

**Achievement of Market-Friendly Initiatives and Results Program
(AMIR 2.0 Program)**

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**The Jordan Pharmaceutical Cluster:
Analysis and Recommendations**

Final Report

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EXECUTIVE SUMMARY

The purpose of this report is to analyze the pharmaceutical cluster, provide concrete, action-oriented recommendations to improve the cluster and provide clear steps in undertaking subsequent clusters research and analysis.

The work originated as a request from the Ministry of Industry and Trade (MIT). MIT recognized the need to adopt a holistic approach to better understand the importance and the impact of pharmaceuticals in the economy. The approach to analyzing the pharmaceutical cluster combines a popular method - a cluster diagnosis (akin to a SWOT analysis) and Porter's diamond, an analytical framework developed at Harvard Business School to analyze the various participants in the cluster. The methodology then links recommendations to findings from the cluster diagnosis and Porter's diamond. Annex A provides a step-by-step approach to undertaking the complete analysis.

Cluster Overview

At present, the pharmaceutical cluster is fast growing, if measured in terms of export performance, but not fast developing, if analyzed in terms of strengthening of various cluster participants (discussed under the cluster analysis section). The pharmaceutical companies' performance has been strong over the last decade, growing an average of 15 percent annually. The growth defied expectations of analysts and practitioners, who forecasted significant retardation to the industry following Jordan's accession to World Trade Organization (WTO), which prohibited local companies from reformulating patented drugs.

However, much of the success is due to policy loopholes in European Union (EU) legislation that prohibits European companies from undertaking generic product preparation (R&D) prior to patent expiry. Jordanian companies, unaffected by this prohibition, have undertaken product preparation and entered the European market through this opportunistic market-window. The legislation is not expected to remain in Jordan's favor, as EU regulators will eliminate this prohibition like their American counterparts. Meanwhile, Jordan's traditional markets that account for three-fourths of its exports - Saudi Arabia, Iraq, and Algeria - become increasingly difficult markets to penetrate because of various technical barriers to trade and an increased tendency to select low cost suppliers from the Indian sub-continent. Furthermore, several local companies in these traditional markets are establishing their own pharmaceutical companies. Jordanian enterprises must not only enter Europe and North America, but also ensure a sustained presence in this high-growth but highly demanding market if they are to remain in business. Jordan's enterprises were able to overcome challenges

of global *policies* (such as WTO) but the challenges of global *markets* will be even harder.

Still, the opportunities parallel the challenges. Europe and North America account for US\$150 billion in annual sales, or about 60% of global consumption; the total Arab market is about 1.6%. The global market for generic drugs (Jordan's target market), currently estimated at US\$17 billion annually, will double in size by 2004 as several patents expire.

Major issues facing the industry are strengthening strategy to enter the European market, maintaining leadership in the Arab world by addressing technical barriers to trade and traditional markets, and improving operational and regulatory standards within the industry with a view to the attracting European and North American pharmaceutical companies.

Major Findings

The findings that resulted out of interviews with various cluster participants had to do mainly with the quality of competing enterprises, the supporting institutions and supplier networks, and the regulatory environment.

With respect to the quality of competing enterprises, the success in European markets masks the quality of the export enterprises. Only two companies have collectively accounted for the quantum leap of exports in European markets. Most companies still focus on exporting to traditional Arab markets. There is no fundamental research and development; companies undertaking clinical trials claim this as research and development. Local companies mainly develop generics in standard therapeutic categories, mostly in the low to mid-tier category of generic drugs. Several opportunities to focus on high-end generics, such as hormones, cytotoxics, and injectables, remain underdeveloped. With few exceptions, most companies produce under minimum efficient scale of manufacturing. This lack of scale economies directly threatens competitiveness. Of course, companies are not likely to increase scale unless they have the assured demand -- one reason why the cluster must remain export oriented.

With respect to supporting institutions and supplier networks, the professional services sector catering to the pharmaceuticals enterprises is quite undeveloped. There are no specialty firms dealing with patent process litigation or patents protection. These services are increasingly important as Jordanian companies focus on European markets, which have very stringent patent registration requirements. There is no network of technical services for strengthening the operational standards within pharmaceutical companies, such as good management practice (GMP), and

good laboratory practice (GLP). Retired personnel from drug administration agencies typically provide these technical services. However, the drug administration agency in Jordan does not have auditing standards at the levels seen in Europe and North America. According to several companies, their self-auditing standards were allegedly higher than those of drug regulators. In addition, inventors are unable to patent because of a lack of patent registration office at the Ministry of Industry and Trade (only trademark registration services are provided at present).

Finally, with respect to the regulatory standards, the auditing/inspection function at the Drug Directorate at the Ministry of Health is not at the level seen in international counterparts; companies seeking manufacturing under license privileges by multinational companies (MNCs) commission private auditors instead.

Recommendations

The recommendations to strengthen the cluster are organized along six areas – export promotion programs, investment promotion programs, product diversification, strengthening of support institutions, strengthening of demand base and strengthening relations with local government.

Export Promotion Programs

Jordanian enterprises must strengthen export development activities. This is important from a cluster perspective for a number of reasons: increased exports will improve enterprise competitiveness by increasingly extending production runs and bringing factories to minimum efficient scale (MES). The absence of MES in Jordanian enterprises threatens the long-term sustainability of the cluster. The various programs described are lobbying Arab governments to remove technical barriers to trade, developing a coherent strategy to enter high growth markets in North America and Europe, improving market intelligence, undertaking matchmaking of firms, improving product dissemination, and ensuring due diligence of Jordanian products entering European and North American markets to avoid litigation.

Investment Promotion Programs

Investment in Jordanian companies is critical from three reasons. First, increasing the minimum efficient scale of production runs; second, developing new product lines; third, strengthening entry into new markets in North America and Europe, thereby shifting dependence on Jordan's traditional markets. The various programs described are providing investment incentives to MNCs, undertaking detailed investor research,

creating a public relations campaign targeted at MNCs, and attracting investment in support services.

Product Diversification

Since the typical size of the Jordanian pharmaceutical manufacturer is well below that of their counterparts in low income as well as high-income markets, enterprises must compete on new high-value products, as well as the pharmaceuticals *services* sector. The programs described in the report include exploring expansion into new high-value added products, studying new drug delivery systems, establishing an expertise in conducting clinical trials for MNCs, and enhancing industry-academia linkages with a view to introducing new products at low research costs.

Strengthen Supporting Institutions

Jordanian exports of pharmaceuticals have increased in spite of the relatively weak institutional support structure of pharmaceuticals. Several areas need improvement: research and development, distribution networks, professional service as it applies to production and operations standards, and market-entry preparation and counsel. Programs described in the report include strengthening research and development capacity, providing incubation services to new companies, drafting a code of conduct for Jordanian enterprises, providing tax breaks for research and development, strengthening clinical research organizations, benchmarking enterprises against world standards, and strengthening distribution networks.

Strengthen Demand Base

Domestically, Jordanian-manufactured pharmaceuticals are not regarded as superior to imports. Local doctors are biased towards prescribing imported medicine from companies with large R&D facilities, such as Pfizer and Merck. In addition, Jordanian law requires pharmacists to prescribe branded pharmaceuticals when a certain pharmaceutical product is specified, and the bias is thus skewed towards foreign products. Strengthening the demand base does not mean providing preferential treatment to local products, but raising awareness of the quality of local products at the source – the prescribing entities. The proposals made in the report are mainly to develop a media campaign aimed at opinion leaders.

Strengthen Partnership with Local Government

As the pharmaceuticals cluster continues to grow, future issues are likely to arise that would require government participation in order to continue to successfully grow the pharmaceuticals enterprises. The proposals mentioned here are to strengthen government-industry coordination on main issues, participate in drafting directives, and the establishment of a public-private force to address cross cutting issues.

PART ONE

INTRODUCTION

1.1. This report analyzes the pharmaceutical cluster, provides concrete, action-oriented recommendations to improve the cluster, and finally provides clear steps to undertake subsequent cluster research and analysis. The cluster analysis is undertaken with a view to increase competitiveness (measured in terms of productivity or increase in value-added) in the immediate term, and sustained growth of the cluster (measured by increase in jobs, investments, exports and product diversification and a proportionately higher increase in output) in the near term. The report uses the cluster analysis approach over conventional methods of industrial policy and economics research owing primarily to the holistic nature of this approach – going beyond enterprise performance to include the performance of all stakeholders e.g. suppliers, customers, regulators, labor, academia, etc.

1.2. Policy advisers from AMIR commissioned this report following a request from the Ministry of Industry and Trade. The Ministry recognized the need to adopt the cluster approach to better understand the importance and impact of the pharmaceuticals business in the economy. An international consultant worked alongside various local experts (a policy analyst from the Ministry of Industry and Trade; the head of the Ministry of Planning's Competitiveness Unit, and the Director General of the Jordan Association of Pharmaceutical Manufacturers) to provide this holistic approach. The approach used in analyzing the pharmaceutical industry will be used as guidelines for subsequent analyses to be undertaken locally and with minimal technical oversight.

1.3. The aim of this report is to provide practical, action-oriented solutions to strengthening various components, policies, and participants within the cluster. The report proposes these solutions after analyzing Jordan's pharmaceutical cluster using a cluster competitiveness methodology designed at Harvard Business School.

