently make up the balance of local manufacturers each with a limited product range.

To generalize, there will be competition in a certain popular range of products, but there is a significant range of products where local competition is non-existent, and the only competition is from highly priced imports which amount to almost 88% of the total market.

Taifa Pharmaceuticals aims to replace the imported products over the next decade by more than 30%.

The most crucial competitive advantage that Taifa Pharmaceuticals will have is the use of high efficiency and high yield, sophisticated equipment of latest technology that would not only significantly produce high quality medicines but would offer the advantages of cost-effectiveness and economies of scale, that other competitors do not have.

Going-to Market Strategy

With the whole emphasis in Tanzania now shifting to the local production of generic medicines, Taifa Pharmaceuticals aims to focussing on establishing a WHO cGMP compliant manufacturing facility that would position the Company firmly in the new market.

Taifa Pharmaceuticals' core objectives will be to produce a wide spectrum of pharmaceuticals, which are currently imported into the country. With the expertise and under the guidance of the Management team, a variety of new products and molecules will be introduced that are currently not being manufactured by any competitor in Tanzania.

The main focus would be to start with a combination of both the generic product range and the high margin OTC products and to place them in to both the public and private markets. Subsequently, the products would be backed up by marketing and branding activities.

The generic products would provide the necessary impetus to boost the sales from beginning of operations. These include beta-lactams and cephalosporin products also along with general products. In the beta-lactam range, Taifa Pharmaceuticals would be adding amoxicillin dispersible tablets, amoxicillin and clavulanic acid tablets and suspensions, which no other company manufactures in Tanzania. Taifa Pharmaceuticals would be the first company to manufacture Cephalosporin products not only in Tanzania but in entire East Africa.

In addition to the above, Taifa Pharmaceuticals will be producing Liquid injectables in the form of ampoules and vials as well as Dry Powder Injections of Beta-lactams and Cephalosporins, which will be the first for the whole of Africa.

Branding

Taifa Pharmaceuticals will be focussing on launching the branded generics along with various other Over the Counter (OTC) brands in to the market and promote vigorously through the team of medical and sales representatives. This would involve a number of marketing activities using both push and pull mechanisms involving CMEs, sampling, leave behind literatures and reminders, posters, brochures and point of sale displays.

The Company will also be developing and promoting the Brand “Taifa Pharmaceuticals“ as the best quality and most affordablely priced product company.

Marketing

The marketing effort separates into two segments: Over the Counter (OTC) products, and “Ethical“ or prescription medicines.

OTC products can be advertised both in print and AV (Audio-visual) media, and can be sold anywhere. Major outlets are the Duka la Dawa pharmacy shops and kiosks. Good quality products combined with effective advertising will enable Taifa Pharmaceuticals to build a good market share. Taifa Pharmaceuticals has the expertise and will establish a distribution network to reach wholesalers and sub-wholesalers as well as all the leading hospitals and dispensaries throughout the country. The trade offers and digital marketing will form a big part of the marketing activities for the OTC products.

For “Ethical“ products, by contrast, advertising is not permitted. Marketing is carried out by Medical Representatives who detail the product to doctors and hospitals, carrying out visits to explain the technical properties of the medication supported by promotional items. Starting initially with 5 or 6 Representatives, this will build eventually to a marketing force of approximately 20 Representatives.

Taifa Pharmaceuticals will be using a double-pronged marketing technique using the sales representatives as well to promote both the OTC as well as ethical products to the pharmacies and ADDOs directly. This will ensure that the Company’s products are available at each and every retail counter and will also provide the first hand information and feedback from the market with regards the customer's preferences and suggestions.

Taifa Pharmaceuticals envisages to have a full-fledged marketing department including, product managers and marketing managers to devise and implement robust marketing strategies.

Exports

Taifa Pharmaceuticals is committed to expand its activities beyond the geographical boundaries of Tanzania. With its neighbors like Rwanda, Burundi, Zambia and the eastern and southern regions of the D.R.C. being mainly landlocked, doors of opportunity are open for cost effective exports to these countries.

The neighboring countries of Kenya, Uganda, Mozambique and Malawi also present lucrative potential markets.

Since, Taifa Pharmaceuticals is aiming to get regulatory approvals from developed countries and stringent regulatory authories such as PIC/S, MHRA, SAHPRA, USFDA, etc. it would present a great opportunity to the Company to export to the developed countries where the price realizations would be much higher.

In the long run, Taifa Pharmaceuticals envisages to employ International Business Development Managers to develop export markets for the Company.

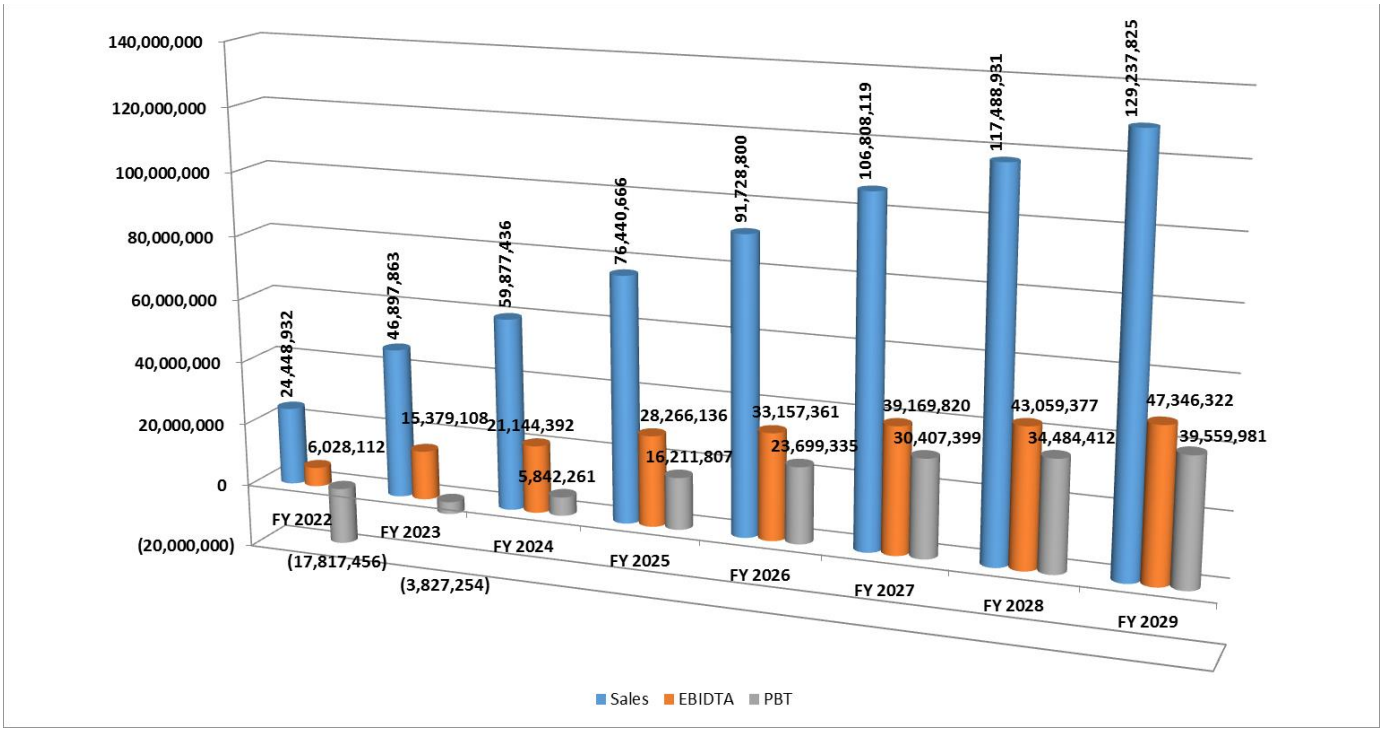
Sales

The selling prices considered for the feasibility study are the lowest from the wholesale counters for the selected products that Taifa Pharmaceuticals will be manufacturing. The individual costing for most of the products was worked out and considered for the sales projections. Where the prices for local manufacturing couldn”t be worked out the cost of importation was considered to be the cost of manufacturing. The detialed projected sales are attached which have been extrapolated to show an annual projection. For the first year of production i.e. year 2022, the projected sales is considered to be 50%, and the next year to be 100% of the projected sales. Thereafter, the sales growth has been assumed to be between 10-20% p.a.

In addition, sales from MSD and exports have been added with an assumed growth of 20% for the first few years followed by 10% in the later years.

The detailed projected sales and profitability figures are shown in the financial plan.

The projected sales and profitability trends have been shown in the following graph.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46,897,863
15,379,108
(3,827,254)
59,877,436
21,144,392
5,842,261
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39,169,820
30,407,399
117,488,931
43,059,377
34,484,412
129,237,825
47,346,322
39,559,981
FY 2022
FY 2023
FY 2024
FY 2025
FY 2026
FY 2027
FY 2028
FY 2029
Sales
EBIDTA
PBT

SIZE & ADVANTAGE

The project would be based in Dar-es-salaam, on a land admeasuring 20 acres at the outskirts of the city but having close proximity to required utilities such as electricity, water, etc.

The project involves establishment and construction of state-of-the-art manufacturing pharmaceutical manufacturing facilities consisting of multiple product lines compliant to Current Good Manufacturing Practices (cGMP) guidelines laid down by the World Health Organization (WHO). With this recognition, Taifa Pharmaceuticals anticipates gaining leverage over its competitors in the market with institutional clients and international donors. The facility will be equipped with machinery and equipment using the most modern and advanced technology in order to enhance the Company"s competitiveness in the local and export markets.

The main project components involved are as follows:

- Construction of a manufacturing facility for oral solids and liquid generic and OTC formulations including tablets, capsules, syrups, suspensions, dry syrups, creams and ointments, eye/ear/nasal drops, externals and dis-infectants
- Installation of a facility for manufacturing beta-lactam products as per WHO specifications as tablets capsules, dry syrups and dry powder injectables.
- Construction of a building to house the administration, accounts, sales, marketing, quality assurance and HR offices
- Construction of the warehousing facility for storage of raw materials, packaging materials and finished goods
- Construction of a state-of-the-art Quality Control laboratory for testing of all kind of materials as per WHO guidelines
- Construction of utility blocks to house the water treatment plant, the effluent treatment plant, the HVAC systems, the transformer and back up generators, the electrical panels, the laundry and the canteen for workers

- Installation of a facility for manufacturing Cephalosporin products in the form of capsules, dry syrups and dry powder injectables that have a great potential in the Tanzania market
- Installation of a facility for manufacturing small and large volume parenterals and liquid injectables and vials

The size of the facility will be admeasuring 30,000 m^2 (200m x 150m) 15000 m^2 (100m x 150m - I.V. fluids) and will consist of the following buildings :

- **General Block :** Three storied building measuring 4400 m^2 (55m x 80m) with manufacturing of solid and liquid dosages on the top floor, HVAC and other utilities on the mezzanine floor and primary and secondaty packaging on the ground floor.
- **Beta-lactam Block :** Two storied building measuring 1200 m^2 (30m x 40m) with manufacturing of solid dosages and dry powder syrups manufacturing and packaging on the ground floor and dry powder injectable manufacturing on the first floor.
- **Cephalosporin Block :** Two storied building measuring 1200 m^2 (30m x 40m) with manufacturing of solid dosages and dry powder syrups manufacturing and packaging on the ground floor and dry powder injectable manufacturing on the first floor.
- **Warehouse Block :** Two storied building measuring 1050 m^2 (35m x 30m) with warehousing facilities for raw materials on the ground floor and packaging materials on the first floor.
- **Liquid Injectable Block :** Single storied building measuring 1000 m^2 (33m x 30m) with liquid injectable manufacturing facilities.
- **Administration Block :** Double storied building measuring 1200 m^2 (20m x 60m) with administration, accounts, HR and marketing offices on the ground floor and Quality Control laboratories and Quality Assurance and Regulatory Affairs offices on the first floor.
- **Utilities Blocks :** There will be three other utility blocks for housing the transformer, generators and other electrical panels & fittings 800 m^2 (20m x 40m), water treatment plant, chillers & boiler 1200 m^2 (30m x 40m) and effluent treatment plant and scrap 900 m^2 (22m x 40m).
- **I. V. Fluid Block :** Single storied building measuring 15000 m^2 (100m x 50m) for small and large volume parenterals

Detailed drawings and layout of the facilities are attached.

Capacity Considerations

The data from Medical Stores Department for the annual demand forecasts for the years 2017-18, 2018-19, 2019-20 was obtained and analysed. The data for actual consumption of the products by Medical Stores Department was also obtained and analysed for the years 2017-18 and 2018-19. The data for importation of pharmaceutical products was obtained and analysed for the calendar years 2016, 2017, 2018 and 2019 (upto 30th October). Based on the data the demand for the various production lines were estimated and capacities were established. The final analysis of the data and the proposed capacities are produced in the subsequent tables.

Following is the summary of consumption of dosage forms for the country on the basis of the imports and MSD purchases. The detailed charts depicting the capacity considerations are attached.