1.4. The intrinsic nature of cluster analysis -- involving various, often seemingly disparate, participants -- requires action by a number of public and private agents. For that reason, the actions are organized not only on thematic lines (i.e. export diversification, strengthening research and development, etc.) but also along cluster participant lines. Building competitiveness, a potentially abstract term, will remain just that if various participants do not undertake the work. For that matter, leadership at the topmost level across ministries, enterprises, and academia is essential to see meaningful success that can translate into increased jobs, investment, and exports for Jordan's economy.

1.5. The report is organized along the following lines. Following this introduction (Part One), the report provides an overview and needs analysis of the pharmaceuticals cluster (Part Two). The report then shifts to the solutions level (Part Three), providing recommendations that respond to the needs presented in the previous section. Part Four, Action Matrix, lists the various tasks discussed in the previous section, and provides a list of the cluster participants charged with improving competitiveness of the cluster.

1.6. This report was finalized in early July after a draft in June 2002 that resulted out of an investigative mission to Amman, Jordan in May 2002. Owing to the quick turn-around of the analysis, most data collection was undertaken through one-on-one interviews with various cluster participants - enterprises, business associations, academia, regulators, and others. The author is responsible for any errors or omissions in this report.

PART TWO

CLUSTER OVERVIEW AND ANALYSIS

I. OVERVIEW

2.1. ***The pharmaceutical cluster in Jordan is among the most significant, and arguably among the most important in the country.*** Unlike Potash, which is a natural resource advantage, or apparel, which is the result of preferential treatment, pharmaceuticals is Jordan's only significant industry that can be considered next-generation (information technology is a growing segment, but its share is a fraction of pharmaceuticals). Pharmaceutical output accounts for almost 12 percent of manufacturing GDP. The export figures are even more impressive: Jordan exports almost 70 percent of its output, and is among the few net exporters of pharmaceuticals in the Arab world.

2.2. ***Jordan's pharmaceutical cluster is resilient, exceeding expectations of analysts and practitioners.*** While industries such as apparel developed because of supportive policies (the Qualifying Industrial Zone policy between US and Jordan), the pharmaceutical industry developed in spite of potentially threatening policies: Jordan's accession to the WTO in May 2000 meant that companies could no longer reformulate products developed by multinationals under a generic brand --- something they were doing for decades. Furthermore, under bilateral negotiations with the United States, Jordan agreed to further regulate enterprises, providing a degree of comfort to multinationals operating in Jordan, but potentially endangering local enterprises by raising standards. The analysts have been surprised. Exports rose from \$141 million in 1999 to \$160 million in 2000 and \$185 million in 2001.

2.3. ***Pharmaceuticals could become the top exporter for Jordan.*** Having met the WTO-challenge, several enterprises are forging ahead. According to industry practitioners, an average growth of 15 percent for the next five years is quite realistic, as some small companies grow aggressively to meet ambitious future growth and expansion goals, which they have set for themselves. Although it may be over-simplified to extrapolate historical patterns into the future given the complex forces of this global industry, the conservative growth figure of 15 percent average annual growth means Jordan's industry output will grow from \$250 million at present to \$1.0 billion in the next 10 years. Pharmaceuticals could well become Jordan's top export by that time. This will not be the result of input-driven growth i.e. adding more people, investment, companies, etc. Not all companies are expected to be dynamic,

universities cannot steadily supply unlimited talent, and there is a diminishing marginal gain to increased mechanization as well. *Continued growth will have to be the result of innovation – simply put, selling more value per weight.*

2.4. ***Challenges to growth are at least as serious as before.*** The downside of Jordan's exports is the narrow focus of their destination: almost 80 percent of Jordan's exports are destined for three markets - Saudi Arabia, Algeria, and Iraq. The direction of exports to these three markets is unhealthy for reasons beyond its narrow focus. Jordanian companies report various technical barriers to trade in most Arab markets. Saudi Arabia, for example, does not allow the registration of a drug if five equivalent formulas are available in the market. Algeria requires that companies set up factories in the domestic market after a few years of importing into the country. Iraq, meanwhile, has increasingly taken on the role of the cost-driven buyer. Almost all pharmaceutical purchases in Iraq are through the government's procurement agency's competitive bidding under the food-for-aid program; over 800 companies compete in the Iraqi pharmaceutical industry. Jordan faces tough competition from low cost-low quality producers from Iraq, Syria and elsewhere in the Indian subcontinent. Things will not get easier, according to industry insiders. Several factories are being established in these countries. Algeria has registered over 34 pharmaceutical manufacturers recently, Iraq an additional 24, and Saudi Arabia an additional ten companies. With Egypt as the only other major Arab country with a sizable population, and which has no fewer technical barriers to trade or domestic competition, Jordan's manufacturers are increasingly looking to new markets. The shift away from Arab countries, particularly the traditional ones can be expected in the near future.

2.5. ***Pharmaceuticals new market frontier: Europe.*** Europe will be Jordan's principal export destination in the foreseeable future, shifting the balance away from its traditional Arab markets (although the latter will remain significant). North America, especially the United States, is the second destination, although it is a less familiar market to Jordanian exporters. The size of the European and North American markets is a quantum leap over Jordan's traditional export markets. The United States pharmaceuticals industry size is estimated at \$132 billion, in contrast to Saudi Arabia's \$1 billion industry, already the largest in the Arab world. Europe's combined market is estimated at over \$40 billion, with promising market sizes in individual countries (UK \$1 billion, Germany to \$1 billion, for example). The growth of these markets barrels the scale of the opportunities. According to a recent article in *SCRIP*, a trade magazine, growth in U.S. pharmaceutical consumption is estimated at 17 percent in the United States, whereas growth in Europe is estimated almost as much. The vast opportunities and the optimistic growth of these markets mask the actual opportunities that exist for Jordanian companies, who operate mainly in the generic drug category. Still, almost one out of every two drugs sold in the United States is generic, and in countries such as Germany, generic drugs outsell patents by a ratio of three to one. Even within generics, the growth of this sector is expected to be

tremendous. According to SCRIIP, by 2004 over one-third of the world's drugs patents will expire, spiraling growth from \$17 billion in 2002 to \$34 billion in 2004.

2.6. *Some companies have already tapped into Europe.* Several innovative Jordanian companies, large and small, recognized the opportunities, pursued them, and have met with spectacular success in some instances. United Pharmaceuticals, a drug manufacturer with sales of about US\$4 million in Jordan, recently exported US\$50 million of generic drugs to Germany. This shipment alone accounted for one-third of total drug exports from Jordan. Another established company, Hikma Pharmaceuticals, has also made inroads, exporting approximately US\$10 million to Germany during that period. Such performance, almost inconceivable a few years ago, has propelled local companies to think along the same lines. The Jordanian pharmaceutical companies' overseas success has been the result of management innovation and well executed strategies. However, only a few companies in Jordan have demonstrated this degree of innovation. At present, only the above-mentioned two companies are exporting to Europe and North America, although several companies are considering into strategies there.

2.7. *Jordan's short-term success in Europe is chance. Continued success will have to be strategic.* The success in the European market has to do with a policy loophole in the European legislation. The European Union does not allow generic drug manufacturers to undertake research and development to develop a generic version of a patent drug prior to patent expiry. Jordanian companies, exempt from this regulation, have embarked on a new strategy - developing generic versions of popular patent drugs and releasing them in the European market immediately upon patent expiry. European companies, meanwhile, are left a few years behind because of the onerous process in drug development and registration. Since the EU will eventually adopt the Bolar provision, allowing locals to undertake pre-expiry work, Jordanian enterprises will need to innovate and move up-market fast, however. Several East European countries – such as Romania and Poland -- will soon gain access to the EU. These countries have a greater pool of people with higher education and a background in the sciences, so they may catch-up faster than anticipated.

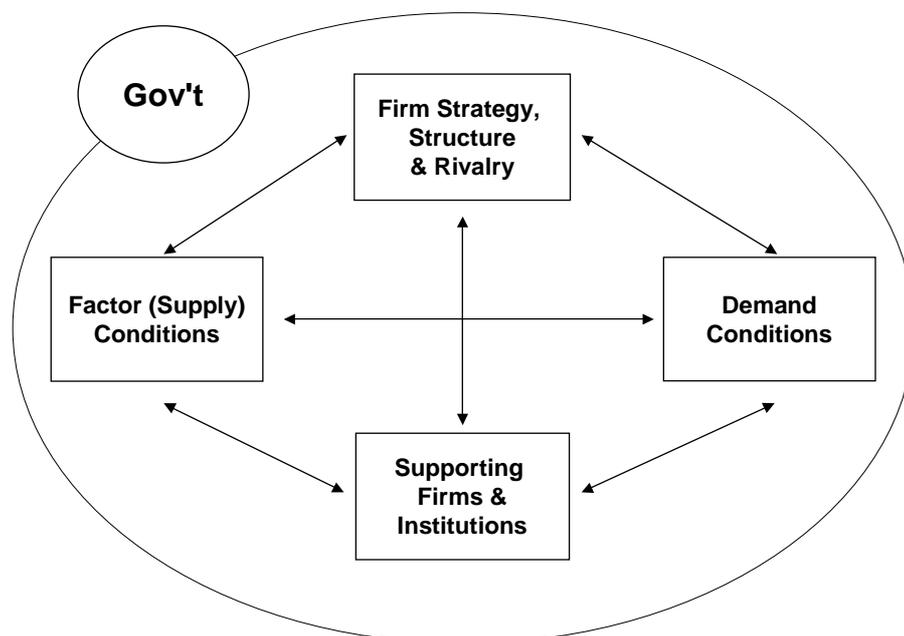
2.8. *What lies ahead.* The global pharmaceutical market is estimated at approximately \$300 billion, with North America alone accounting for half this amount, and including Japan, accounting for almost 80 percent of global pharmaceutical sales. Jordan is currently the only Arab country exporting to the region, taking advantage of its first-mover position. Still, Jordan is expected to face competition from South Asian companies, especially from India. Indian companies have been operating at scale economies --- a critical factor to success not widely seen in Jordan's pharmaceutical companies.

2.9. The remainder of the section discusses Jordan's pharmaceutical industry from a cluster perspective, examining not only the core enterprises but also the environment within which it operates and the various entities - suppliers, buyers, institutions, regulators – that the core interacts with. The list of recommendations to improve the cluster will be presented with a view to strengthening international success, in particular succeeding in Europe, strengthening presence in the Arab world, and entering markets not previously penetrated.

II. CLUSTER ANALYSIS

2.10. *We use a proven methodology: Porter's "five forces"*. The pharmaceutical cluster is analyzed using Porter's five forces, shown in Exhibit 1. One of the forces, firm strategy and rivalry, relates directly to the enterprises in the cluster and is considered among the most significant. Firm strategy and rivalry analyzes the quality of the strategy, level of leadership, and various other factors that relate to the high level of competition between firms.

Exhibit 1: Porter's Five Forces



2.11. ***Firm structure (1a) is weak by international standards; many won't survive.*** Similar to other clusters, pharmaceutical has a mix of intrepid/visionary companies and short-term thinkers. Even these narrow-minded companies survived under the high degree of protection of the industry provided until recently (pre-WTO). As internationalization of the pharmaceutical cluster becomes a matter of necessity, not just interest, companies that do not meet international standards will face a rapid and certain demise. Pharmaceutical factory size varies in Jordan, but is generally considered below minimum efficient scale. For example, the average investment in a generic plant in the United States is \$500 million and in Europe it is approximately \$490 million. In Jordan, meanwhile, investment varies from \$4 to \$40 million.

2.12. ***Firm rivalry (1b) is strong; good for innovation.*** When industry cooperation is good, generally the level of domestic rivalry is extremely high. The Jordan Association of Pharmaceutical Manufacturers (JAPM) represents the bulk of the enterprises, and is an effective catalyst in bringing together companies on matters of shared concerns. The typical startup capital for a generic drug production company in Jordan is between US\$2-3 million dollars. This low barrier to entry has encouraged several companies to enter the industry.

2.13. As Jordan's pharmaceutical enterprises become increasingly global, moving from 70 percent to almost 90 percent of their production destined for overseas markets, companies will have to meet international counterparts. This means increasing investment levels to achieve minimum efficient scale manufacturing,

establishing a network of support services for example strong contract research organizations, establishing business industry university linkages, bringing-in a legal specialist in the area of connection property, as well as business analysts and market research organizations that specialize in the supporting industry, etc. This also means attracting multinational enterprises to manufacture under license and, more importantly, establishing joint ventures to expand production scales to international standards. The detailed recommendations are provided in the following section - strategic direction for the pharmaceuticals cluster.

2.14. ***Factor/supply conditions (2) are mainly human based.*** The second dimension of Porter's five forces, factor conditions, focuses on old basic factor conditions such as climate, land, location proximity, community, basic inputs etc. as well as advanced factor conditions such as knowledge resources, access to resources from infrastructure, and institutions. The human resource conditions are among the most significant factors in the pharmaceutical cluster. While Jordan labor cannot compete on wage rates in general, it is highly competitive in terms of wage rates for professions in the sciences in comparison to other countries. According to the study by the Ministry of Planning, the average annual salary of a Ph.D. was approximately US\$28,000, about 60 to 70 percent less than counterparts in major pharmaceutical locations such as New Jersey in the USA and the biotech cluster in Germany. Jordan's two universities produce approximately 900 graduates in pharmacies studies annually, while the demand is not always met by industry (employment of professionals averages about 2000 at present), some graduates work in pharmaceuticals companies while others operate the many small and highly fragmented pharmacies.

2.15. Knowledge resources in Jordan's pharmaceutical cluster are strong domestically, although not by international standards. Jordanian universities undertake bio-equivalence studies in partnerships with contract research organizations, although lab work is not done at the scale of that seen in private enterprises. The upstream research cluster is developing slowly, however, as companies are undertaking contract bio-equivalence studies in Jordan for MNCs (a major MNC, Merck, is undertaking clinical trials in partnership in Jordan University).

2.16. Despite the plethora of talent, Jordan's pharmaceutical enterprises are still focused on developing generics in standard therapeutic areas. There is limited work done in high-end generics, such as hormones, cytotoxics, injectables, or portative drug products. The knowledge base that could be used for establishing a strong service industry, say in the pharmaceutical contract research organization area, is largely underdeveloped. There are about four contract research organizations in Jordan. Switzerland, on the other hand, has close to 150.

2.17. **Key change areas – upstream R&D.** The review of the basic factor conditions points to the need for the cluster to diversify and grow the product portfolio by providing alternate drug products, new delivery systems for the products, and entirely new segments in the service sector. This is discussed in detail in the following section.

2.18. **Demand conditions (3) are improving; will improve product.** The next factor, demand conditions, has to do with the quality of the buyers. As mentioned earlier, the sophistication and the bargaining power of the buyer (evidenced through his ability to select from a number of vendors, ability to access market information with ease, and incur few switching costs as a result) drive up the degree of competitiveness of the cluster as a whole.

2.19. Jordan's buyers are both local and overseas, with the latter gaining increasing prominence. Until recently the buyers in Jordan have been at least as sophisticated, or more sophisticated, than Jordan's export market consumers in Algeria, Iraq and Saudi Arabia (countries that import most of Jordan's pharmaceutical exports). Still, by world standards, none can be considered world-class buyers in terms of being demanding. Since drug prices are regulated, there is little option for drug companies to innovate existing products in order to command a higher price (say, by repackaging, or offering it in a different delivery mode such as gel capsules or children sizes). Also, consumption in the Arab world is small by international standard (just 1.4% of world consumption) so there is not a large enough market to try out new drugs. In most Arab countries, no more than five registered drugs of the same category are allowed. This reduction of competition, coupled with regulated prices, offers a generally low demand customer, which in turn prompts low quality products.

2.20. As Jordan's pharmaceutical exports are directed to its European and North American markets, enterprises will increasingly come in contact with sophisticated, demanding consumers, thus prompting improved quality of the products in the home market as well. The sheer size and segmentation of local demand in European and North American markets also suggest that Jordanian companies will need to innovate in their respective categories to seek continued growth. Jordanian enterprises have always had to compete aggressively in the home market, which saturates easily given its size. Although some enterprises began looking toward the export market as a better source of sales and revenues, enterprises primarily export to Arab countries, whose customers are cost conscious – resulting in a race to the bottom in terms of pricing. Jordanian enterprises, therefore, have to look towards shifting their export focus to the North American and European markets.

2.21. **Key change areas --- public awareness.** There are several areas where the cluster can be strengthened. The cluster can create the impetus for a demanding

consumer by educating the consumer about the quality of the locally produced drugs. At present, Jordanian companies suffer from low perception of quality in the eyes of the consumer, according to industry interviews. This education of the consumer can take the form of a public relations campaign targeted at local consumers. Such programs and related activities to improve the demand conditions in the local market are discussed in detail in a subsequent section.

2.22. ***Supporting institutions (4) are not at par with enterprises.*** The next factor, quality of supporting institutions, examines the quality and competitiveness of the supplier base as well as institutions that directly or indirectly support the core enterprises. These include business services, business associations, research institutions, education and training/location centers, and various governmental agencies that regulate the enterprises.

2.23. Two groups undertake research and development in the pharmaceutical cluster: enterprises, in the area of stability and formulation, and contract research organizations, in the area of clinical trial/bio-equivalence. The success of one group reinforces the overall cluster. For example, strong contract research organizations attract world-class pharmaceutical companies, who are then prompted to continue additional work by extending their involvement – going beyond contract research to contract manufacturing, and possible joint venture work. At present the contracting research organizations are not internationally known, according to industry interviews, and strengthening this function is thus important in strengthening the cluster.

2.24. Direct suppliers such as bottling and packaging functions contribute directly to the success of the cluster. At present, most bottles are imported from Egypt. As the industry grows, it will need to attract investment in support services. Another area that requires assistance is the packaging area. The quality of packaging in Jordan is mediocre in comparison to international standards. This need not be so because Jordan, particularly Amman, already has a strong commercial and graphics design services.

2.25. In the area of business services, pharmaceutical enterprises do not have access to world-class advisers to guide them through the stringent roadmap to registering their products in overseas, particularly Western, markets. At present, a company seeking entry to a market such as the United Kingdom incurs far greater costs by having to retain overseas experts to prepare their files for registration. There are few advisers in the area of a Good Management Practice (GMP) and Good Clinical Practice (GCP) - certification standards for the industry. In theory, although the Drug Directorate is charged with auditing companies on the good management practices, in practice, companies actually have higher standards of self-auditing. Still, there is the need for advisers to help companies prepare files for registration,

undertake good management practice audits, and help with marketing and legal functions to enter markets with high potential and high standards.

2.26. Other areas of the cluster include education and training services. The cluster performs well in maintaining the quality standards. There is however room for improvement in the practical aspects of the pharmaceutical business. Several of those interviewed alleged that while students get training in theory, their practical skills are quite limited until they start working. In addition, no business school has a formal internship program with pharmaceutical companies. Jordan University has recently set up a program for a Masters degree in Intellectual Property. However, there is no link between this program and the University's Law School. Business school students also need the opportunity to undertake research and strategy projects on-site or off-site for the pharmaceuticals industry. This lack of applied experience also has implications for the development of the cluster.