'000s

Particulars	Tablets	Capsules	Syrups / Suspensions	IV Fluids (LTS)	IV Fluids (PCES)	Ampoules	Vials	DPIs	Creams / Ointments	Creams/ Ointments (KGS)	Externals / Dis-infectants	Eye / Ear / Nasal Drops
TOTAL CONSUMPTION 2019 (PRIVATE MARKET)	3,353,528	517,872	29,617	4,142	8,285	4,625	1,636	10,594	12,813	203	88	1,630
BETALACTAMS	173,654	304,258	7,037				1,260					
CEPHALOSPORINS	8,769	52,420	668					10,565				
BALANCE	3,171,105	161,195	21,912			4,625	376	30	12,813	203	88	1,630
TOTAL CONSUMPTION 2018-19 (MEDICAL STORES DEPARTMENT)	923,530	273,125	1,494	6,258	34,218	10,578	562	10,251	4,520	77	644	197
BETALACTAMS	13,877	221,770	400		20,948			5,201				
CEPHALOSPORINS		1,623						4,298				
BALANCE	909,653	49,731	1,094	6,258	13,269	10,578	562	752	4,520	77	644	197
EXISTING LOCAL PRODUCTION ESTIMATES 2018	8,208,000	250,000	31,260									
BETALACTAMS	800,000	1,524,000	9,000									
CEPHALOSPORINS												
TOTAL ANNUAL CONSUMPTION	4,080,758	210,926	23,007	10,400	21,554	15,204	938	782	17,333	280	732	1,827
BETALACTAMS	187,531	526,028	7,438				1,260	5,201				
CEPHALOSPORINS	8,769	54,043	668					14,862				
CAPACITIES @ 50%	2,040,379	102,209	14,758	5,095	10,777	7,602	467	391	8,666	140	366	914
CAPACITIES @ 50%	93,766	263,014	3,719					3,231				
CAPACITIES @ 150%	13,154	81,065	1,002					22,293				

Proposed capacities for the various production lines :

'000s

Proposed Manufacturing Capacities / Shift	Particulars	Tablets	Capsules	Syrups / Suspensions	IV Fluids (LTS)	IV Fluids (PCES)	Ampoules	Vials	DPIs	Creams / Ointments	Creams/ Ointments (KGS)	Externals / Dis-infectants	Eye / Ear / Nasal Drops
GENERAL BLOCK	ANNUAL	3,000,000	300,000	30,000									
	PER/DAY	8,000	1,000	100									
BETALACTAM ORAL / DPI	ANNUAL	150,000	600,000	6,000					15,000				
	PER/DAY	500	2,000	20					50				
CEPHALOSPORIN ORAL / DPI	ANNUAL		60,000	6,000					15,000				
	PER/DAY		200	20					50				
CREAMS / OINTMENTS / EXTERNALS / DIS-INFECTANTS	ANNUAL									18,000	300	1,200	
	PER/DAY									60	1	4	
EYE / EAR / NASAL DROPS	ANNUAL												3,000
	PER/DAY												10
IV-FLUIDS / ASEPTIC PLANT	ANNUAL				15,000	18,000	24,000	7,200					
(PHASE II)	PER/DAY				50	60	80	24					
TOTAL		3,150,000	960,000	42,000	15,000	18,000	24,000	7,200	30,000	18,000	300	1,200	3,000

A detailed list of all the machinery and equipment required for the proposed facilties along with the costs are attached*.*

Sourcing of Raw & Packaging Materials

The promoters having been a part of the pharmaceutical manufacturing industry, and currently enjoy good relations with several Raw material and Packaging material suppliers and have already identified sources as shown below.

Raw Material suppliers

India

- Aurobindo Laboratories
- Mehta Pharmaceuticals
- Aarti Drugs Limited
- Pharmchem Limited
- Swati Spentose Limited
- Cadila Pharmaceuticals
- Farmsons Limited

China

- Medif Limited
- Hebei Jiheng Pharmaceuticals Co.
- Zhejiang Pharmaceuticals

Europe

- Anendex Chemie
- Biesterfeld Ltd.
- FDA exports

Local

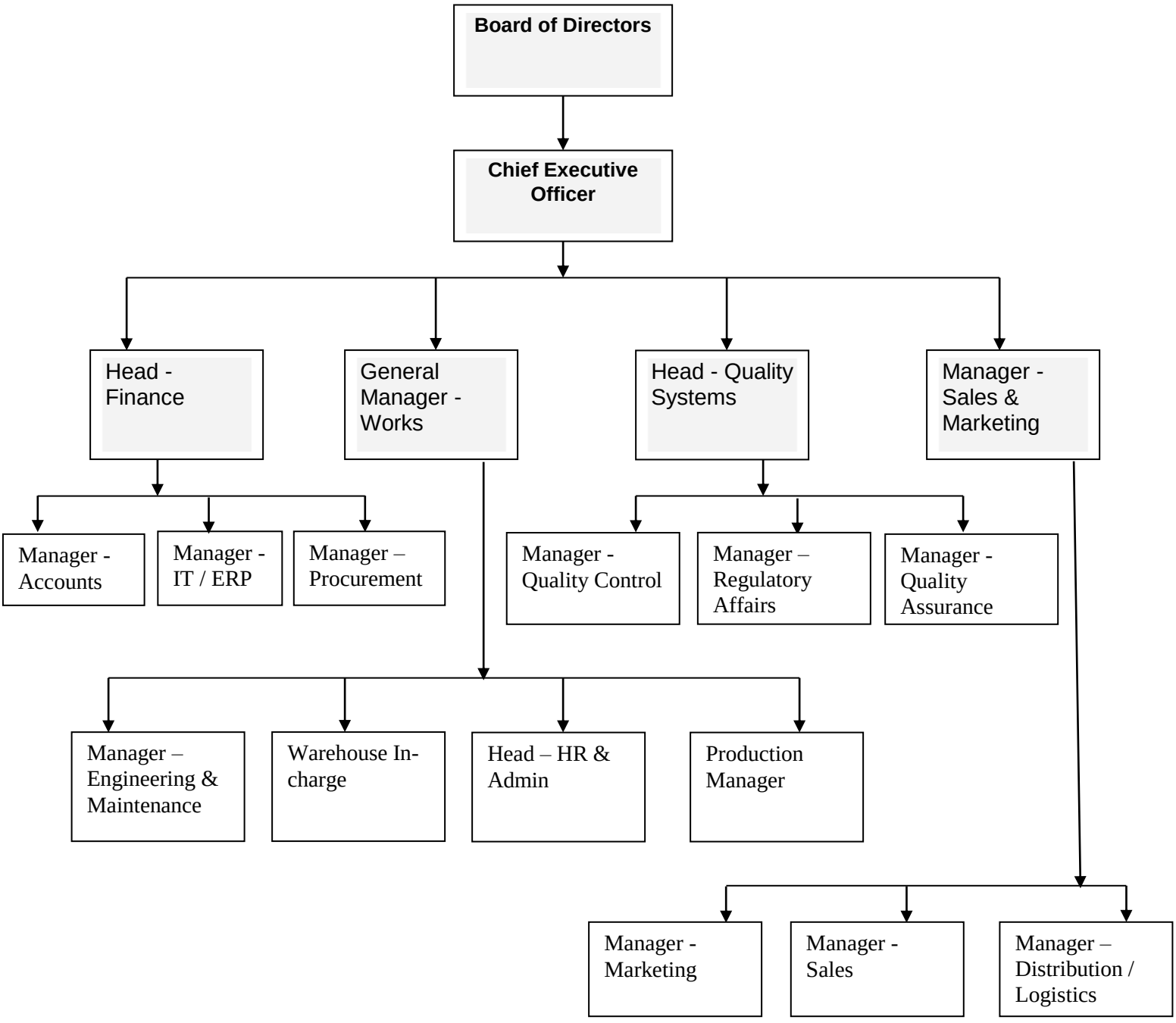
- Desbro Tanzania Ltd.
- Tata Chemicals Ltd.
- Tristar Chemicals Ltd.

Packaging Material Suppliers

- Jamaana Printers
- Twiga Paper
- Jiemel Industries
- Simba Plastics
- Tridea Cosmetics
- Chirag Printers Ltd. India
- Majan Printing UAE

Many of these suppliers have been transacting business with the promoters and they have already agreed to extend the same supply and credit terms to Taifa Pharmaceuticals.

Organisational Structure



Management Structure

There will be a Board of Directors for the overall governance of Taifa Pharmaceuticals. The Chairman of the Board of Directors is Mr. Rostam Azizi who will be contributing his business skills and experience of running successful enterprises in the local business environment.

Harvinder Singh Alag is the Chief Executive Officer of the company, contributing his direct experience of managing pharmaceutical manufacturing facilities in Tanzania.

Day-to-day operations will be the responsibility of the General Manager - Works with a management team under him responsible for factory and production management, quality systems management, maintenance and engineering management, logistics and warehouse management.

Management Team

Management of the pharmaceutical manufacturing facility will comprise of the following staff:

- **General Manager – Works:**
  A Qualified individual with over 20 years experience in a pharmaceutical manufacturing company and will have the following managers reporting to him.

- **Production Manager:**
  Qualified Analytical and Manufacturing Chemist certified by FDA, India with over 10 years of Production / Management experience

- **Warehouse In-charge:**
  A Qualified individual with over 10 years experience in warehouse and inventory management in pharmaceutical industry

- **Manager – Engineering & Maintenance:**
  A Qualified individual with over 10 years experience in engineering and maintenance in pharmaceutical industry

- **Manager – Human Resources & Admin:**
  An individual who has over 10 years of hands on experience in Tanzania with payroll, Human Resource management, accounts and administration

- **Head Quality Systems :**
  A Qualified individual with over 15 years experience in Quality assurance & Quality control in pharmaceutical Industry and will have the following managers reporting to him

- **Manager - Quality Assurance:**
  A Qualified individual with over than 10 years experience in Quality assurance in pharmaceutical Industry

- **Manager - Quality Control:**
  A Qualified individual with over 10 years experience in Quality control in pharmaceutical Industry

- **Manager - Regulatory Affairs:**
  A Qualified individual with over 10 years experience in managing Regulatory Affairs and dossier preparation in pharmaceutical Industry

- **Head – Finance:**
  Chartered Accountant, with over 10 years direct industrial and cost accounting experience and will have Manager - Accounts, Manager - Procurement and Manager - IT/ERP reporting to him.

The sales and marketing department will be managed by the respective teams led by the Manager - Marketing, Manager - Sales and Manager - Distribution / Logistics.

- **Marketing Manager:**
  Experienced marketing manager with over 10 years experience in formulation and implementation of marketing strategies, detailing stories, account management, technical presentations and a high level of overall marketing experience gained in particular with multinationals within Africa.

Additional Staff

There will be highly experienced technical staff including pharmacists, chemists, microbiologists, pharmaceutical technicians, laboratory technicians. Subsequently, we will recruit additional lower level support staff during the implementation period. For packaging operations, casual staff could be outsourced from service providers.

Detailed man-power requirement and tentative salary & wages expenses for the various departments are tabulated.

Manufacturing	Expats	Locals	Total
General Block			
Tablet section	1	36	37
Liquid section		24	24
Capsule section		16	16
Eye / Ear / Nasal Drops section		16	16
Creams & Ointment section		13	13
External / Dis-infectant section		11	11
Beta-lactam Block			
Tablet section		22	22
Dry Syrup section		17	17
Capsule section		20	20
DPI section		21	21
Cephalosporin Block			
Tablet section		22	22
Dry Syrup section		17	17
Capsule section		16	16
DPI section		21	21
Liquid Injectable Block		39	39
I. V. Fluid Block	1	35	36
Quality Control Block			
Quality Control	2	41	43
Quality Assurance	3	16	19
Regulatory Affairs	1	5	6
Maintenance			
General	2	14	16
Water Treatment		3	3
Effluent Treatment		3	3
Warehouse Block	1	15	16
HR Management		7	7
Total	**11**	**450**	**460**

Administration	Expats	Locals	Total
Senior Management	4		4
Accounts	1	4	5
Procurement	1	1	2
IT / ERP	1	2	3
Total	**7**	**7**	**14**

Sales & Marketing	Expats	Locals	Total
Marketing	1	25	26
Sales	1	26	27
Distribution / Logistics	1	26	27
Total	**3**	**77**	**80**

No. of Workers	Expats	Locals	Total
Total	**21**	**534**	**555**

FINANCE PLAN

Taifa Pharmaceuticals shall invest a total amount of US$ 101.58 million comprising of land and buildings, machinery and equipment, factory installations, motor vehicles, furniture and fittings, office equipment and initial working capital.

The summary of cost of investments is as follows:

Particulars	**In US$**
Land	7,000,000
Civil Works & Buildings	19,500,000
Machinery & Equipment	60,420,000
Furniture & Fixtures	1,440,000
Motor Vehicles	1,200,000
Office Equipment	160,000
Computers	80,000
Pre-Operative Expenses	3,457,286
Interest during Construction	5,120,000
Raw & Pkg. Materials for Regn. Batches	3,000,000
Software - ERP	200,000
Sub-Total	**101,577,286**

Means of Finance

Particulars		**(US$)**
Equity Share Capital	30%	30,473,186
Long-Term Loan	70%	71,104,100
Total		**101,577,286**
Disbursement		
Year 1	20%	20,315,457
Year 2	80%	81,261,829

The project will entail installment of the general and betalactam, cephalosporin, I.V. fluids and liquid injectable facilities starting from 2020. The year 2022 is when the facility would be commissioned for production. The shareholders are seeking to secure financing for up to 70% of the total investment requirements. Taifa Pharmaceuticals will be investing USD 30.47 million as shareholders' equity and will be seeking a debt financing of nearly USD 70.10 million as long-term loans and overdraft facility in order to complete the establishment of the proposed pharmaceutical manufacturing facility.

The financial information is projected as follows :

Particulars		Results
Discount Rate - p.a.		10%
Interest Loan - p.a.		6.00%
Repayment years	Years	8.00
Taxation		20%
Project IRR		10.79%
NPV 10% - USD		$ 3,508,661
Equity IRR		14.43%
ROI		3.45%
Payback (Years)		7.74
Discounted Payback (Years)		9.77

The projected balance sheets, income statements and cash flows are attached herewith in financial projections*.*

Income Statement

The projected income statement is presented below under the heading of key financials.

It should be noted that sales projections are realistically conservative, in that Taifa Pharmaceuticals has prepared a detailed list of products to be manufactured, priced these at a realistic level based on the company's current trading and market information, the first hand data collected from the private market, TMDA and MSD; and then for the purposes of the projections has reduced the average selling prices by 5% to reflect a possible increase in

competitive pressure in the market. While a reasonable precaution, this may be over conservative given that:

- As indicated under Section 2 (Pricing & Distribution) above, the Company"s sales prices including the assumed profit margins are competitive with imported products (which are the main price driver in the Tanzanian market)

- To the extent that the Company breaks into the MSD market, which currently offers domestic manufacturers a 15% price preference above the lowest imported cost, sales prices are more likely to increase in real terms than to reduce.
- The main domestic competitors, Shelys and Zenufa, have a heavy management overhead cost and is correspondingly unlikely to initiate a price war.

Profit after tax (PAT) ranges from a loss of US$ 17.8 million in the first year of operation (2022) to a profit of US$ 2.25 million in 5.8 years i.e. in 2024 (3rd year of operation). This indicates that the Company will start breaking even from the 3rd year of operation with a sales turnover of approx. $60 million.

Expenditure

Operating cost items include raw materials, salaries and wages (expatriate and local), fuel, power and water, advertising and sales promotions, general and administrative expenses etc. The details of these items are are shown in Schedules in the financial projections. For all practical purposes, the year 2022 has been considered as the first year of operation as there will be no sales during the years 2020 and 2021.

Depreciation

Depreciation charges are calculated based on the following depreciation rates:

- Land
- Buildings 5% straight line
- Machinery and equipment 25%
- Furniture and fittings 12.5%
- Motor vehicles 25%
- Office equipment 12.5%

- Computers 37.5%
- Pre-operational expenses 25%
- Interest during construction 25%
- Raw and packaging materials for registration batches 25%
- Software - ERP 37.5 %

Taxation :

Corporate tax on taxable income is 30% per annum. The Corporate tax is not payable until the fifth year of operation, as the project will be enjoying a carry forward on initial losses and a capital allowance of 25% per annum on plant and machinery. Moreover, for the first 5 years after the commencement of production the corporate tax is calculated at 20%.

Key Financials

The projected income statement for the first 10 years of operation of the project is as shown below:

ITEM / YEAR	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
Revenue	0	0	24,448,932	46,897,863	59,877,436	76,440,666	91,728,800	106,808,119	117,488,931	129,237,825
Cost of goods sold	(468,946)	(828,746)	(14,981,209)	(27,391,106)	(34,378,887)	(43,434,179)	(53,418,919)	(62,077,944)	(68,432,543)	(75,444,623)
Gross profit	**(468,946)**	**(828,746)**	**9,467,723**	**19,506,757**	**25,498,549**	**33,006,487**	**38,309,881**	**44,730,175**	**49,056,388**	**53,793,202**
Operating expenses	(438,668)	(874,118)	(3,439,612)	(4,127,648)	(4,354,158)	(4,740,350)	(5,152,520)	(5,560,355)	(5,997,012)	(6,446,880)
EBIDTA	**(907,614)**	**(1,702,864)**	**6,028,112**	**15,379,108**	**21,144,392**	**28,266,136**	**33,157,361**	**39,169,820**	**43,059,377**	**47,346,322**
Depreciation	0	0	(19,579,322)	(14,940,116)	(11,462,509)	(8,854,645)	(6,898,278)	(6,842,610)	(7,295,091)	(7,146,404)
Interest	0	0	(4,266,246)	(4,266,246)	(3,839,621)	(3,199,685)	(2,559,748)	(1,919,811)	(1,279,874)	(639,937)
Profit before tax	**(907,614)**	**(1,702,864)**	**(17,817,456)**	**(3,827,254)**	**5,842,261**	**16,211,807**	**23,699,335**	**30,407,399**	**34,484,412**	**39,559,981**
Tax	0	0	0	0	0	0	(4,739,867)	(6,081,480)	(6,896,882)	(7,911,996)
Profit after tax	**(907,614)**	**(1,702,864)**	**(17,817,456)**	**(3,827,254)**	**5,842,261**	**16,211,807**	**18,959,468**	**24,325,920**	**27,587,529**	**31,647,985**

Assumptions

The assumptions for these projections are as follows:

- All prices and costs used in this project analysis are in constant terms.
- Revenue has been projected takng conservative approach.

- Expenses and cost have been considered based on incentives to the project.
- The projects life span for the purpose of illustration is assumed to be 10 years starting from 2020
- Tax Rate has been considered at 20%.
- Deprecaition has been considered on WDV basis and for Building on SLM basis
- Interest rate has been considered at 6% p.a.
- The Loan repayment schedule has been considered as 7 years with initial moratorium period.
- Capital Investment shall be made in initial two years.
- Debt and Equity ratio will be maintain at 7:3.
- Funds will be sourced locally through Promoters and Banks.
- The commencement of commercial operation has been estiamted to start in the year 2022.
- All milestones are performed in accordance with the schedule
- All transactions are closed yearly with no carry-over to subsequent years

Key Milestones

The establishment of the new facilities is expected to take between eighteen to twenty-four months from the date of project approval and disbursement of funds to the commissioning. The first production for sales would take about a year from the date of commissioning. The following is a high level schedule of some significant milestones for this project:

Compilation of Feasibility Study - December, 2019
Approval of Project Report - January, 2020
Selection of service providers for site plans / execution – April 2020
Receipt and Approvals of conceptual designs/plans - June 2020
Construction of new buildings – August 2020 onwards
Receipt and installation of equipment – between November 2020 to June 2021
TMDA approval for manufacturing - between July 2021 to Aug 2021
Ordering raw materials for registration batches - April 2021 onwards
Manufacturing of registration batches – from August 2021 to December 2021
Submission of dossiers to TMDA – between February 2022 to June 2022
Market authorizations from TMDA - from April 2022 onwards
Production of approved products - May 2022

Upon approval of finance for this project, the assigned project team will create a detailed schedule to include all tasks and deliverables.

ANNEXE I

Position paper of FEAPM on EA Pharma Policy Incentive Package

FEAPM Position Paper

The EA Pharma Policy Incentive Package

Proposed Policy for the Growth of the East African Pharmaceutical Manufacturing Sector

Background

This Policy Incentive Package is based on the successful experience of other countries in supporting local pharmaceutical manufacturing. Countries such as Ghana, Bangladesh and India have managed to develop a very healthy local industry which has reduced the reliance on imports and the prevalence of sub-standard and counterfeit medicines in the market.

Research clearly indicates that well balanced and flexible policy measures can lower prices, reduce donor and import dependencies, eliminate sub-standard and counterfeit medicines as well as tackle stock-outs and expirations in the supply chain.

Policy Measures

Measures applied in successful pharmaceutical policy packages in other LDCs and DCc include: preferential price margins for domestic manufacturers, price ceilings for selected medicines, tax and import duty exemptions, import restrictions and bans, marketing/advertisement limitations for foreign based companies, utilization of TRIPS Flexibilities through approximation of national law, public investment, facilitation of technology transfer, reverse engineering and other R&D activities.

In addition, the EAC Common Market Protocol, in Art. 35, provides for a non-discrimination clause: The Partner States shall not discriminate against suppliers, products or services originating from other Partner States, for purposes of achieving the benefits of free competition in the field of public procurement. Full implementation can improve the competitiveness and economies of scale of the local industry by enabling access to a sizeable regional market.

Ghana's Policy Impact

In 20 years since the introduction of local pharma oriented policies, many positive effects have been achieved in Ghana:

- Increase of local companies from **9 to 39**
- Increase in employment from **150 to 6,500**
- Reduction of sub-standard and counterfeit medicines in the market from **40% to 3%**
- Improved trade balance:
  - medicine imports dropped from **90% to 70%**
  - medicine exports **increased**
- Local production of Active Pharmaceutical Ingredients (APIs)

Key Features of the EA Pharma Policy Incentive Package

EAC Common Market Protocol
Uniform regional implementation of the non-discrimination clause in public procurement of medicines according to Art. 35 of the EAC CMP

Price Preference
A preferencial margin of 20% for all locally produced medicines and medical devices in national tenders

Tax Incentives
No duties on imports of raw and packing material, pharmaceutical manufacturing related equipment as well as spare parts for this equipment

Import Classification
Classification of medicines into those allowed for import with no tax, those allowed but taxed and those banned from import because they can be manufactured by more than one local company in the right quality and quantity required and at a fair price.

Bangladesh's Policy Impact

- Prices decreased by **more than 50%** in real terms
- Local production of essential medicines increased from **30% to 80%**
- Substandard drugs fell from **36% to 9%**
- Import savings of USD 600 million
- Local API production
- Sector employs over **100,000 people**

India's Policy Impact

- India is among the top 20 pharmaceutical exporting countries
- Exports have grown at around **19% p.a.** and Indian medicines are exported to around **200 countries**
- The industry currently employs about **450,000 people**
- Creation of a rich talent pool of pharmaceutical researchers, scientists and project managers

Conclusion

Success stories like these can serve as best practice examples to support the development of a sustainable local pharmaceutical manufacturing industry in less developed economies. In addition, WTO trade agreements and the WTO TRIPS agreement are specifically designed to allow less developed countries to support upcoming industries through these kinds of policy measures, especially with regard to public health interests and the development of infant industries.

Through the adoption of the East African Community Regional Pharmaceutical Manufacturing Plan of Action (RPMPOA) and the EAC TRIPS the EAC and her Partner States have made progress in promoting local pharmaceutical production in the region.

These achievements, the lessons learnt from various country success stories and favourable international trade-related agreements, highly justify the introduction and enforcement of the EAC Pharma Policy Incentive Package. The EAC can significantly strengthen a sustainable and competitive local pharmaceutical industry in the region through regional policy measures regarding procurement, taxation and import of medicines. These measures must be uniform for the entire region and adjusted to changing context factors as required.

FEAPM's Position 2016

- Full implementation and enforcement of Art. 35, EAC Common Market Protocol (non-discrimination clause in public procurement);
- Uniform price preference of 20% for local manufacturers registered in the EAC;
- Zero taxation of all raw materials (incl. packaging) and pharmaceutical manufacturing related equipment (incl. respective spare parts) acquired by local manufacturers registered in the EAC;
- Import classification for finished pharmaceutical products that can be produced locally, based on regional capacity and quality audits of local manufacturers.

ANNEXE II

Top products imported by the private market operators for various therapeutic segments between January - October 2019 are enlisted in the following tables.

Analgesics / Anti-pyretics / Pain-killers	**Value ($)**
Aspirin + Caffiene (Mifupen)	314,340
Aspirin 75 mg (Loprin)	135,924
Diclofenac 100 mg SR	100,875
Diclofenac tabs	1,367,046
Ibuprofen sp	235,519
Ibuprofen tabs	635,589
Ketoprofen tabs	321,000
Meloxicam tabs	522,611
Paracetamol + Caffiene (Panadol Extra)	143,392
Paracetamol + Caffiene + Aspirin (Action)	4,012,216
Paracetamol + Diclofenac (Vivian Plus)	460,776
Paracetamol + Ibuprofen tabs	131,242
Paracetamol sp	770,329
Paracetamol tabs	3,977,711
Piroxicam	281,612
Tramadol tabs	372,445
Total	**13,782,627**

Anti-Malarials	**Value ($)**
Artemether + Lumefantrine DS (ARH-L)	168,211
Artemether + Lumefantrine tabs	4,999,262
Artesunate + Mefloquine	127,248
Dihydroartemisinin + Piperaquine	828,363
Pyrimethamine + Sulafmethopyrazine (Laefin)	574,886
Pyrimethamine + Sulfadoxine (Orodar)	351,842
Quinine Sulfate tabs	115,400
Total	**7,165,212**

Antibiotics / Anti-bacterials	Value ($)
Azithromycin caps	1,034,977
Azithromycin susp	313,242
Chloramphenicol caps	126,560
Chloramphenicol Susp	138,032
Ciprofloxacin tabs	1,967,904
Clarithromycin tabs	232,342
Doxycycline caps	538,992
Erythromycin sp	680,618
Erythromycin tabs	887,794
Norfloxacin tabs	278,074
Sulfamethoxazole + trimethoprim susp	537,347
Sulfamethoxazole + trimethoprim tabs	342,749
Total	**7,078,631**

Anti-fungals	Value ($)
Fluconazole Inj	291,051
Fluconazole tabs	770,663
Griseofulvin	537,295
Nystatin ovules	65,476
Nystatin Susp	188,592
Ornidazole tabs	179,087
Terbinafine tabs	658,312
Total	**2,690,476**

Anti-protozals & Anthelmentics	Value ($)
Albendazole Susp (Womiban)	253,840
Albendazole Suspension	718,799
Albendazole tablets	436,104
Ciprofloxacin + Tinidazole	165,203
Clarithromycin + Lansoprazole + Tinidazole (Heligo Kit)	483,051
Levamisole susp	128,254
Levamisole tabs	154,145
Mebendazole susp	98,753
Mebendazole tabs	113,772
Metronidazole Susp	137,173
Metronidazole tabs	871,244
Norfloxacin + Tinidazole	91,725
Secnidazole tabs	109,840
Total	**3,761,903**

Anti-Hypertensives / Anti-cholesterols	Value ($)
Amlodepine + valsartan tablets (Exforge)	178,350
Amlodepine tablets	1,004,750
Atorvastatin tabs	312,325
Bisoprolol 10 tabs	98,775
Bisoprolol 5 tabs	129,254
Candesartan	191,185
Candesartan + Hydrochlorthiazide	145,171
Captopril 25 mg	112,168
Carvedilol	259,002
Clopidogrel tabs	208,216
Febuxostat tabs	183,967
Felodipine (Plendil)	100,228
Irbesartan + Hydrochlorthiazide	259,447
Irbesartan tabs	134,811
Losartan + Hydrochlorthiazide tabs	960,894
Losartan tabs	173,989
Methyldopa tabs	113,645
Nefidipine tabs	126,557
Rosuvastatin	384,269
Telmisartan	342,882
Telmisartan + Hydrochlorthiazide	418,456
Total	**5,838,341**

Antacids / Anti-Ulcerates	Value($)
Aluminium + Magnesium susp (Magnomint)	51,350
Aluminium + Magnesium tablets (Magnomint)	21,384
Esomeprazole	568,184
Lactulose susp	91,910
Lansoprazole 30 caps	81,844
Magnesium + Aluminium + Simethicone (Beta cool tabs)	283,625
Magnesium + Aluminium + Simethicone (Relcer gel)	470,488
Magnesium Hydrochloride BP + Aluminium Hydroxide wet gel equivalent to dried Aluminium Hydroxide gel BP + Simethicone USP (Altapham)	26,802
Omeprazole caps	343,339
Oxethazaine BP + Dried Aluminium Hydroxide USP + Magnesium Hdrochloride USP (Mucogel)	91,125
Pantoprazole caps	511,461
Pantoprazole inj	235,769
Rabeprazole caps	211,733
Total	**2,989,014**