2.27. ***Key change areas – professional services and industry & business/law academia linkages.*** Supporting industries and institutions need help in several areas: strengthening contract research organizations, establishing one-stop service for companies to obtain registration, good management practice, legal and marketing advice for exports, strengthening the university-industry linkages not only in pharmaceutical, but also in other disciplines such as law and business. These issues are discussed in detail in a subsequent section.

2.28. ***Government (5) needs to improve auditing standards.*** Porter's fifth factor has to do with the government, more specifically the enabling regulatory environment and legal environment that stimulates cluster development. Factors having to do with a political will, supportive laws, enabling regulations, capacity of enforcing authority, and other private partnership programs.

2.29. Overall, the government is generally supportive when it comes to the cluster, according to interviews. The government's support is evidenced through its policy of exempting pharmaceutical enterprises from export income tax. This factor has prompted companies to be export oriented according to interviews, but this export income tax exemption is not expected to last given budgetary constraints and allegations of export subsidy under WTO rules. The recent policy by government to tax drugs by a two percent sales tax has to do with the need for government to improve its fiscal health.

2.30. Beyond laws, the implementing regulations are considered generally favorable by industry. The Drug Directorate of the Ministry of Health has recently announced that it will process files for registration within 120 days. This is a major change from previous years, when it ranged from three months to several years. This

action has been lauded not only by local enterprises but also international companies, such as American pharmaceutical companies represented by their local offices.

2.31. ***Key change areas --- Ministry of Health inspection standards, government-industry relations.*** Industry mentioned a few concerns when working with government. First, the auditing capacity within the Ministry of Health's Drug Directorate needs improvement in areas related to good management practice and good laboratory practice auditing. As mentioned earlier, the standards imposed by companies are higher than those imposed by the regulators, and there is a need to raise the bar in order to get companies to aim for higher, international standards. Second, it appears that the pharmaceutical enterprises do not have a strong relationship with the Ministry of Health, and approach it mainly on problem-solving matters. There were no items to include the Ministry of Health on programs related to the industry updates and seminars. Such interaction could be especially beneficial to the long-term relationship between regulators and enterprises, and is discussed in detail in the subsequent section.

PART THREE

RECOMMENDATIONS

I. Grow and Diversify Exports

3.1 **Rationale.** Pharmaceuticals enterprises have sustained exports of 70 percent of total production, and have ranked as the third largest exporter in Jordan. As mentioned previously, these exports are destined primarily to Arab markets, with the largest markets being Saudi Arabia, Iraq, and Algeria.

3.2 The pharmaceuticals enterprises produce mainly generic medicines and patented medicines without license agreements from the foreign patent holders – 82% of total sales come from generic drugs and 15% come from the reproduction of in-patent drugs.

3.3 By joining the WTO, Jordan has become a signatory to the Trade Related Aspects of Intellectual Property Rights (TRIPS), which provide an international standard of protection over intellectual property rights.

3.4 By becoming a signatory to TRIPS, the “rules of the game” for the Jordanian pharmaceuticals enterprises have changed. This includes changes in the product-mix of the drugs that the Jordanian pharmaceuticals enterprises can legally produce and export under the WTO provisions.

3.5 Whereas Jordan’s pharmaceuticals enterprises are fundamentally export-oriented, Jordan should grow its pharmaceuticals enterprises by increasing and diversifying exports. It can achieve this goal through the following strategies:

3.6 **Overcome technical barriers in Arab world by lobbying governments:** Jordanian pharmaceuticals enterprises can use their position in these export markets – especially its three largest export markets, Saudi Arabia, Iraq, and Algeria, which in 1999 accounted for 32, 28, and 10 percent of Jordan’s pharmaceuticals exports respectively – as well as its established relationships with Arab governments to increase market share and sales. This is especially important as new pharmaceuticals firms are appearing in these export markets, and threaten Jordan’s market share and exports.

3.7 In increasing its market share in Arab countries, Jordan faces technical barriers to trade. As mentioned in the previous section, each Arab country has its own specific rules and regulations. Therefore, separate agreements negotiated with each government must be conducted on an individual basis in order to gain access and increase production.

3.8 **Specific tasks.** The specific task that should be undertaken here is to hire a lawyer in targeted major Arab markets on a retainer basis in order to undertake lobbying missions to major Middle Eastern and North African (MENA) markets.

3.9 **Create a strategy to enter North American and European markets.** These are lucrative markets and future growth rates in these markets are considerable, as they have a large percentage of aging population that will continue to need medicine as they continue to age. These markets prefer generic drugs, as mentioned in the previous section, a sector poised for explosive growth. Some Jordanian pharmaceuticals enterprises mentioned in the previous section, are already taking advantage of the Bolar provision of TRIPS to export to the European market, which allows manufacturers of generic drugs to use the patented invention to obtain marketing approval without the patent owner's permission and before the patent protection expires. The generic producers can then market their versions as soon as the patent expires.

3.10 Unlike developing country markets, the North America and European markets are highly quality-based, and have very stringent technical standards. European standards still vary by country (although standard harmonization is increasing). Jordanian pharmaceuticals enterprises will have to meet those standards in separate countries in order to be able to increase exports to this region.

3.11 Jordanian companies planning to enter the US market will need help with file preparation. The U.S. Food and Drug Administration's (FDA) Center for Drug Evaluation and Research, Office of Generic Drugs, provides for the review and ultimate approval of a generic drug product, a highly rigorous and time consuming procedure. By completing the abbreviated new drug application (ANDA) -- the application process for generics in the US -- the applicant may manufacture and market the generic drug product for local sales.

3.12 As the Jordanian pharmaceuticals enterprises meet the quality standards and increase exports to Europe and to North America, they will have a first mover advantage over Eastern European countries that are just now beginning to develop a pharmaceuticals industry, Jordanian enterprises, however, will face competition from Indian and other producers, as mentioned in the previous section.

3.13 ***Specific tasks.*** The specific tasks that should be undertaken here are:

- Undertake Deficiency Analysis (hire an ex-FDA consultant) for ANDA
- Training companies in regulatory file preparation – for export to the USA.
- Training companies in GMP/Validation Standards – for export to the EU.
- Performing bio-equivalence studies of specific drugs: A reputable contract research organization (CRO) should be hired to conduct bio-equivalence studies in the export market.

3.13 ***Access to Global Market Intelligence:*** The Jordanian pharmaceuticals enterprises will need access to global market intelligence in order to avoid infringing on any existing patents, better plan the launch of generic products in targeted markets, and face future competition from other pharmaceuticals manufacturers.

3.14 Market intelligence would provide Jordan with patent information world wide, including patent extensions and expirations for both products and processes, known as a supplemental production certificate. The information provided by market intelligence can also provide crucial insight into a specific market in terms of trends of specific molecules in dollar sales and in amount consumed in kilograms. Such insight will allow the Jordanian pharmaceuticals enterprises to perform critical analyses in terms of what are the molecules most sold and consumed in the North American and European markets, to identify early development activities for the generic drugs, and to predict the competitiveness of specific drugs as generics.

3.15 Lastly, market intelligence should be used in order to establish a first mover advantage and in order to keep aware of future and possible entrants into the market and competitors. For example, other countries are gearing up to develop their pharmaceuticals market – Brazil, Argentina, Mexico, Poland and Hungary – Jordanian pharmaceuticals enterprises will need to keep abreast of the moves of their potential competitors.

3.16 ***Specific tasks.*** The specific tasks that should be undertaken here are:

- Commission market research studies (for the EU, Eastern Europe).

- Buy IMS Strategic Intelligence Data and Generic Planning (SIDGP) Software.
- Get routine market intelligence reports from specialized market research companies.
- Keep up to date and attend international industry conferences as another means of getting global market intelligence.
- Participate in exploratory trade missions, exhibitions, and conferences.

3.17 ***Firm Matchmaking.*** By global standards, Jordanian pharmaceuticals enterprises are not a major exporter of pharmaceuticals. While Germany, Switzerland, the United Kingdom, the US, and France account for a total of just over 50 percent of global pharmaceuticals exports, Arab countries, including Jordan, account for 0.25 percent of exports. It has been shown that the most effective way for a new company to enter into a new market is by firm matchmaking. That is, selling to a specific company whose products serve as a complement to those products of the new entrant. This strategy gives the new entrant a client base and, in a sense, a foot in the door.

3.18 ***Specific tasks.*** The specific tasks that should be undertaken here are:

- Background research on companies in North America and in Europe
- Planning of trade missions to meet with other companies in export markets
- Developing local company database (on brochure, CD and website)

3.19 ***Improve Product Dissemination.*** Since the Jordanian pharmaceuticals enterprises are a relatively new exporter in Europe and North America, the enterprises should invest in product marketing in order to create international awareness of the Jordanian pharmaceuticals enterprises and their quality products, induce trial, and lead to repeat use of their product. While the quality of the Jordanian pharmaceuticals products will lead to repeat use, the most crucial aspect is the creation of awareness. Awareness can be created by an integrated marketing campaign that will reach the target market through print media in trade publications, public relations, trade shows, brochures, and an integrated Website.

3.20 ***Specific tasks.*** The specific task that should be undertaken here is to hire an integrated marketing communications company to develop a one-stop Website, multimedia presentations, brochures, film.