Anti-Spasmodics / Muscle Relaxants	Value ($)
Gripe water Baby	451,371
Hyoscine Butyl Bromide tabs	338,158
Mefenamic Acid	126,639
Mefenamic Acid + Dicyclomine	22,584
Paracetamol + Chlorzoxazone	79,740
Paracetamol + Chlorzoxazone + Diclofenac (Flamar MX)	208,250
Total	**1,226,742**

Anti-Diabetics	Value ($)
Glibenclamide	63,376
Glibenclamide + Metformin	136,813
Glimepiride	119,115
Glimepiride + Metformin	173,380
Metformin + Glibenclamide	74,303
Metformin and sulphonylureas ILET	104,115
Metformin tabs	228,338
Sitagliptin	104,524
Vidagliptin	118,840
Vidagliptin + Metformin	144,378
Total	**1,267,182**

Anti-allergics / Anti-Asthamatics	Value ($)
Betahistine	121,130
Cetrizine sp	328,793
Cetrizine tabs	344,527
Chlorpheniramine tabs	78,130
Desloratadine sp	33,666
Desloratadine tabs	164,298
Fexofenadine	25,806
Loratadine sp	23,240
Loratadine tabs	160,574
Montelukast tabs	284,828
Prednisolone tabs	328,067
Promethazine	107,934
Triamcinolone inj	260,305
Total	**2,261,298**

Cough / Cold Preparations	Value ($)
Carbocysteine (Rhinathiol)	70,901
Cough Syrup Herbal (Chestcof)	784,180
Dextromethorphan + Triprolidine sp (Ascoril D)	90,780
Dextromethorphan caps (Toff Plus)	346,500
Diphenhydramine sp (Benilyn)	299,017
Guaifenesin sp (Delased)	29,050
Paracetamol + Pseudoephedrine + Chlorpheniramine (Coldcaps)	36,480
Paracetamol + pseudoephedrine + Dextromethorphan (Flucor day)	143,406
Triproline + Pseudoephedrine Hydrochloride+Codeine Phosphate+Guaiphenesin (Actifed sp)	39,083
Total	**1,839,397**

Anti-Diaorhials / Anti-emetics	Value ($)
Bisacodyl tabs	54,537
Domperidone tabs	69,067
Loperamide tabs	91,704
Metoclopramide sp	15,671
Metoclopramide tabs	74,678
Ondensetron tabs	58,544
Total	**364,201**

I.V. Fluids	Value ($)
Ringer Lactate	824,942
Sodium Chloride IV	707,347
Glucose IV	306,408
Sodium Chloride + Dextrose	224,658
Metronidazole Inj 100 ml	277,173
Sterilised WFI	161,453
Total	**2,501,981**

Eye/Ear /Nasal Drops	Value ($)
Chloramphenicol eye drops	79,442
Ciprofloxacin eye drops	118,200
Ephedrine nasal drops	84,624
Lignocaine +Chloramphenicol +Beclomethasone Dipropiote +Clotrimazole (Candibiotic Ear drops)	107,530
Lignocaine +Chloramphenicol +Beclomethasone Dipropiote +Clotrimazole (Candibiotic Ear drops)	107,530
Timolol + Combinations	213,690
Xylometazolin nasal drops	37,800
Total	**748,816**

Multi-vitamins / Dietary Supplements	Value ($)
Calcium + Cholecalciferol	63,270
Calcium-Sandoz + Vitamin C	50,274
Cyanocobalamine + Pyridoxine + Thiamine (Norubine Forte)	98,250
Ferrous fumerate tonics	195,357
Iron tonic (Ferrotone Liquid)	82,123
Magnesium Sulphate IH + Sodium chloride IH + Ascorbic acid IH + DLMathionine IH + Potassium Chloride IH + Niacin IH + Vitamin A + Cholecalciferol IH + LLysine Hydrochloride IH + Copper Sulphate pentahydride IH + Zinc sulphate monohydrate IH + Pyridoxine Hydrochloride (Vitamin B6) IH + Riboflavin sodium phosphate IH + Tocopherol acetate IH + Nicotimide + Dexapanthenol IH (Nat B)	496,738
Multivitamin (Intaplex + Globin-Z)	157,223
Multivitamin supplements caps	174,020
Multivitamin supplements Syrups	51,100
Pyridoxine Hydrochloride BP + Ascorbic Acid BP + Thiamine Hydrochloride BP + Folic acid BP + Cyanocobalamine BP + Riboflavine Phosphate BP (Noton)	306,320
Vitamin A + Cholecalciferol (D3) + Thiamine + Riboflavin + Pyridoxine + Ascorbic acid + Tocopheryl acetate + Nicotinamide + Calcium gluconate + Calcium glubionate + Ferrous gluconate (Vitacap)	99,270
Total	**1,773,945**

Topical Preparations	Value ($)
Acyclovir Cream	37,002
Beclomethasone + Clotrimazole + Gentamycin cream	188,489
Benzyl Peroxide 2.5 gel	28,466
Benzyl Peroxide 5 gel	32,388
Betamethasone + clotrimazole + gentamycin cream	1,314,705
Betamethasone + Dexchlorpheniramine (Celestamine)	154,200
Betamethasone cream (B-mycin)	319,942
Clobetasol + antibiotics	43,749
Clobetasol + Gentamycin + Miconazole	715,000
Clotrimazole + Betamethasone	83,505
Clotrimazole cream / ovules	621,606
Diclofenac + Methyl Salicylate + Eucalyptus Oil +Mephenesin +Capsaicin	99,455
Diclofenac cream	160,134
Diclofenac cream	160,134
Ketoprofen cream	284,331
Methylsalicylate combinations (Volini + others)	369,082
Miconozole cream	397,362
Mometasone cream	147,600
Mupirocin ointment	177,165
Silver Sulfadiazine + Chlorhexidine cream	76,900
Tetracycline Opthalmic	90,588
Total	**5,501,803**

Sprays	Value($)
Mometasone spray	101,048
Salbutamol and Beclometasone Inhaler	37,200
Salbutamol inhaler	370,850
Salmeterol + Fluticasone Inhaler	98,021
Total	**607,119**

Grand Total	**65,281,455**

Top Beta-lactam products imported between January-October 2019 are as follows:

Capsules	**Value ($)**
Amoxycillin + Flucloxacillin caps	545,191
Amoxycillin 250mg caps	2,004,942
Ampicillin + Cloxacillin caps	2,376,788
Ampicillin 250 mg caps	571,989
Total	**5,498,910**

Tablets	**Value ($)**
Amoxycillin + Clavulinic acid tabs	1,725,532
Amoxycillin 250 mg DT	202,551
Phenoxymethyl Penicillin tabs	1,407,551
Total	**3,335,634**

Dry Powder Injection	**Value ($)**
Ampicillin + Cloxacillin inj	218,700
Total	**218,700**

Dry Syrups	**Value ($)**
Amoxycillin + Clavulinic acid susp	936,600
Amoxycillin + Flucloxacillin susp	132,000
Amoxycillin 125 mg DS	712,588
Ampicillin + Cloxacillin DS	1,405,808
Ampicillin 125 mg DS	83,631
Total	**3,270,627**

Grand Total	**12,323,872**

Top Cephalosporin products imported between January-October 2019 are as follows:

Capsules	**Value ($)**
Cefelexin caps	1,278,934
Total	**1,278,934**

Tablets	**Value ($)**
Cefuroxime Axetil tabs	163,389
Cefixime 200 tabs	129,976
Cefadroxil tabs	125,878
Cefpodoxime tabs	119,991
Cefixime 400 tabs	43,387
Total	**582,621**

Dry Powder Injections	**Value ($)**
Ceftriaxone inj	1,670,593
Meropenem Inj	136,859
Ceftriaxone + Sulbactam inj	97,951
Cefuroxime inj	38,004
Total	**1,943,407**

Dry Syrups	**Value ($)**
Cefalexin sp	359,579
Cefixime DS	149,071
Cefpodoxime sp	57,694
Cefaclor sp	23,998
Total	**590,342**

Grand Total	**4,395,304**

ANNEXE III

Products procured by Medical Stores Department classified under various dosage forms for the year 2017-18 are as follows showing both the number of units and the total value in US Dollars.

TABLETS:

Sr. No.	Item Description	UOM	Actual Consumption 2017-2018	Tablets	MSD Prices ($)	Value ($)
1	PARACETAMOL TABS 500 MG	1000 TABLETS	222,590	222,589,744	0.00495	1,101,819.23
2	CO-TRIMOXAZOLE TABS 400 MG/80 MG	1000 TABLETS	176,553	176,552,649	0.0098	1,730,215.96
3	METRONIDAZOLE TABS 200 MG	1000 TABLETS	115,167	115,166,791	0.0057	656,450.71
4	FERROUS SULPHATE + FOLIC ACID TABS 200+0.25 MG	1000 TABLETS	113,697	113,696,529	0.0083	943,681.19
5	AMOXICILLIN DISPERSIBLE KID TABLETS 125MG	100 TABLETS	714,397	71,439,669	0.0127	907,283.79
6	ERYTHROMYCIN TABS 250 MG	1000 TABLETS	56,687	56,686,862	0.023	1,303,797.82
7	CHLORPHENIRAMINE TABS 4 MG	1000 TABLETS	49,283	49,283,349	0.0023	113,351.70
8	MEBENDAZOLE TABS 100 MG, CHEWABLE	1000 TABLETS	46,373	46,373,201	0.00598	277,311.74
9	ACETYLSALICYLIC ACID (ASPIRIN) TABS 300MG	1000 TABLETS	42,499	42,498,959	0.003	127,496.88
10	FOLIC ACID TABS 5 MG	1000 TABLETS	42,327	42,327,445	0.003	126,982.33
11	VITAMIN B COMPLEX TABS	1000 TABLETS	31,224	31,223,990	0.0033	103,039.17
12	MAGNESIUM TRISILICATE BPC COMPOUND TABS	1000 TABLETS	30,641	30,640,772	0.0062	189,972.79
13	PHENOXYMETHYL PENICILLIN TABS 250 MG	1000 TABLETS	26,660	26,660,064	0.012	319,920.76
14	AMINOPHYLLINE TABS 100 MG	1000 TABLETS	26,384	26,383,504	0.005087	134,212.88
15	PHENOBARBITAL TABS 30 MG	1000 TABLETS	24,641	24,641,087	0.0046	113,349.00
16	PHENOBARBITAL TABS 100 MG	1000 TABLETS	24,409	24,409,367	0.0144	351,494.89
17	DICLOFENAC TABS 50 MG	100 TABLETS	237,883	23,788,251	0.003	71,364.75
18	SALBUTAMOL TABS 4 MG	1000 TABLETS	19,803	19,802,856	0.00304	60,200.68
19	PREDNISOLONE TABS 5 MG	1000 TABLETS	18,548	18,547,855	0.007	129,834.98
20	CIPROFLOXACIN TABS 500MG	100 TABLETS	162,114	16,211,441	0.0237	384,211.15

Sr. No.	Item Description	UOM	Actual Consumption 2017-2018	Tablets	MSD Prices ($)	Value ($)
21	BENDROFLUAZIDE TABS 5 MG	1000 TABLETS	14,798	14,797,927	0.0059	87,307.77
22	FRUSEMIDE TABS 40 MG	1000 TABLETS	14,783	14,782,583	0.0059	87,217.24
23	PROMETHAZINE TABS 25 MG	1000 TABLETS	13,949	13,948,852	0.00322	44,915.30
24	PHENYTOIN TABS 100 MG	1000 TABLETS	13,454	13,454,341	0.0079	106,289.29
25	ASCORBIC ACID TABS 100 MG	1000 TABLETS	12,433	12,433,180	0.0057	70,869.12
26	SULPHADOXINE+PYRIMETHAMINE 500MG/25MG	100 TABLETS	113,210	11,321,007	0.00417	47,208.60
27	HYOSCINE-N-BUTYLBROMIDE TABS 10 MG	500 TABLETS	21,653	10,826,517	0.04	433,060.70
28	NITROFURANTOIN TABS 100 MG	1000 TABLETS	10,131	10,130,816	0.00395	40,016.72
29	NIFEDIPINE RETARD TABS 20 MG	100 TABLETS	96,034	9,603,438	0.0043	41,294.78
30	METFORMIN 500MG TABLETS	100 TABLETS	88,028	8,802,786	0.0059	51,936.44
31	CHLORPROMAZINE TABS 100 MG	500 TABLETS	15,401	7,700,448	0.00978	75,310.38
32	CAPTOPRIL 25 MG TABLETS	100 TABLETS	75,954	7,595,408	0.0187	142,034.12
33	DIAZEPAM TABS 5 MG	500 TABLETS	15,106	7,552,856	0.0048	36,253.71
34	GRISEOFULVIN TABS 500 MG	1000 TABLETS	7,474	7,473,934	0.05049	377,358.91
35	METHYLDOPA TABS 250 MG	500 TABLETS	14,162	7,081,240	0.0309	218,810.31
36	EPHEDRINE TABS 30 MG	1000 TABLETS	6,815	6,815,017	0.00784	53,429.73
37	CARBAMAZEPINE TABS 200 MG	500 TABLETS	13,281	6,640,455	0.0163	108,239.42
38	LOSARTAN 50MG TABS	100 TABLETS	64,011	6,401,064	0.012	76,812.76
39	ALBENDAZOLE TABS 200MG, CHEWABLE	100 TABLETS	63,433	6,343,335	0.0385	244,218.40
40	GLIBENCLAMIDE 5MG TABLETS	100 TABLETS	62,000	6,200,033	0.00432	26,784.14
41	ZINC SULPHATE 20MG TABS	100 TABLETS	54,593	5,459,338	0.02386	130,259.80
42	CETRIZINE TABS 10 MG	100 TABLETS	53,212	5,321,154	0.0044	23,413.08
43	NEUROBION	100 TABLETS	50,135	5,013,458		-
44	HALOPERIDOL TABS 1.5 MG	250 TABLETS	18,997	4,749,340	0.027536	130,777.83
45	QUININE SULPHATE TABS 300MG	500 TABLETS	9,001	4,500,347	0.03942	177,403.70

Sr. No.	Item Description	UOM	Actual Consumption 2017-2018	Tablets	MSD Prices ($)	Value ($)
46	FLUCONAZOLE 150MG TABS	100 TABLETS	44,239	4,423,949	0.043	190,229.79
47	AMITRYPTILINE TABS 25 MG	500 TABLETS	8,778	4,389,108	0.011	48,280.19
48	PROPRANOLOL TABS 40 MG	500 TABLETS	8,516	4,257,868	0.0078	33,211.37
49	CHLORPROMAZINE TABS 25 MG	500 TABLETS	7,450	3,725,100	0.00337	12,553.59
50	TINIDAZOLE 500MG TABS	100 TABLETS	33,494	3,349,365	0.0122	40,862.25
51	QUININE TABS 300 MG	1000 TABLETS	3,341	3,340,575	0.03942	131,685.46
52	ATENOLOL 50MG TABLTES	28 TABLETS	107,561	3,011,720	0.00571	17,196.92
53	ISOSORBIDE DINITRATE 10MG TABS	100 TABLETS	26,386	2,638,590	0.01439	37,969.31
54	CHLORPROPAMIDE TABS 250 MG	100 TABLETS	18,596	1,859,589	0.0212	39,423.29
55	DIGOXIN TABS 0.25 MG	500 TABLETS	3,508	1,753,908	0.01606	28,167.76
56	BISACODYL TABS 5 MG	200 TABLETS	8,200	1,639,976	0.02367	38,818.23
57	ALLOPURINOL TABS 100 MG	100 TABLETS	16,133	1,613,298	0.04545	73,324.38
58	CALMAG + ZINC	30 TABLETS	50,135	1,504,037		-
59	HYDRALAZINE TABS 25 MG	100 TABLETS	11,605	1,160,498	0.05757	66,809.85
60	BENZHEXOL(ARTANE) TABS 5MG	100 TABLETS	11,079	1,107,934	0.01	11,079.34
61	SIMVASTATIN 20MG TABS	100 TABLETS	10,501	1,050,053	0.01477	15,509.29
62	LOPERAMIDE 2MG	100 TABLETS	8,673	867,283	0.01856	16,096.76
63	KETOCONAZOLE TABS 200 MG	100 TABLETS	8,000	800,000	0.01894	15,152.00
	TOTAL			**1,436,366,107**		**12,793,584**
	Beta-Lactam			**98,099,732**		

CAPSULES:

Sr. No.	Item Description	UOM	Actual Consumption 2017-2018	Capsules	MSD Prices ($)	Value ($)
1	AMOXICILLIN CAPSULESULES 250MG	1000 CAPSULE	172,568	172,568,488	0.00961	1,658,383.17
2	DOXYCYCLINE CAPSULES 100 MG	1000 CAPSULES	36,777	36,777,304	0.0103	378,806.23
3	AMPICILLIN 250mg + CLOXACILIN 250 mg capsules	500 CP	54,670	27,334,812	0.0235	642,368.08
4	CHLORAMPHENICOL CAPSULES 250 MG	1000 CAPSULES	16,409	16,409,327	0.02373	389,393.33
5	OMEPRAZOLE TABLETS 20MG	100 TABLETS	89,566	8,956,603	0.0085	76,131.13
6	TRAMADOL 50MG CAPSULES	100 CAPSULES	58,972	5,897,153	0.009	53,074.38
7	VITAMIN A CAPSULES 200,000 IU	100 CAPSULES	15,079	1,507,900	0.05038	75,968.00
8	AMOXICILLIN TRIHYDRATE+CLAVULANIC POTASSIUM 500MG+125MG CAPSULES	15 CAPSULES	99,524	1,492,855.05	0.0714	106,589.85
9	VITAMIN A CAPSULESULE 100,000I.U	100 TABLETS	12,329	1,232,900	0.04811	59,314.82
10	AZITHROMYCIN DEHYDRATE CAP 250MG	6 CAPSULES	174,871	1,049,226	0.0533	55,923.72
	TOTAL			**273,226,568**		**3,495,953**
	Beta-Lactam			**201,396,155**		**2,407,341**

SYRUPS / SUSPENSIONS:

Sr. No.	Item Description	UOM	Actual Consumption 2017-2018	Syrups / suspensions	MSD Prices ($)	Value ($)
1	ERYTHROMYCIN GRANULES 125 MG/5 ML	100 MILLILITRES	308,839	308,839	0.42	129,712.42
2	AMOXICILLIN GRANULES 125MG/5ML 100MLS	24 BOTTLES	64,310	1,543,441	0.28	432,163.53
3	CO-TRIMOXAZOLE SUSPENSION 200/40MG/5ML, 100MLS	24 BOTTLES	62,920	1,510,069	0.26	392,617.88
4	PARACETAMOL SYRUP 120MG/5MLS,100MLS	24 BOTTLES	51,744	1,241,854	0.2	248,370.73
5	METRONIDAZOLE SUSPENSION 200MG/5ML, 100ML	24 BOTTLES X 100 MILLILITRES	35,035	840,836	0.308	258,977.61
6	COUGH EXPECTORANT ADULT 100ML SYRUP	24 BOTTLES	27,558	661,389	0.3	198,416.72
7	COUGH EXPECTORANT CHILD 100ML SYRUP	24 BOTTLES	27,186	652,461	0.304	198,348.16
8	PHENOXYMETHYL PENICILLIN GRANULES 125MG/5ML,100MLS	24 BOTTLES	8,715	209,160	0.31	64,839.60
9	VITAMIN B COMPLEX 100ML SYRUP	24 BOTTLES	7,825	187,808.06	0.317	59,535.16
10	CHLORAMPHENICOL SYRUP 125MG/5ML 100MLS	24 BOTTLES	6,050	145,190	0.368	53,429.76
11	MEBENDAZOLE SUSP 100 MG/5ML	30 MILLILITRES	56,014	56,014	0.3	16,804.20
12	NYSTATIN SUSP 100000 IU/ML	30 MILLILITRES	52,250	52,250	0.34	17,764.96
13	CETRIZINE SYRUP 5mg/5ml	30 MILLILITRES	41,928	41,928	0.6	25,156.85
	TOTAL			**7,451,239**		**2,096,138**
	Beta-Lactam			**1,752,601**		**497,003**
	Syrups / Suspensions 30 ML			**150,192**		**59,726**

IV FLUIDS:

Sr. No.	Item Description	UOM	Actual Consumption 2017-2018	IV Fluids (lts)	IV Fluids (pcs)	MSD Prices ($)	Value ($)
1	DEXTROSE INJECTION 5%,500ML	24 BOTTLES	40,039	480,469	960,938.18	0.37979	364,954.71
2	WATER FOR INJECTION 10ML	100 VIALS	86,911	86,911	8,691,104	0.0245	212,932.04
3	SODIUM LACTATE COMPOUND (HARTMANN'S),500MLS	24 BOTTLES	91,805	1,101,663	2,203,326	0.381	839,467.19
4	SODIUM CHLORIDE INJECTION 0.9% FOR IV,500ML	24 BOTTLES	64,496	773,951	1,547,901	0.38	588,202.46
5	METRONIDAZOLE 100ML INJ 5MG/ML	10 AMPOULES	129,592	129,592	1,295,922	0.178	230,674.06
6	SODIUM CHLORIDE + DEXTROSE INJECTION ISOTONIC,500MLS	24 BOTTLES	40,412	484,946	969,892	0.40575	393,533.65
7	SODIUM LACTATE COMP (HARTMANN'S) INJECTION, 1000MLS	12 BOTTLES	20,878	250,531	250,531	0.833	208,692.25
8	SODIUM CHLORIDE INJECTION 0.9%,1000MLS	12 BOTTLES	20,854	250,250	250,250	0.82	205,205.09
9	DEXTROSE INJECTION 10%,500ML	24 BOTTLES	7,519	90,224	180,448	0.4079	73,604.79
10	SODIUM CHLORIDE + DEXTROSE INJECTION ISOTONIC,1000MLS	12 BOTTLES	10,703	128,436	128,436	0.0647	8,309.81
11	DEXTROSE INJECTION 5%,1000MLS	12 BOTTLES	9,847	118,164	118,164	0.556	65,699.18
12	MANNITOL INJ 20%	500 MILLILITRES	18,020	9,010	18,020	0.943	16,992.60
	TOTAL			**3,904,147**	**16,614,932**		**3,208,268**
	Water forInjection 10ML			**86,911**	**8,691,104**		**212,932.04**

AMPOULES:

Sr. No.	Item Description	UOM	Actual Consumption 2017-2018	Ampoules	MSD Prices ($)	Value ($)
1	OXYTOCIN 1ML INJ 5IU/ML	10 AMPOULES	216,494	2,164,942.58	0.205	443,813.23
2	GENTAMYCIN 2ML INJ 40MG/ML	10 VIALS	201,247	2,012,470.10	0.033	66,411.51
3	DICLOFENAC SODIUM INJ 25 MG	10 AMPOULES	170,899	1,708,985.49	0.03	51,269.56
4	QUININE 2ML INJ 300MG/ML	10 AMPOULES	106,267	1,062,666.70	0.15	159,400.01
5	DIAZEPAM 2ML INJ 5 MG/ML	10 VIALS	70,739	707,390.81	0.045	31,832.59
6	GENTAMYCIN 2ML INJ 10MG/ML	10 VIALS	68,480	684,804.15		-
7	FRUSEMIDE 2ML INJ 10MG/ML	10 AMPOULES	62,339	623,389.50	0.068	42,390.49
8	TRAMADOL INJECTION 50MG/ML, 2ML	10 AMPOULES	48,189	481,887.83	0.086	41,442.35
9	PETHIDINE INJECTION 100MG/2ML	10 AMPOULES	38,747	387,471.72	0.26	100,742.65
10	ATROPINE 1ML INJ 1MG/ML	10 AMPOULES	35,810	358,095.63	0.15	53,714.34
11	ADRENALINE 1ML INJ 1MG/ML	10 AMPOULES	33,157	331,572.37	0.139	46,088.56
12	PETHIDINE INJ 50MG/ML, 1ML	10 AMPOULES	32,529	325,288.12	0.11	35,781.69
13	PROMETHAZINE 2ML INJ 25MG/ML	10 VIALS	27,149	271,489.03	0.026	7,058.71
14	AMINOPHYLLINE 10ML INJ 25MG/ML	10 VIALS	25,093	250,925.44	0.167	41,904.55
15	CHLORPROMAZINE 2ML INJ 25MG/ML	10 AMPOULES	16,839	168,387.13	0.143	24,079.36
16	DEXAMETHASONE INJ 4 MG/ML	10 AMPOULES	14,719	147,192.06	0.1026	15,101.90
17	PHENOBARBITAL SODIUM 100MG/ML,2ML INJECTION	10 VIALS	13,027	130,273.13	0.246	32,047.19
18	ERGOMETRINE 1ML INJ 0.5MG/ML	10 AMPOULES	10,107	101,070.00	0.337	34,060.59
19	VITAMIN B COMPLEX 2ML INJ	10 VIALS	10,066	100,662.96	0.167	16,810.71
20	SUXAMETHONIUM CHLORIDE 2ML INJ 50MG/ML	10 VIALS	9,094	90,936.80	0.29	26,371.67
21	FLUPHENAZINE DECANOATE INJ 25 MG	10 VIALS	6,489	64,890.00	0.41	26,604.90
22	HALOPERIDOL 1ML INJ 5MG/ML	10 AMPOULES	6,172	61,720.00	0.134	8,270.48
23	EPHEDRINE 1ML INJ 30MG/ML	10 AMPOULES	6,069	60,686.25	0.278	16,870.78
24	NEOSTIGMINE 1ML INJ 2.5MG/ML	10 VIALS	5,944	59,443.90	0.055	3,269.41

Sr. No.	Item Description	UOM	Actual Consumption 2017-2018	Ampoules	MSD Prices ($)	Value ($)
25	MORPHINE INJECTION 10MG/ML	10 VIALS	5,823	58,230.00	0.21	12,228.30
26	CHLORPHENIRAMINE 1ML INJ 10MG/ML	10 AMPOULES	4,889	48,890	0.63	30,800.70
27	PANCURONIUM BROMIDE 2MG/ML- 2ML INJECTION	10 AMPOULES	3,821	38,210.00	0.88	33,624.80
28	PHYTOMENADIONE (VITAMIN K1) INJECTION	1 AMPOULE	29,691	29,690.63	0.568	16,864.28
29	CALCIUM GLUCONATE 10ML INJ 100MG/ML	10 VIALS	2,611	26,109.31	0.44	11,488.10
30	NALOXONE INJ 0.4 MG/ML. 1 MILILLITRE	1 AMPOULE	1,834	18,340.00	1	18,340.00
	TOTAL			**12,576,112**		**1,448,683**

VIALS:

Sr. No.	Item Description	UOM	Actual Consumption 2017-2018	Vials	MSD Prices ($)	Value ($)
1	KETAMINE 10ML INJECTION 50MG/ML	10ml X 25VIALS	18,947	473,673.26	0.75	355,254.94
2	LIGNOCAINE 50ML INJ 2%	10 VIALS	28,936	289,363.97	0.57	164,937.46
3	MAGNESIUM SULPHATE 500MG/ML 10ML INJECTION	25 VIALS X 10 MILILLITRES	11,387	284,678.13	0.788	224,326.37
4	LIGNOCAIN SPINAL IN 7.5 % DEXTROSE 2ML INJ 5%	10 VIALS	15,904	159,036.80	0.11	17,494.05
5	LIGNOCAIN+ADRENALINE 50ML INJ 2%+1: 80000	10 VIALS	10,828	108,281.80	0.5	54,140.90
6	HYDRALAZINE 1ML PDR F INJ 20MG/ML	5 VIALS	11,484	57,418.99	0.28	16,077.32
7	SODIUM BICARBONATE 20ML INJ	10 VIALS	745	7,450	2.29	17,060.50
8	POTASSIUM CHLORIDE INJECTION 7.45%	10 VIALS	735	7,347.80	2.905	21,345.36
	TOTAL			**1,387,251**		**870,637**

DRY POWDER INJECTIONS:

Sr. No.	Item Description	UOM	Actual Consumption 2017-2018	DPIs	MSD Prices ($)	Value ($)
1	BENZYL PENICILLIN PDR F INJ 5 MU	50 VIALS	49,123	2,456,169	0.1413	347,056.70
2	AMPICILLIN PDR F INJ 500 MG	50 VIALS	39,965	1,998,229	0.0593	118,494.96
3	CEFTRIAXONE POWDER INJ 250 MG	20 VIALS	93,254	1,865,074	0.4022	750,132.65
4	AMPICILLIN + CLOXACILIN POWDER FOR INJ. 500 MG	50 VIALS	28,814	1,440,685	0.06626	95,459.78
5	ARTESUNATE 60MG POWDER FOR INJECTION	50 VIALS	23,349	1,167,472	1.4	1,634,460.80
6	CEFTRIAXONE PDR F INJ 1G	1 VIAL	948,796	948,796	0.16	151,807.40
7	BENZATHINE PENICILLIN FORTIFIED PDR F INJ 2.4 MU	50 VIALS	16,210	810,476	0.141	114,277.06
8	PROCAINE PENICILLIN FORTIFIED PDR F INJ 4 MU	50 VIALS	15,234	761,685	0.156	118,822.79
9	CLOXACILLIN PDR F INJ 500 MG	50 VIALS	10,922	546,118	0.07116	38,861.76
10	HYDROCORTISONE POWDER FOR INJECTION. 100 MG	10 VIALS	47,973	479,731	0.242	116,094.84
11	CHLORAMPHENICOL PDR F INJ 1 G	50 VIALS	8,602	430,100	0.2667	114,707.67
12	CEFTRIAXONE 1G + SALBACTAM 0.5G	10 VIALS	7,123	71,230	0.82	58,408.60
13	THIOPENTAL PDR F INJ 500 MG	25 VIALS	2,263	56,575	0.048	2,715.60
14	MEROPENEM TRIHYDRATE 1GM	10 AMPOULES	1,322	13,220	2.3	30,406.00
	TOTAL			**13,045,558**		**3,691,707**
	Beta-Lactam			**8,013,361**		**832,973**
	Cephalosporins			**2,813,870**		**960,349**

CREAMS / OINTMENTS / EXTERNALS / DIS-INFECTANTS:

Sr. No.	Item Description	UOM	Actual Consumption 2017-2018	Creams / Ointments	Creams / Ointments (Kgs)	Externals /Dis-infectants	MSD Prices ($)	Value ($)
1	CHLORAMPHENICOL EYE OINTMENT 1% 3.5GM	100 TUBES	12,605	1,260,519	4,412		0.1124	141,682.34
2	CLOTRIMAZOLE CREAM/OINTMENT 1%,20GM	24 TUBES	38,002	912,054.80	18,241.10		0.1421	129,602.99
3	OXYTETRACYCLINE EYE OINTMENT,5GM	20 TUBES	29,538	590,758	2,954		0.1085	64,097.23

4	MICONAZOLE CREAM 2%, 20GM	12 TUBES	26,340	316,082.68	6,321.65		0.2	63,216.54
5	BETAMETHASONE CREAM 0.1% 15GM	12 TUBES	13,915	166,978	2,505		0.27	45,084.00
6	MICONAZOLE ORAL GEL, 20GM	12 TUBES	11,629	139,544.44	2,790.89		2.64	368,397.33
7	Silver Sulphadiazine cream 20g 1%w/w	12 Tubes	8,881	106,572	2,131		0.2417	25,758.45
8	BENZOIC ACID COMPOUND (WHITFIELD) OINTMENT 6%+3%	40 GRAMS	92,193	92,193	3,688		0.22	20,282.52
9	Diclofenac Gel 30g, 1% w/w	12 Tubes	39,246	470,946.79	14,128		0.2	94,189.36
10	HYDROCORTISONE CREAM 1%, 15 GM	1 TUBE	73,266	73,266	1,099		0.36	26,375.59
11	OXYTETRACYCLINE+HYDROCORTISONE EYE/EAR	1 TUBE	15,745	15,745	79			-
1	POVIDONE IODINE LIQUID 10%	250 MILLILITRES	171,766			171,766	0.76	130,542.03
2	CALAMINE LOTION 100MLS	12 BOTTLES	11,394			136,724.38	0.4	54,689.75
3	BENZYLBENZOATE 25% EMULSION , 100ML	12 BOTTLES	8,486			101,826.32	0.29	29,529.63
4	METHYLATED SPIRIT LIQUID 70%	5 LITRES	33,648			33,648	5.326	179,210.06
5	CHLOROXYLENOL (DETTOL) LIQUID 5%	5 LITRES	28,550			28,550	10.87	310,337.02
6	CHLORHEXIDINE + CETRIMIDE (SAVLON) LIQUID 1.5% + 15%	5 LITRES	22,892			22,892	5.25	120,182.29
7	CRESOL SAPONATED (LYSOL) LIQUID 50%	5 LITRES	21,415			21,415	13.9	297,667.72
8	HYPOCHLORITE SALT(SODIUM HYPOCHLORITE SALT)	100 GRAMS	13,018			13,018	2.95	38,403.10
9	RECTIFIED SPIRIT (ETHANOL 90%) LIQUID	5 LITRES	4,156			4,156	12.4275	51,648.69
10	ETHANOL 68.229%+ISOPROPANOL 5%+BUTANDAIOL 0.115%-(SEPTOCIDE R-PLUS)	1000 MILILLITRES	893			893	25.27	22,566.11
	TOTAL			**4,144,659**	**58,349**	**534,888**		**2,213,463**

EYE / EAR / NASAL DROPS & SPRAYS:

Sr. No.	Item Description	UOM	Actual Consumption 2017-2018	Eye / Ear / Nasal Drops	MSD Prices ($)	Value ($)
1	EPHEDRINE NASAL DROPS 0.5% (PAEDIATRIC)	1 BOTTLE	19,372	19,372	0.1811	3,508.21
2	NEOMYCIN 0.5% + DEXAMETHASONE 0.5% EYE/EAR DROPS 10 ML	10 PACK	17,426	174,256.80	0.29	50,534.47
3	NEOMYCIN/POLYMYXIN/DEXAMETHASONE OPTHLAMIC DROPS 5ML	5ml	9,976	9,976	1.06	10,574.56
4	FRAMYCETIN+DEXAMETASONE+GRAMICIDIN EYE DROPS 0.5%+0.05%+0.005%	8 MILLILITRES	6,653	6,653	2.72	18,095.00
5	PILOCARPINE EYE DROPS	5 MILILITRES	4,366	4,366	1.97	8,601.02
	TOTAL			**214,623**		**91,313**

Importation in terms of dosage forms by private market operators from January – October 2019 is tabulated as follows:

'000s

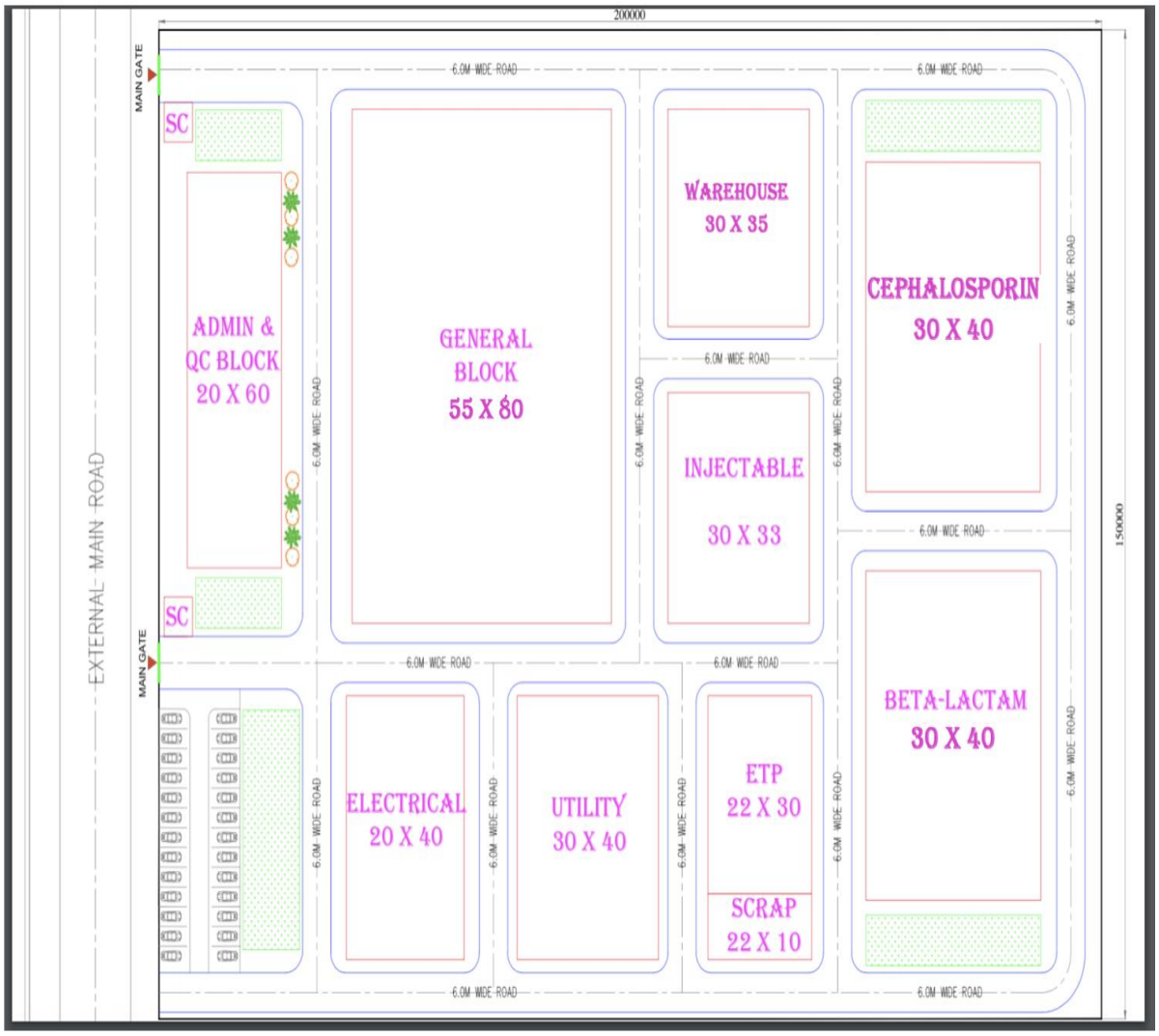
TABLETS	CAPSULES	SYRUPS / SUSPENSIONS	IV FLUIDS (LTS)	IV FLUIDS (PCES)	AMPOULES	VIALS	DPIs	CREAMS / OINTMENTS (KGS)	CREAMS / OINTMENTS (KGS)	EXTERNALS/DIS-INFECTANTS	EYE / EAR / NASAL DROPS
3,314,881	517,873	29,618	4,143	8,285	4,626	376	11,854	12,813	204	88	1,630
135,007	304,258	7,038					1,260				
8,769	52,420	668					10,565				

NB: 1st row : Total volumes
2nd row : Betalactams (Yellow highlighted)
3rd row : Cephalosporins (Blue highlighted)

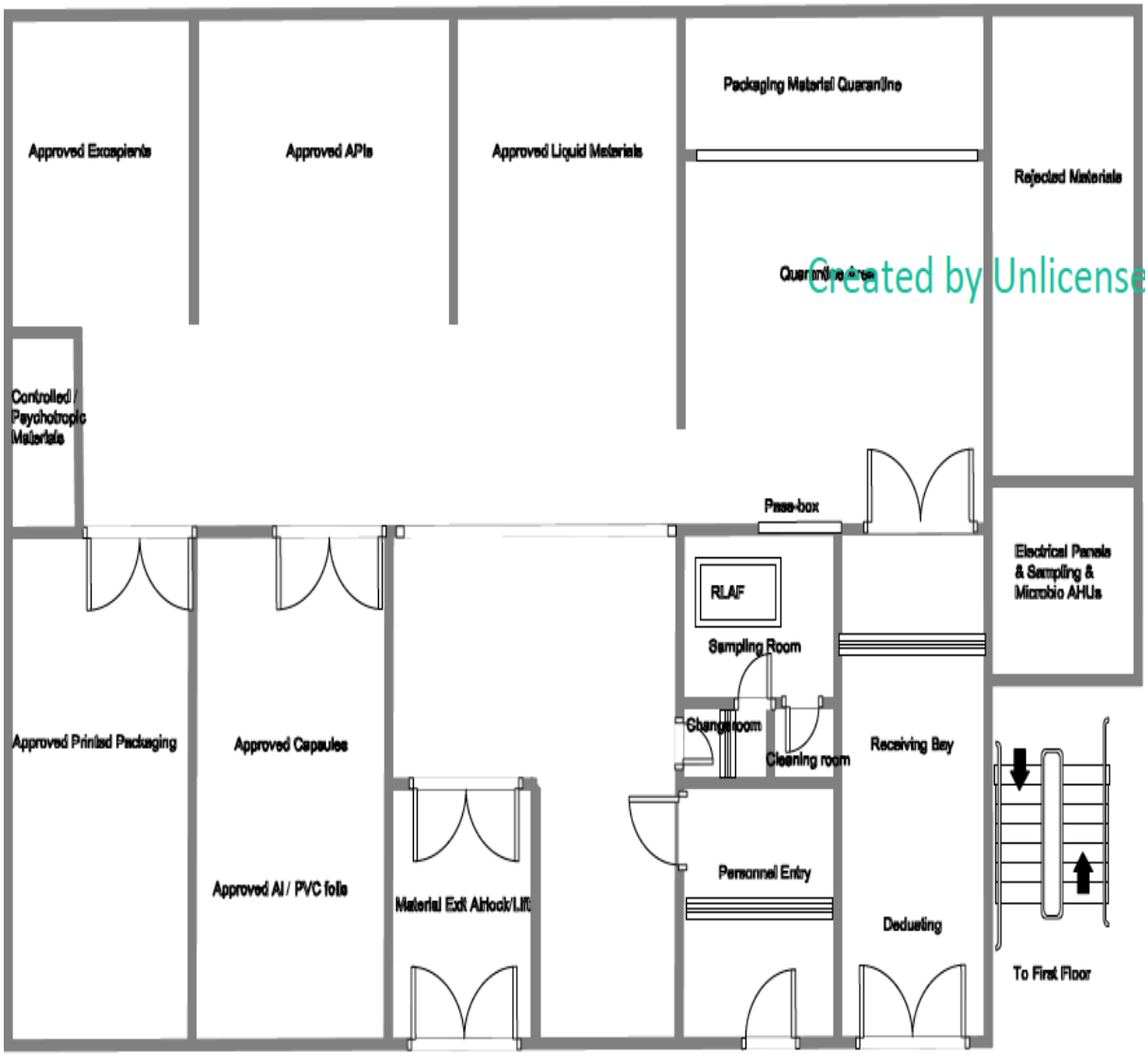
FEASIBILITY **REPORT**

Section 9 | Annexures - Layout

Facility Site Layout :