3.21 ***Ensure Due Diligence of New Products into North America and Europe.*** Jordanian pharmaceuticals enterprises have to be highly aware of not infringing on another international company's process or the molecule patents. Such infringement could result in a lawsuit and potentially considerable financial loss that could lead to an enterprise's bankruptcy. Due diligence on the part of the Jordanian pharmaceuticals enterprises is crucial. To this end, the Jordanian pharmaceuticals enterprises should hire a lawyer to conduct extensive molecular patent inspection before the industry embarks on selling a specific product in an export market.

3.22 ***Specific tasks.*** The specific task that should be undertaken here is to commission pharmaceutical intellectual property right (IPR) lawyers specializing in process patent infringement in the North American and the European markets.

II. Position Jordan as the Principal Destination for MNCs

3.23 ***Rationale.*** Foreign investment in Jordan's pharmaceuticals enterprises is important in order to allow the enterprises to maintain their level of growth, their position as a leading export sector, the quality of their products, and provide know-how in the significantly changed environment that compliance with TRIPS brings about.

3.24 To this end, MNCs can enter into different agreements with Jordanian pharmaceuticals enterprises: MNCs can provide labor force training and technology transfer, licensing for the production of old and new drugs, co-marketing and co-promotion in different markets, as well as contract manufacturing for the local production of drugs. Jordanian pharmaceuticals enterprises can achieve this goal through the following strategies:

3.25 ***Provide MNCs with Incentives to Invest.*** Jordanian pharmaceuticals enterprises are able to provide the following incentives to pharmaceutical MNCs: First, established connections and relationships with markets such as Yemen and Sudan, which for Western MNCs are difficult markets to break into. Second, co-marketing and selling a specific MNC product under different trade names in the same export markets as a means of increasing revenue without compromising the brand name.

3.26 Third, entering into a licensing agreement or a manufacturing agreement with Jordanian pharmaceuticals enterprises will allow the MNC to turn-over the production of already established products that are selling well in world markets, and to focus on the research and development of bringing to market new drugs faster, releasing new product lines with higher value, and staying one step ahead of the competition.

3.27 Fourth, Jordanian pharmaceuticals enterprises can also become an export destination for the MNCs' products, which may have reached a plateau in their product life cycle in Western markets.

3.28 Fifth, Jordanian pharmaceuticals enterprises can focus on the manufacturing and marketing of specialized, niche generic products such as hormones, cytotoxics, etc. for sale in the MENA region and export to other markets. These products will provide Jordanian pharmaceuticals enterprises with an internationally recognized niche expertise and increase revenues for the industry.

3.29 The pharmaceuticals enterprises have a number of unique assets they can offer to MNCs who invest in Jordan. However, they have to work to increase awareness of their assets in these markets by meeting and introducing their enterprises to MNCs.

3.30 **Specific tasks.** The specific tasks that should be undertaken here are a series of targeted investment promotion missions to North America and to Europe.

3.31 **Undertake Detailed Investor Research.** The Jordanian pharmaceuticals enterprises will need to conduct in-depth and detailed investor research in order to find and to target those MNCs that would be best suited as investors – there is no one single format for targeting and reaching the MNCs' decision-makers.

3.32 American MNCs tend to be very large and complex bureaucratic bodies with different types and styles of corporate organization. Decision-making, therefore, takes place at different levels throughout the organization: At times decision-making is centered at headquarters and moves down to the regional offices, other times the regional offices have considerably more power and say that is sought out and taken into consideration at headquarters. Some European and Scandinavian MNCs are smaller than their American counterparts.

3.33 Given this complex organizational structure, Jordanian pharmaceuticals enterprises will have to target MNCs across sectors and investigate both generic and research and development oriented companies. Moreover, this type of specific

corporate information is not always in the public domain, or on a company's Website. It often goes deeper, and companies can be reluctant to provide such details. An industry-insider is often the one person that can cut through the red tape and the bureaucracy to provide this information.

3.34 ***Specific tasks.*** Therefore, the specific tasks that should be undertaken here are:

- Develop an investor profile database.
- Build relationships with professional associations.
- Commission investor research of the North American and European pharmaceuticals industry.

3.35 ***Create a Public Relations Campaign Targeted at Multinationals.***

Jordan's pharmaceuticals enterprises are not widely covered in the international press, and have not been widely participating in international pharmaceutical trade shows and conferences. Awareness of the existence of these pharmaceuticals enterprises and their high quality products needs to be created. This can be achieved through the participation of Jordanian pharmaceuticals enterprises in international events where they can disseminate information about their expertise. As such, tool kits for exhibitors from different companies or from an umbrella association of the industry can be selected and be readily packaged for large trade shows and conferences. These large international conferences are also important as a means of interacting and networking with other international corporations.

3.36 In addition, there are several well-respected trade magazines, such as SCRIP, where a good article is a tacit vote of endorsement for the industry. Not being well-known international players, Jordan's pharmaceuticals enterprises should acquaint themselves to the international industry through an article in SCRIP outlining the country's signing-on to the WTO and enforcing the TRIPS provision, as well as its leading pharmaceuticals enterprises and their productive labor force and high-quality products. Such an article would introduce the Jordanian pharmaceuticals enterprises and may prompt interested parties to seek out additional information.

3.37 ***Specific tasks.*** Therefore, the specific tasks that should be undertaken here are:

- Commission an analysis of the sector by an internationally recognized consultancy firm.
- Pay for SCRIP journalist to visit Jordan and write an article about the industry.
- Participate in major exhibitions and participate or speak at conferences.
- Develop “Booth in a Box” (banner, exhibits, etc.) for exhibitions.

3.38 ***Attract Investment in Support Services.*** Although the Jordanian pharmaceutical cluster is comprised of many related and supporting enterprises, the key components of the cluster are imported, as mentioned in the previous section. Imports include raw materials (active and inactive ingredients), machinery, and some of the packaging (plastic and glass packaging and bottle caps). As the pharmaceuticals enterprises grow, they will become a viable destination for support services, and the cluster will grow alongside.

3.39 ***Specific tasks.*** The specific tasks that should be undertaken here are investment promotion missions to other markets for raw materials and for packaging materials.

III Diversify and Grow the Product Portfolio

3.40 ***Rationale.*** There are low barriers to entry into the genetic pharmaceuticals sector that Jordanian enterprises manufacture, because the inputs and processes are not complex, and the products can be produced with relatively little capital input. The Jordanian pharmaceuticals enterprises, therefore, face the threat of competition from the entry of new companies. As mentioned in the previous section, regional companies manufacturing similar low-end manufacturing products are being established in Jordan’s top three export markets. Others, especially in Eastern European countries, are in the process of setting-up a local pharmaceutical industry.

3.41 A diversification in the portfolio of pharmaceuticals manufactured in Jordan, as well as the growth and expansion of the enterprises would better shield the Jordanian pharmaceuticals enterprises from future competition. This will also provide the Jordanian enterprises with a market niche in which they can serve a particular global market segment as a means of gaining an edge over competitors.

3.42 In addition, currently, most Jordanian pharmaceutical enterprises focus on the production of similar product categories, typically therapeutic drugs e.g. paracetamol, and standard antibiotics e.g. penicillin and amoxicillin. This is mainly because of the large markets for standard drugs. However, this results in production overlap, high domestic competition, and excess production capacity. A diversification in the generic drug production portfolios would lead to increased exports, increased earnings, and a better product portfolio that can sustain increased international competition.

3.43 The production of more specialized, high value-added, niche generic pharmaceuticals such as the injectibles, hormones, and cytotoxics mentioned in the previous paragraph would expand and diversify the pharmaceutical enterprises, protect them from competition, and would allow them to engage in more research-oriented work that would reduce their current dependence on imported chemicals. Jordanian pharmaceutical enterprises can achieve this goal of diversifying the product portfolio through the following strategies:

3.44 ***Explore Expansion Into New High-Value-Added Products.*** Expanding into the production of generic injectibles, hormones, and cytotoxics products would diversify the production portfolio of the Jordanian pharmaceutical enterprises, add value to the products, and increase the export revenues for the cluster. This strategy would also allow the enterprises to engage in more pharmaceutical research, thereby adding more value to the final product and creating a niche expertise in the research and manufacturing of specialized generic drugs.

3.45 ***Specific tasks.*** The specific tasks that should be undertaken here are to commission feasibility studies for new pharmaceutical production areas, engage in missions to MNCs to discuss avenues of cooperation on the development and manufacturing of these specialized generic product areas, and study new alternative drug products.

3.46 ***Study New Drug Delivery Systems.*** The arena of new drug delivery systems is expected to reach \$35 billion in the US. The Jordanian pharmaceutical cluster could be poised to enter this new field when it takes-off, as another business dimension to the pharmaceutical cluster.

3.47 ***Specific tasks.*** The specific tasks that should be undertaken here are to commission feasibility studies for new drug delivery systems, and provide training to cluster employees in this new drug delivery system.

3.48 ***Establish an Expertise in Conducting Bio-Equivalence Testing for MNCs.*** The Jordanian pharmaceuticals cluster could differentiate itself from other

developing market pharmaceutical industries by developing an expertise in conducting bio-equivalence testing for MNCs. While at the moment this capacity is not very well developed in the Jordanian pharmaceuticals cluster, training and education could be provided to cluster employees to allow the creation of local Clinical Research Organizations (CROs).

3.49 Local CROs could enhance and diversify the Jordanian pharmaceutical cluster by offering to MNCs not only a jumping-off point into the more difficult to enter Middle Eastern and North African markets, such as Yemen and Sudan, but also the capability to conduct bio-equivalence tests for the production and marketing of pharmaceutical products in this region – in a sense, a bundle of services.