Warehouse Layout :

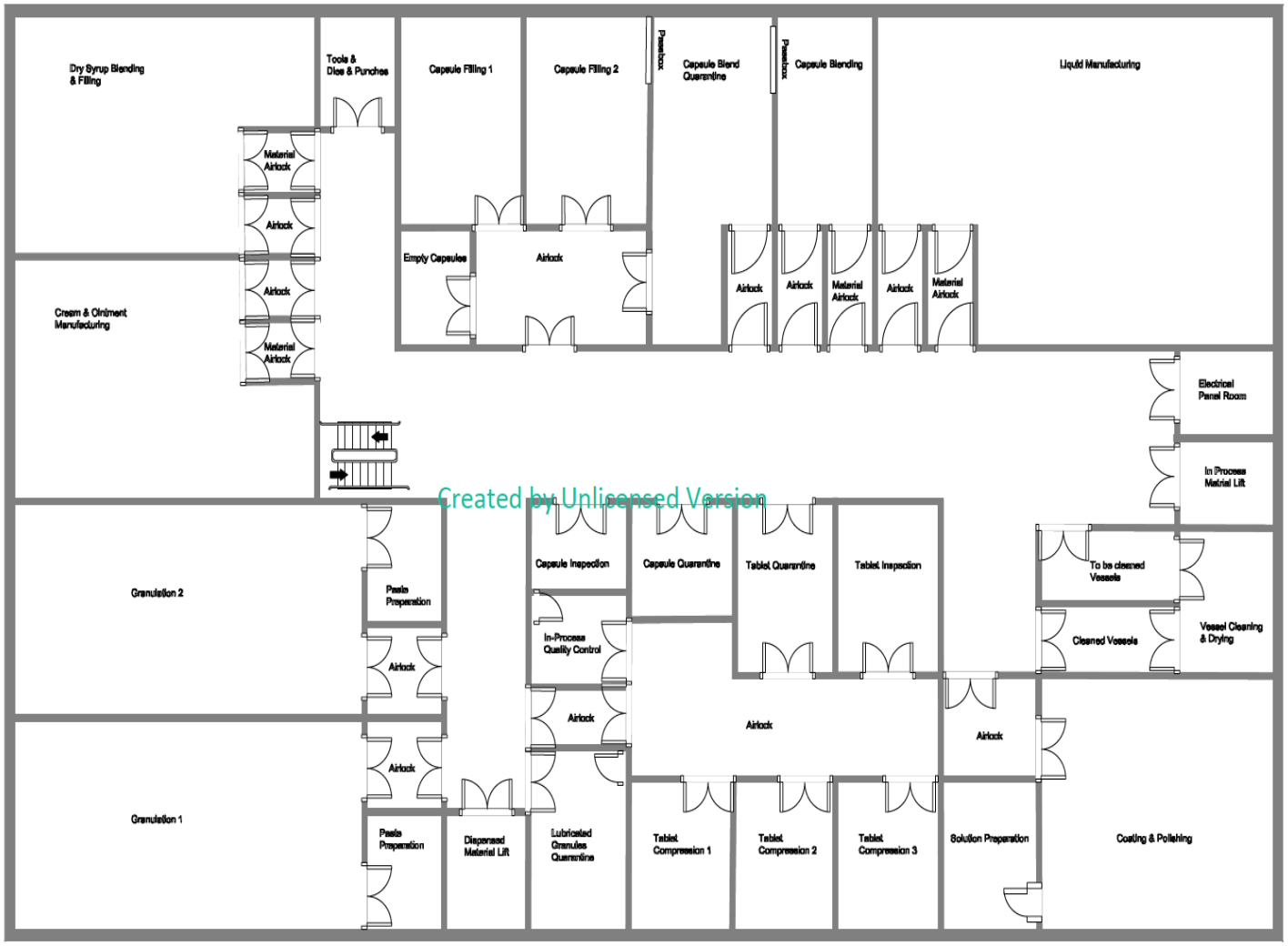


General Block :

Ground Floor Layout :

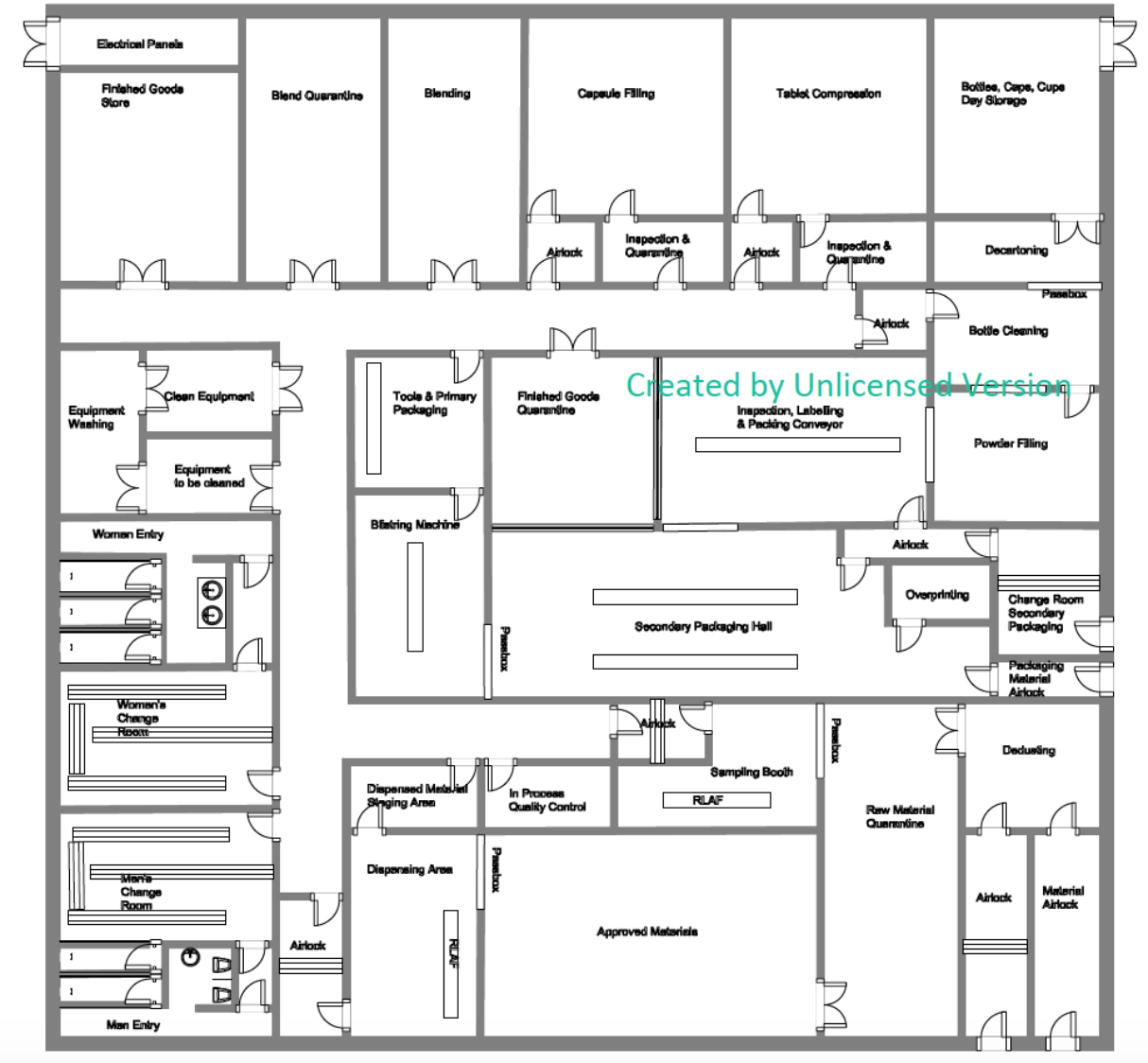
General Block :

Ground Floor Layout :



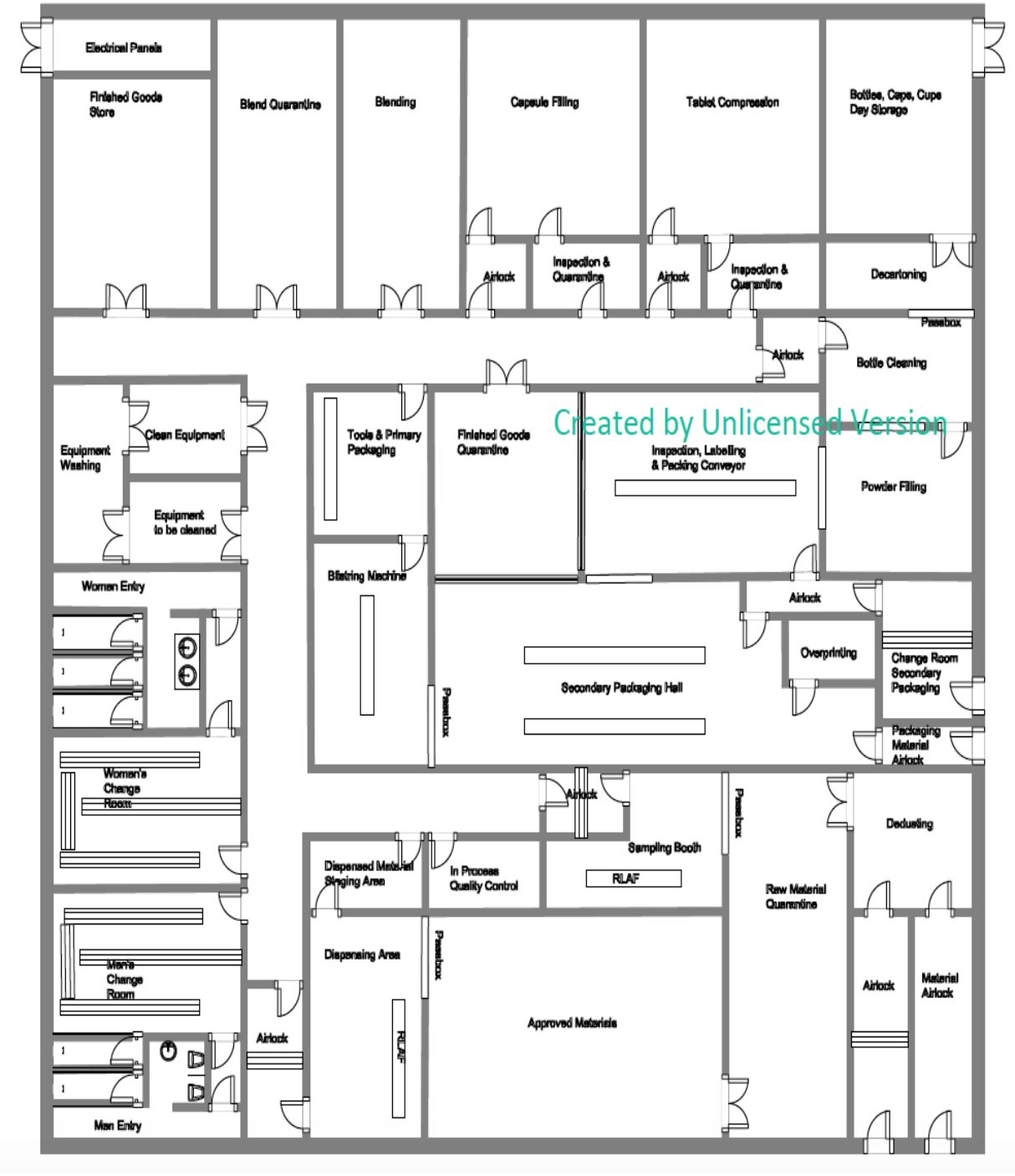
Beta-lactam Block :

Ground Floor Layout :



Cephalosporin Block :

Ground Floor Layout :



I. V. Fluid Block Layout :

List of machinery

Sr. No.	Machinery / Equipment	Capacity	Quantity	Unit Price	Total Price
I	**General Block:**				
A	**Tablet Section:**				
1	Integrated Granulation Line	150 kgs/hour	4	751,000	3,004,000
2	Communiting Mill	150 kgs/hour	4	15,000	60,000
3	Multi mill	150 kgs/hour	4	10,000	40,000
4	Pillar Blender	1000 lts	4	35,000	140,000
5	Hydraulic Tipper	500 kgs	4	15,000	60,000
6	Tablet compression machine	300,000/hour	2	253,775	507,550
7	High Speed compression machine	700,000/hour	4	525,000	2,100,000
8	Blistering machine with Cartonator	400 blisters/min	4	383,564	1,534,256
9	Blistering machine with Cartonator	700 blisters/min	2	1,900,000	3,800,000
10	Air compressor		4	100,000	400,000
11	Weighing Scales		8	15,000	120,000
12	IPQC set		2	35,000	70,000
13	Jacketed Paste preparation tank	200 lts	4	20,000	80,000
14	Roll compactor	100kgs/hour	2	40,000	80,000
15	Autocoater	300 kgs/hour	2	150,000	300,000
16	Tablet deduster		6	15,000	90,000
17	Deblistering machine		6	5,000	30,000
18	Overprinting machine		6	10,000	60,000
19	BOPP Taping machine		6	5,000	30,000
20	Leak tester		2	700	1,400
	Total				**12,507,206**
B	**Capsule Section :**				
1	Capsule filling machine	150,000/hour	2	313,000	626,000
2	Pillar Blender		2	35,000	70,000
3	IPQC set		2	35,000	70,000
4	Blistering machine with Cartonator	500/min	2	383,564	767,128
	Total				**1,533,128**
C	**Liquid Section:**				
1	Liquid manufacturing line	3000 Lts	4	427,500	1,710,000
2	Liquid filling & sealing line	100 bottles/min	4	203,000	812,000
3	Double head dry syrup filling machine	60 bottles/min	2	50,000	100,000
4	Labelling machines		4	20,000	80,000
5	Cartonator for bottle packing		2	175,282	350,564
6	IPQC set		2	35,000	70,000
7	Overprinting machine		4	10,000	40,000
8	BOPP Taping machine		4	5,000	20,000
	Total				**3,182,564**
D	**Cream / Ointment Section:**				
1	Cream Preparation Tank	500 kgs	2	335,400	670,800
2	Tube filling / sealing line	100 tubes/hour	2	95,000	190,000

3	Storage vessels	1000 Lts	12	5,000	60,000
4	IPQC set		2	10,000	20,000
5	CIP System		2	40,000	80,000
	Total				**1,020,800**

Sr. No.	Machinery / Equipment	Capacity	Quantity	Unit Price	Total Price
I	**General Block:**				
E	**Externals / Dis-infectants Section:**				
1	Liquid manufacturing line	2000 Lts	2	180,000	360,000
2	Liquid filling & sealing line	Multi-filling	4	60,000	240,000
3	Labelling machines		2	50,000	100,000
4	IPQC set		2	10,000	20,000
5	CIP System		2	65,000	130,000
	Total				**850,000**
F	**Eye / Ear / Nasal Drops Section:**				
1	Integrated filling assembly		2	350,000	700,000
2	Laminar Flow		2	50,000	100,000
3	Nitrogen Generator		2	20,000	40,000
4	Miscellaneous (Product Manufacturing)		2	80,000	160,000
5	IPQC set		2	10,000	20,000
6	Labelling machine		2	20,000	40,000
	Total				**1,060,000**
G	**Common Equipment:**				
1	Building & Civil works		1	4,000,000	4,000,000
2	Clean Room Partitions/HVACs		1	4,800,000	4,800,000
3	Furniture, Electrical fititngs and fixtures/panels		1	400,000	400,000
4	Epoxy flooring + covings		1	400,000	400,000
5	UV light Insect killer		40	200	8,000
6	Industrial vaccum cleaner		20	3,000	60,000
7	Industrial wet/dry vacuum cleaner		20	3,000	60,000
8	SS pallets		400	1,000	400,000
9	SS Scoops, spatulas, jug, rods and other accessories			60,000	20,000
10	Pass boxes		60	5,000	300,000
11	IBL Containers		40	3,000	120,000
12	IPC Containers		200	5,000	1,000,000
13	Storage Containers		200	800	160,000
14	Dispensing booth		6	25,000	150,000
15	Forklifts		4	60,000	240,000
16	Hydraulic forklifts		6	25,000	150,000
17	Pallet trucks		12	1,000	12,000
	Total				**12,280,000**
H	**Quality Control Laboratory:**				
1	QC Lab		1	800,000	800,000
2	Microbiology Lab		1	400,000	400,000
	Total				**1,200,000**
I	**Warehouse Section:**				
1	AHUs with ductings		2	50,000	100,000
2	Sampling booth		4	25,000	100,000
3	Refrigerator		4	1,000	4,000
4	Storage racks		2	200,000	400,000
5	Passboxes		10	5,000	50,000
6	Weighing Scales		1	750,000	750,000
7	Building & Civil works		1	2,000,000	2,000,000
8	Furniture, fixtures, electircal panels		1	160,000	160,000
	Total				**3,564,000**

Sr. No.	Machinery / Equipment	Capacity	Quantity	Unit Price	Total Price
I	**General Block:**				
J	**Common Utilities:**				
1	Effluent Treatment Plant		1	200,000	200,000
2	Water treatment plant		1	600,000	600,000
3	Washing machine with dryer		6	30,000	180,000
4	Distribution trucks		20	35,000	700,000
5	Management vehicles		20	25,000	500,000
6	Transformer 1500 kVA		1	500,000	500,000
7	Generator 1200 kVA		1	300,000	300,000
8	Generator 100 kVA		1	90,000	90,000
9	Boiler (Diesel or Gas fired)		1	160,000	160,000
10	ERP Software		2	100,000	200,000
11	Office equipment		1	160,000	160,000
12	Computers		1	80,000	80,000
13	Furniture, Electrical fititngs and fixtures/panels		1	200,000	200,000
	Total				**3,870,000**
	Sub-Total				**41,067,698**
	Other Production Blocks:				
II	**Beta-lactam Section:**				
1	Double head Dry syrup filling machine	60 bottles/min	2	50,000	100,000
2	Labelling machine		2	20,000	40,000
3	High speed tabletting machine	300,000/hour	2	282,900	565,800
4	Capsule filling machine	150,000/hour	4	313,000	1,252,000
5	Granulator	100kgs/hour	2	50,000	100,000
6	Multi-Mill	150kg/hr	2	10,000	20,000
7	Communiting mill	150kg/hr	2	15,000	30,000
8	Pillar Blender	800 lts	2	35,000	70,000
9	High speed DPI filling machine	120 vials/min	2	144,000	288,000
10	Hydraulic tippers	500 kgs	4	15,000	60,000
11	Dehumidifiers		4	25,000	100,000
12	Weighing scales		4	12,000	48,000
13	IPQC Equipment Set		2	35,000	70,000
14	Blistering Machine with cartonator	500/min	4	383,564	1,534,256
15	Air compressor		2	50,000	100,000
16	Pass boxes		16	5,000	80,000
17	IBL Containers		10	3,000	20,000
18	IPC Containers		60	5,000	300,000
19	Storage Containers		60	800	48,000
20	Sampling booth		2	25,000	50,000
21	Dispensing booth		2	25,000	50,000
22	SS pallets		100	1,000	100,000
23	SS Scoops, spatulas, jug, rods and other accessories		2	5,000	10,000
24	Building & Civil works		1	600,000	600,000
25	Clean Room Partitions/HVACs		1	1,200,000	1,200,000
26	Furniture, Electrical fititngs and fixtures/panels		1	160,000	160,000
27	Epoxy flooring + covings		1	150,000	150,000
	Total				**7,146,056**

Sr. No.	Machinery / Equipment	Capacity	Quantity	Unit Price	Total Price
III	**Cephalosporin Secton:**				-
1	Double head Dry syrup filling machine	60 bottles/min	2	50,000	100,000
2	Labelling machine		2	20,000	40,000
3	High speed tabletting machine	300,000/hour	2	282,900	565,800

4	Capsule filling machine	150,000/hour	4	313,000	1,252,000
5	Granulator	100kgs/hour	2	50,000	100,000
6	Multi-Mill	150kg/hr	2	10,000	20,000
7	Communiting mill	150kg/hr	2	15,000	30,000
8	Pillar Blender	800 lts	2	35,000	70,000
9	High speed DPI filling machine	120 vials/min	2	144,000	288,000
10	Hydraulic tippers	500 kgs	4	35,000	140,000
11	Dehumidifiers		4	25,000	100,000
12	Weighing scales		4	12,000	48,000
13	IPQC Equipment Set		2	35,000	70,000
14	Blistering Machine with cartonator	500/min	4	383,564	1,534,256
15	Air compressor		2	50,000	100,000
16	Pass boxes		16	5,000	80,000
17	IBL Containers		10	3,000	20,000
18	IPC Containers		60	5,000	300,000
19	Storage Containers		60	800	48,000
20	Sampling booth		2	25,000	50,000
21	Dispensing booth		2	25,000	50,000
22	SS pallets		100	1,000	100,000
23	SS Scoops, spatulas, jug, rods and other accessories		1	10,000	10,000
24	Building & Civil works		1	600,000	600,000
25	Clean Room Partitions/HVACs		1	1,200,000	1,200,000
26	Furniture, Electrical fititngs and fixtures/panels		1	160,000	160,000
27	Epoxy flooring + covings		1	150,000	150,000
	Total				**7,226,056**

IV	**Liquid Injectable Section:**				
1	Decartonating unit with conveyor & Turntable		2	7,700	15,400
2	Automatic ampoule washing machine		2	120,000	240,000
4	Online steriliser tunnel		2	175,000	350,000
5	Automatic ampoule sealing machine		2	205,000	410,000
6	Ampoules handling tray		2	6,500	13,000
7	Semi-automatic ampoule inspection line		2	57,000	114,000
8	Ampoule labelling machine with turntable		2	6,500	13,000
9	Blister packing machine for ampoules		2	37,000	74,000
10	Other accessories		2	8,000	16,000
11	Manufacturing & Transfer Tanks		6	300,000	1,800,000
12	Weighing scales		6	5,000	30,000
13	LAF		6	30,000	180,000
14	Liquid vial filling line		2	813,000	1,626,000
15	Ampoule blistering machine		2	180,000	360,000
16	IPQC Equipment Set		2	35,000	70,000
17	Building & Civil works		2	500,000	1,000,000
18	Clean Room Partitions/HVACs		2	500,000	1,000,000
19	Furniture, Electrical fittings and fixtures/panels		2	80,000	160,000
20	Epoxy flooring + covings		2	100,000	200,000
	Total				**7,671,400**
1	Blowing machine		2	1,235,000	2,470,000
2	Blow Mould Sets		8	45,000	360,000
3	Water Chiller (for blow moulds)		2	15,300	30,600
4	High Pressure Compressor		2	140,500	281,000
5	Preform Injection machine		2	740,000	1,480,000
6	Preform mould sets		8	102,600	820,800
7	Water Chiller (for preform moulds)		2	23,300	46,600

8	Filling machine		2	1,235,000	2,470,000
9	Low Pressure Compressor		2	8,700	17,400
10	LAF		2	66,000	132,000
11	Autoclave		2	357,000	714,000
12	Automatic bottle transfer system		2	1,253,000	2,506,000
13	Autoclave vehicle		54	4,260	230,040
14	Labelling, Packing & Sealing machine		2	232,300	464,600
15	Automatic Weighing, printing, control system		2	80,500	161,000
16	Water treatment system		2	896,000	1,792,000
17	IPQC Equipment Set		2	35,000	70,000
18	Building & Civil works		1	2,000,000	2,000,000
19	Clean Room Partitions/HVACs		2	600,000	1,200,000
20	Furniture, Electrical fittings and fixtures/panels		2	300,000	600,000
21	Epoxy flooring + covings		2	200,000	400,000
	Total				**18,246,040**
1	Conceptual & Engineering Designs			760,000	380,000
	Miscellaneous+ Installation Expenses		1		1,262,750
	Grand Total				**83,000,000**

We append below list of Incentive for approval and extention to the Project.

- 100% First Year Allowance on All Infrastructure and Equipment/Assets Purchased By the Company.
- Corporate Tax Exemption for First Fifteen Years of Commercial Operation.
- Exemption from Payment of PAYE Employment Tax on Expatriate Personnel.
- Exempt From Payment Of Skills And Development Levy On Salaries And Emoluments Paid To Staff.
- Exemption From The Contribution Towards The Workmen Compensation Fund As Per The Workers Compensation Act (Cap. 263)
- Exemption Form The Levy of The Alternate Minimum Tax.
- Exemption of Withholding Tax on Imported Services.
- Exemption from Reverse Vat on Imported Services.
- Exemption from Vat on Importation of All the Equipment and Furniture in the First Fifteen Years of the Operations.
- Exempt From Payment of City Service Levy on Turnover.
- Exemption on deduction of withholding tax on Interest on Foreign Loan from Institution other than Bank/Financial Institution.

- Exemption on deduction of withholding tax on payment of Dividend for first ten year of operation.
- Exemption From Payment of Import Duty, Vat And Other Taxes On Importation Of Plant & Equipment And Furniture In The First Ten Years Of The Operations.
- Exemption on Duty and VAT on Industrial Sugar used for pharmaceutical products.
- Importation of Parallel product should be restricted / or impose higher tariff to encourage local manufacturing.
- MSD support for product being used locally to be procured locally and not imported.
- Exemption in registration and payment related to OSHA.
- Cap For Upper Limit For Expatriate Staff Be Relaxed - Recommendation Be Issued By Tanzania Investment Centre For Granting Work Permits To Staff At Desired Levels As Perceived By Our Company.
- Exemption From Payment Of Work Permit Fees, Resident Permit fee or any other related fee or levy on Expatriatate staff. This Is Essential For The Success Of The Project with The Intention Of Transfer Of Technology And Know How To Local Manpower Eventually.

FEASIBILITY **REPORT**

Section 12 Glossary

Abbreviation	Explanation		Abbreviation	Explanation
ACT	Artemisinin based Combination Therapy		NMRA	National Medicines Regulatory Authority
ADDO	Accredited Drug Dispensing Outlet		NORAD	Norwegian Agency for development Cooperation
AIDS	Acquired Immuni-Deficiency Syndrome		NPV	Net Present Value
ART	Anti-Retro Viral Therapy		OHDs	Overheads
ARV	Anti-Retro Viral		OTC	Over the Counter
AUC	African Union Commission		p.a.	per annum
AV	Audio Visual		PAT	Profit After Taxation
BoP	Balance of Payment		PIC/S	Pharmaceutical Inspection Convention & Pharmaceutical Inspection Cooperation Scheme
CAGR	Compounded Annual Growth Rate		PV	Present Value
cGMP	current Good Manufacturing Practices		QA	Quality Assurance
CME	Continuous Medical Education		QC	Quality Control
COGS	Cost of Goods Sold		RMNCAH	Reproductive, Maternal, Newborn Child & Adolescent Health
DPI	Dry Powder Injection		ROI	Return on Investment
EAC	East African Community		RPMPOA	Regional Pharmaceutical Manufacturing Plan of Action
EBIDTA	Earnings Before Depreciation, Interest and Tax		SADC	South Africa Development Community
ERP	Enterprise Resources Planning		SAHPRA	South African Health Products Regulatory Authority
FEAPM	Federation of East African Pharmaceutical Manufacturers		SDG	Sustainable Development Goals