3.50 Most importantly, the Jordanian pharmaceutical cluster could differentiate itself from other developing country clusters. The Jordanian cluster could go beyond the manufacturing and selling of pills, to conducting value-added tests for a fraction of the cost of such tests in North America and Europe.

3.51 *Specific Tasks.* The specific tasks that should be undertaken here are:

- Undertake marketing program for companies in North America and Europe
- Attend international conferences and exhibits to create contacts with MNCs and to increase international awareness of the Jordanian pharmaceutical cluster capabilities.
- Create marketing communications material on the Jordanian cluster capabilities such as brochures and other promotional and educational materials.
- Establish a local training program in biotechnology for the pharmaceutical cluster/Academia (Swiss).

3.52 **Enhance Industry-Academia Links.** Enhanced academic-industry links could help the cluster to move towards conducting higher value-added tests and producing specialized generics. Links are needed in order to ensure that the Jordanian pharmaceutical cluster is made-up of qualified professionals that will develop the cluster. As mentioned in the previous paragraph, while Jordanian universities are of good caliber, additional programs and stronger links would further benefit the cluster.

3.53 **Specific Tasks.** The specific tasks that should be undertaken here are:

- Offer college and advanced degree students internships at local pharmaceutical enterprises. This experience will likely introduce students to an interesting field of work they may not have considered.
- Create a connection between academic science, business management, and law programs, such as the possibility to take joint degrees.
- Engage students in universities or in graduate degree programs (science, business, or law) to participate and solve “real world” problems and issues in the pharmaceutical cluster, and therefore become exposed to this cluster and the opportunities it presents.
- Increase exposure of the pharmaceutical cluster at local universities by speaking at local university conferences and seminars.
- Create partnerships between enterprises, government, and universities on the development of, for example, better processes and higher efficiencies for the manufacturing of specialized generics. For example, university and hospital laboratories and academic resources could be used for research of new methodologies, while all entities shared the cost of the effort.

IV. Strengthen the Support of the Pharmaceutical Cluster

3.54 **Rationale.** As mentioned in the previous paragraph, in order to perform at maximum efficiency, the Jordanian pharmaceuticals enterprises need an internationally competitive support cluster that will complement the enterprises’ characteristics and enhance their global competitiveness.

3.55 **Strengthen R&D Capacity.** Increasing the R&D capacity and developing advanced R&D systems such as clinical and pre-clinical tests, would allow the

Jordanian pharmaceutical cluster to grow and diversify its functions, and to increase its international competitive edge. The characteristics of the cluster would change from being a manufacturer and seller of pharmaceuticals to becoming a provider of a full array of services – the hallmark of a robust and competitive pharmaceutical cluster.

3.56 ***Specific Tasks.*** In order for Jordan to be able to call its pharmaceuticals cluster a world-class destination for MNCs, it is necessary to develop an R&D capacity. Therefore, the specific tasks that should be undertaken here are feasibility studies for clinical and pre-clinical companies, and training courses in Harvesting Inventions/IP Management.

3.57 ***Provide Incubation Services to New Companies.*** Incubation services refer to support services that help the pharmaceuticals enterprises to strengthen the management of their product and to market it in foreign markets. Incubation services, for example, assist the pharmaceuticals enterprises with the preparation of files and documentation required by international governments from an enterprise when the latter wants to introduce a new product into a foreign market. The file consists of documents establishing the pharmaceutical product's stability, feasibility, and bio-equivalence tests conducted by clinical research organization.

3.58 In addition to file-generating services, incubation services also consist of marketing, legal and general management functions. For example, Good Management Practice processes. These services can be quite expensive, but they are critical for any enterprise that wants to enter the high-standards pharmaceuticals market.

3.59 By providing incubation services in addition to the bio-equivalence tests conducted by clinical research organizations, Jordan's pharmaceuticals cluster would become a one-stop-service shop for enterprises looking to expand into the high-standard market. The provision of these additional services would further diversify and strengthen the cluster's competitiveness.

3.60 Jordan's cluster, however, would require some training and expertise in order to provide high quality incubation services. As mentioned in the previous section, while the Jordanian Ministry of Health has established a department to help set up standards within the cluster, additional expertise is required. As such, former employees of North American and European government regulatory bodies dealing with the pharmaceuticals industry could be brought-in as consultants to the local cluster to help train the companies and to assist the government with the establishment of higher standards. The services of such consultants would be best utilized as a longer-term contract of a few years. In order to take advantage of the full

impact that such consultants can bring about, a longer period is required in order to bring Jordan's already sophisticated pharmaceutical enterprises to the level of world-class enterprises.

3.61 **Specific Tasks.** Therefore, the specific tasks that should be undertaken here are:

- Establish incubator within JAPM. Experts will provide GMP, file preparation, regulatory, legal, and marketing expertise to companies.
- Develop an online/offline library and reference center within JAPM.

3.62 ***Draft a Code of Conduct and Ethical Practices for Jordanian Enterprises.*** Jordan's pharmaceuticals enterprises would benefit from adhering to accepted ethical international standards when dealing with foreign markets and with MNCs. Most MNCs have a corporate code of conduct that outlines corporate behavior and ethics. JAPM can use such general international codes of conduct and guidelines and apply them to local Jordanian pharmaceuticals enterprises.

3.63 The incorporation of such general ethical standards would signal to MNCs that Jordanian pharmaceuticals enterprises are part of the international business community, and would bring Jordanian enterprises to an equal playing field in the view of MNCs.

3.64 ***Specific Tasks.*** The specific tasks that should be undertaken here are a review MNC Code of Conduct materials and to adapt them for local Jordanian conditions

3.65 ***Tax Breaks for Research and Development.*** Research and development is the lifeline of the pharmaceuticals industry. R&D has played a limited role in Jordan, with less than 2 percent of sales spent by Jordanian pharmaceutical enterprises on R&D versus 20 percent or more in the North American and European markets.

3.66 Providing tax breaks and other financial incentives can encourage R&D. This would encourage enterprises to engage in R&D and to promote the pharmaceutical enterprises and help establish the cluster with an international reputation.

3.67 Currently, the Jordanian government exempts R&D for pharmaceutical enterprises on a case-by-case basis. While some enterprises are allowed to claim R&D tax exemptions, others have to amortize the expense over several years. This non-transparent treatment discourages enterprises from embarking in R&D, especially given the high expense involved for smaller enterprises.

3.68 As mentioned in the previous section, whereas in the past export income was tax-exempt, the Jordanian government is now considering taxing export income. While almost inevitable, the taxation of export income of pharmaceuticals enterprises could result in considerable harm to Jordan's only value-added manufacturing sector, if it fails to prepare for this move.

3.69 **Specific Tasks.** The specific tasks should be to encourage the Jordanian government to exempt R&D expenses across the board, and encourage the enterprises to prepare for the removal of exemptions of export income.

3.70 **Strengthen CROs.** CROs can be established in Jordan in order for the pharmaceutical cluster to differentiate itself from other global competitors and to provide to MNCs more specialized services. CROs are outsourcing services to pharmaceuticals enterprises that help enterprises to streamline produce development and to reduce time to market. CROs provide a number of services, such as bio-safety testing and bio-equivalence testing required by governments to ensure the product's safety, purity, and potency (these tests are part of the documentation that is required by foreign governments when a company wants to introduce a new pharmaceutical product into a foreign market). CROs typically work with hospitals, but they carry out their analysis independently.

3.71 However, foreign CRO bio-equivalence tests are not always upheld when a company wants to register a new product in an overseas market. Usually the federal or regulatory agency in the foreign market requires that bio-equivalence tests be conducted locally, on its population.

3.72 If CROs in Jordan are trained and upgraded to International Conference on Harmonization (ICH) standards, the Jordanian pharmaceutical cluster would be able to conduct bio-equivalence tests in Jordan for the MNCs that are interested in entering or introducing new products into the Middle Eastern and North African markets. Jordan could become the center for conducting bio-equivalence tests for the Middle Eastern and North African region.

3.73 Conducting bio-equivalence tests in Jordan would also mean considerable price savings for MNCs of about 60-70 percent of the cost of conducting these tests in

North America or Europe. The main cost savings would come from lower costs in manpower for test analysis, human volunteers, equipment costs and hospital costs.

3.74 While the Jordanian pharmaceutical cluster faces competition in the analysis of bio-equivalence tests from Egypt and India, Jordan is recognized for the high quality of its pharmaceutical products. The JAPM is in the process of getting EU guidance for the conduct of these tests from Sweden, and needs US guidance.

3.75 **Specific Tasks.** The specific tasks that should be undertaken here are:

- Train existing CROs in GCP/GLP according to International Conference on Harmonization guidelines.
- Get a US-based CRO trainer to provide this training.

3.76 **Benchmark Jordanian Pharmaceutical Industry Against World Standards.** Profit margins in the production of generic pharmaceuticals are low and depend on turnover of new products. In order to effectively compete in a pharmaceutical global market, the Jordanian pharmaceutical enterprises have to undergo initial improvement and changes from a producer of generic and in-patent products, to a high value added producer of specialized generics. Additional services should be incorporated into the cluster that will make it a competitive provider of diverse support services. This cluster should be benchmarked against competitive pharmaceutical clusters in North America and Europe in order to determine how competitive is the Jordanian cluster against its main international competitors.

3.77 In order to determine competitiveness, the unit cost of Jordan's high value added specialized generic exports should be evaluated versus Indian generics sold in North America and Europe, as well as versus European and North American generic manufacturers.

3.78 **Specific tasks.** The specific task that should be undertaken here is a study of Jordanian generics industry versus leading competitors in the global generics market. This study will examine unit-manufacturing cost and cost drivers (direct costs and direct and indirect overhead) in order to improve efficiency.

3.79 **Strengthen Distribution Networks.** Jordan's pharmaceuticals enterprises provide over 30% of the domestic demand for drugs. The sector, however, does not have one central domestic distribution network. There is not one main chain where drugs are sold, instead there are hundreds of small, independent stores. In addition,

there is no professional freight or distribution company, making domestic distribution of pharmaceuticals difficult and inefficient.

3.80 **Specific Tasks.** The main task proposed here is to undertake a feasibility study for cooperative distribution networks. An investment in a distribution network, either a cooperative effort or a new investment by a third party, would help improve transport efficiency since there are few suppliers and multiple buyers (pharmacies). This would be helpful given the highly fragmented nature of the industry.

3.81 **Improve Standards Across Functions.** In order to compete efficiently on an international level, Jordanian pharmaceuticals enterprises have to reach and operate at existing international standards. That is, Jordanian enterprises have to obtain cost leadership, differentiate products, services, and processes, providing better and more unique features than competitors', creating a market niche. This requires continuous introduction of efficiencies, innovations, and new strategies to achieve their goal better from both a health management and a scientific perspective. Continuous GMP (cGMP) is the way to competitiveness.

3.82 **Specific Tasks.** The main task proposed here is to train companies in continuous GMP and in GLP.

V. Improve Perception of Jordanian Pharmaceutical Product in Jordan

3.83 **Rationale.** Domestically, Jordanian-manufactured pharmaceuticals are not regarded as superior to imports. On the contrary, local doctors are biased towards prescribing imported medicine from companies with large R&D facilities, such as Pfizer and Merck. In addition, Jordanian law requires pharmacists to prescribe branded pharmaceuticals when a certain pharmaceutical product is specified, and the bias is thus skewed towards foreign products.

3.84 Although the pharmaceuticals enterprises' growth can be achieved mainly from growing the already strong export function, attention should be paid to increasing supply of Jordanian-manufactured pharmaceuticals to the domestic sector as well. The Jordan pharmaceuticals enterprises can achieve this goal through the following strategies:

3.85 **Local Public Relations Campaign.** Although the Jordanian pharmaceuticals enterprises satisfy over one-third of domestic demand, it is mainly export-oriented. Local pharmaceuticals enterprises, as part of an outreach program with the cluster, can bring medical students and pharmacy school students from local universities to visit their production plants, thereby introducing them to the local

industry while still in school. As was previously mentioned, local pharmaceutical enterprises can also bring on interns from pharmaceutical schools into their companies for a semester project or a summer internship, thereby creating strong relationships with their future client base. The local enterprises can also get testimonials from doctors and hospitals that are prescribing their product as a means to create trust of the product within the community and induce trial of the locally manufactured medicine. Lastly, Jordanian pharmaceutical enterprises can engage a marketing communications or a media company to create an ad and public relations campaign for the local market.

3.86 The Jordanian pharmaceutical enterprises can get a high quality “look” to their packaging that matches their high quality product, as the packaging often communicates to the customer the quality of the produce. As mentioned previously, this can be achieved by working with a commercial designer to create logos and visuals, as well as with the JAPM to create quality standards and a seal of approval given to products by the association. In addition, packaging needs to be informative and professional, similar to the packaging of imported products from North America and Europe.

3.87 In contacting local doctors that deal with the type of diseases and illnesses that require products manufactured locally, the Jordanian enterprises can introduce their high quality products to selected doctors and hospitals. These relationships between manufacturers and hospitals are important to build in order to strengthen the cluster, and in order to create a wider local market.

3.88 *Specific Tasks.* The specific tasks that should be undertaken under this program are the commissioning of a media firm to create an advertisement/public relations campaign, designing marketing programs aimed at medical and pharmacy school students e.g. site visit programs, and commissioning an international graphics design expert for packaging and design of pharmaceutical products.

VI. Strengthen Partnership with Local Government

2.32. *Rationale.* As the pharmaceuticals cluster continues to grow, future issues are likely to arise that would require government participation in order to continue to successfully grow the pharmaceutical enterprises. However, as mentioned earlier, it appears that the pharmaceutical enterprises do not have a strong relationship with the Ministry of Health, and approaches it mainly on problem-solving matters. There were no items to include the Ministry of Health on programs related to the industry updates and seminars. Such interaction could be especially beneficial to the long-term relationship between regulators and enterprises, and is discussed in detail in the subsequent section.

3.89 *Specific Tasks.* The specific tasks that should be undertaken here are:

- Strengthen government-industry coordination on main issues. This effort should be lead by the industry association.
- Private sector to participate in drafting directives.
- Visits and representations of the cluster representatives to key officials.
- Establish a public-private task force for key issues.

PART FOUR

LIST OF TASKS AND RESEARCH AGENDA¹

		Tasks/Research Activity	Participants ²						
			1	2	3	4	5	6	7
*	1	Hire lawyer in targeted major Arab markets on a retainer basis in order to undertake lobbying missions to major MENA markets	X						
*	2	Undertake Deficiency Analysis (hire an ex-FDA consultant) for ANDA	X	X	X				
*	3	Train companies in regulatory file preparation – for export to the USA.	X	X					
*	4	Train companies in GMP/Validation Standards – for export to the EU.	X	X					
	5	Hire a reputable contract research organization (CRO) to conduct bio-equivalence studies in the export market.	X				X		
	6	Commission market research studies (for the EU, Eastern Europe).	X	X					
	7	Buy IMS Strategic Intelligence Data and Generic Planning (SIDGP) Software.	X	X					
	8	Get routine market intelligence reports from specialized market research companies.	X	X					
	9	Keep up to date and attend international industry conferences to get global market intelligence.	X		X				
	10	Participate in exploratory trade missions, exhibitions, and conferences.	X	X	X				
	11	Background research on companies in North America and in Europe	X	X					
	12	Plan trade missions to meet with other companies in export markets	X	X	X		X		
	13	Develop local company database (on brochure, CD and website)	X	X					
	14	Hire integrated marketing communications company to develop a one-stop Website, multimedia presentations, brochures, film.	X						

2.1. _____

¹ * = Indicates immediate term activities. All else should be undertaken with a 24 month period

² Legend is as follows: 1 – Jordan Association of Pharmaceutical Manufacturers; 2 – Pharmaceutical Enterprises; 3 - Ministry of Health / Drug Directorate; 4 – Ministry of Industry & Trade; 5 – Contract Research Organizations; 6 - University of Jordan; 7 – Jordan Investment Board.

		Tasks/Research Activity	Participants ²						
			1	2	3	4	5	6	7
	15	Commission pharmaceutical intellectual property right (IPR) lawyers specializing in process patent infringement in the North American and the European markets.	X			X			
*	16	Undertake Series of investment promotion missions to North America and to Europe	X						X
	17	Develop an Investor Profile database.	X						X
	18	Build relationships with professional associations.	X						
	19	Commission investor research of the North American and European pharmaceuticals industry.	X						X
	20	Commission analysis of the sector by specialized research companies.	X						X
*	21	Pay for SCRIP journalist to visit Jordan and write an article about the industry	X	X	X		X		X
	22	Participate in major exhibitions and participate or speak at conferences	X	X					
	23	Develop "Booth in a Box" (banner, exhibits, etc.) for exhibitions	X	X					
	24	Develop investment promotion missions to other markets for raw materials and for packaging materials	X	X					X
*	25	Commission feasibility studies for new pharmaceutical production areas, engage in missions to MNCs to discuss avenues of cooperation on the development and manufacturing of these specialized generic product areas, and study new alternative drug products	X	X					
*	26	Commission feasibility studies for new drug delivery systems, and provide training to cluster employees in this new drug delivery system.	X	X	X				
	27	Undertake marketing program for companies in North America and Europe	X	X					
	28	Attend international conferences and exhibits to create contacts with MNCs and to increase international awareness of the Jordanian pharmaceutical cluster capabilities.	X	X					X
	29	Create marketing communications material on the Jordanian cluster capabilities such as brochures and other promotional and educational materials.	X	X					X
	30	Establish a local training program in biotechnology for the pharmaceutical cluster/Academia (Swiss).	X	X	X		X		
	31	Offer college and advanced degree students internships at local pharmaceutical enterprises. This experience will likely introduce students to an interesting field of work they may not have considered.	X	X	X		X		
	32	Create a connection between academic science, business management, and law programs, such	X	X			X		

		Participants ²							
		Tasks/Research Activity	1	2	3	4	5	6	7
		as the possibility to take joint degrees.							
	33	Engage students in universities or in graduate degree programs (science, business, or law) to participate and solve "real world" problems and issues in the pharmaceutical cluster, and therefore become exposed to this cluster and the opportunities it presents.	X	X			X		
	34	Increase exposure of the pharmaceutical cluster at local universities by speaking at local university conferences and seminars.	X	X			X		
	35	Create partnerships between enterprises, government, and universities on the development of, for example, better processes and higher efficiencies for the manufacturing of specialized generics.	X	X	X		X		
	36	Undertake feasibility studies for clinical and pre-clinical companies, and training courses in Harvesting Inventions/IP Management.	X	X			X		
*	37	Establish incubator within JAPM. Experts will provide GMP, file preparation, regulatory, legal, and marketing expertise to companies.	X	X	X				
	38	Develop an online/offline library and reference center within JAPM	X						
*	39	Review MNC Code of Conduct materials and adapt them for local Jordanian conditions	X	X					
	40	Encourage the Jordanian government to exempt R&D expenses across the board.	X	X		X			
*	41	Train existing CROs in GCP/GLP according to International Conference on Harmonization guidelines.					X		
*	42	Get an international CRO trainer to provide this training.					X		
*	43	Study of Jordanian generics industry versus leading competitors in the global generics market. This study will examine unit-manufacturing cost and cost drivers (direct costs and direct and indirect overhead) in order to improve efficiency.	X	X		X			
	44	Undertake feasibility study for cooperative distribution networks.				X			
*	45	Train companies in continuous GMP and in GLP.	X	X	X				
	46	Commission a media firm to create an advertisement/public relations campaign, designing marketing programs aimed at medical and pharmacy school students e.g. site visit programs, etc., and commission an international graphics design expert for packaging and design of pharmaceutical products	X						
	47	Strengthen government-industry coordination on main issues	X		X	X			
	48	Participate in drafting directives	X						
	49	Undertake visits and representations to key	X	X					

			Participants ²						
		Tasks/Research Activity	1	2	3	4	5	6	7
		officials							
	50	Establish public-private task force for key issues	X	X	X	X	X	X	X

ANNEXES

ANNEX A

CLUSTER RESEARCH & ANALYSIS ROADMAP

Introduction

A.1. The cluster analysis and research roadmap is a step-by-step guide to the team undertaking analysis of the various clusters in Jordan. The approach in the cluster analysis is similar to standard research steps -- desk research, field interviews and workshops, analysis and reporting. In Jordan, however, the Ministry of Planning's Competitiveness Unit has done much work in background research and analysis of the cluster. There are several reasons to re-visit the cluster analyses, as seen in this report.

- First, the information presented in the cluster analyses original work is now dated. Given the complexity of working at the cluster level, more holistic in nature than an industry level analysis, there are multiple factors and external forces whose impact on one cluster participant affects the other. For that matter, it is important to frequently evaluate forces that the cluster faces.
- Second, the work done by the competitiveness unit was groundbreaking when undertaken originally. It was used both to highlight the concept of the cluster approach, as well as to inform business and policymakers on the state of the cluster, as well as present recommendations to improve the cluster. The approach undertaken here is less on information dissemination. The approach has more of an action, rather than an analytical orientation. The purpose of revisiting clusters is not to discuss clusters at length, but rather use this widely accepted paradigm as a method to identify practical, actionable tasks, organized by priority and by implementing agencies.

A.2. The cluster analyses and research roadmap presented here is organized along four distinct phases: desk research, field interviews and workshops, analyses, and reporting. Given the multiple participants and information sources, the practice of cluster analysis and research rarely follows the neat and well-organized path that the four phases might imply. The team must exercise in flexibility, often returning to desk research following workshops and field interviews, for example. The detailed, step-by-step guide presented below includes experiences in undertaking the pharmaceutical cluster research and analyses, the first of its kind since work undertaken by the Ministry of Planning's Competitiveness Unit some years back.

Step 1: Desk Research

A.3. Before starting the research process, the team must first develop a thorough understanding of the cluster paradigm. While the cluster concept has been in practice for several decades, the first attempt to organize this thinking was done by Michael Porter in his work *Competitive Advantage Of Nations* (1990). It should be recognized that Porter is a Harvard Business School professor, and uses an **applied** method to economic development, as opposed to the didactic approach used by industry and trade economists. Not surprisingly, Michael Porter's work is quite intuitive and has received extensive recognition since it was first published over 10 years ago. As a professor of business, though, Porter's preoccupation with cluster development is rooted in his interest in productivity of the firm. Porter's previous works on competitive strategy (1980, 1983) focused on aligning the enterprise to achieve high degree productivity. With his work on the *Competitive Advantages of Nations*, Porter goes *beyond* the enterprise, to its business environment. The thesis behind the *Competitive Advantage of Nations* is that a well-developed cluster, which includes core enterprises as well as participants that are interdependent with these enterprises, will foster innovation that will lead to a high degree productivity of the firm and thus contribute to general economic well being of the location. In short, Porter starts and ends with his focus on the enterprise. Much work has been done on clusters and their role in fostering competitiveness. Annex D included in this report provides a detailed list of current thinking on clusters and competitiveness, not only by Michael Porter, but also his counterparts in academia, industry and economic development.

A.4. Next, the team should review the work done by the Ministry of Planning Competitiveness Unit. The general layout of the analysis by the Unit is organized along the following lines – (a) Cluster Overview, which provides basic cluster information, (b) Cluster Analyses, which organize information along lines presented in Michael Porter's remark, and (c) Next Steps, which provides recommendations in general, and along a timeline priority. The team should also obtain all information and background material used by the Unit. Here the team must work with an analyst from the Competitiveness Unit to obtain a deeper understanding of the cluster. At this stage, the team must also gather information on the following:

- For the domestic perspective: significance of cluster in local economy. This can be measured by share of core industry in GDP, employment, volume and value of exports to domestic consumption, and fixed investment. Other indicators such as value-added (i.e. sector GDP/sector employment) are also helpful. This information is widely available in local statistical agencies.
- For the international perspective: significance in international markets, such as overall size of domestic market, per capita consumption, direction of trade, typical

employment, typical investment size in relation to international averages. Publications such as *Manufacturing Worldwide* (Gale Encyclopedia) and the *Commodity Trade Statistics* (UNCTAD) provide a detailed glimpse into this information.

A.5. Third, the team should review articles on the cluster in the general business press of the last 18-24 months, and obtain similar information from industry newsletters. Put together, the sources provide a vivid understanding of developments in the industry. However, some of the press coverage is often sensationalist, as was evident from a review of the pharmaceutical articles for a few years ago (when industry sentiments on the possible demise of the cluster as a result of WTO was widely covered). The team should make sure to obtain statistics on core enterprises as well as statistics on the major participants in the cluster. For this reason, the team must have an experienced individual in the cluster analysis team. The policy analyst from the Ministry of Planning's Competitiveness Unit and the director general of Jordan association of pharmaceutical manufacturing were especially helpful in developing this cluster map.

A.6. Fourth, after having reviewed the local business situation, the team should get a global perspective and context in which the cluster operates. Given the global nature of various clusters (pharmaceuticals, information technology and apparel, for example), the team will encounter several global forces that have a local impact. In the pharmaceutical work, this was especially significant. The role of the WTO and subsequent bilateral negotiations with the U.S. government, EU legislation that allowed Jordanians to export using a loophole, were among some of the global issues. In addition, the team should contact international companies operating in Jordan to get a sense on where the industry is headed and the market forces that could potentially impact the cluster. The team should also examine previous work and studies undertaken by experts. During the pharmaceutical research, several documents undertaken by noteworthy experts, local and international, provided a stronger baseline to focus to research.

A.7. At this stage, the team is probably dealing with a great deal of industry jargon, especially dealing with complex, next-generation industries, such as information technology. In addition to clarifying with industry practitioners, the team might find it helpful to obtain a basic reference document on the industry. A primer on the industry, often available through brokerage house research or an entry-level university textbook, provides valuable information on jargon. Ideally of course, as was the case with the pharmaceutical cluster research, knowledgeable participants can provide outstanding clarity to the team during the research process. The Jordan Association of Pharmaceutical Manufacturers was especially helpful in clarifying jargon in the manufacturing process as well as in the general business and policy environment.

A.8. Given the plethora of data, the team must start organizing its information within an analytical framework. Here, Porter's cluster paradigm – the five forces - is helpful. The team should develop questions around this paradigm. In the case of the pharmaceutical cluster, Porter's five forces were translated individually into the specific questions. For example, under Firm Strategy and Rivalry, the questions included -- what is our number of firms? How many of these are well capitalized by national standards? How many companies compete under a single product category? How easy it to ensure entry and exit from the industry? etc.

A.9. At this point, the team is almost ready to undertake one-on-one and workshop based discussions with various participants in the cluster. While the work in this subsequent stage will be mostly of a reactive, data gathering and screening nature, the team can nonetheless be proactive in developing arguments on the direction of the cluster. For example, when researching the pharmaceuticals cluster, it was apparent that the companies had to be export oriented to succeed, and that scale economies, entering new markets, and going beyond products to the services function were some of the elements to improve competitiveness within the cluster. Having 'framed' the discussion at the start, the team can actively facilitate the discussions with a view to strengthening, refocusing or eliminating these arguments.

Step 2: Field Interviews and Workshops

A.10. In person data collection is the reality check aspect of the cluster research process. The team will need to identify various opinion leaders that represent the wide range of cluster participants. During the pharmaceutical research process, interviews were conducted not only with the core enterprises, but also, and more importantly, with other participants in the cluster. This included faculty of pharmacy at Jordan University, head of Jordan University hospital, regulators within the ministry of health, a research analyst at the local investment bank, policy analyst at ministries of planning as well as industry and trade. In addition, the team researched the quality of services available in the legal and business consultants and community, one of the many support services within the pharmaceutical cluster.

A.11. Given the wide range of participants in the process, the team must ensure that it stays focused. For this matter, the team should try and stick to the questions to reflect the factors outlined in Porter's model. However, good interviewing is more art than science. The interviewer needs to set a purpose as well as the agenda of the meeting, but allow some degree of latitude to the interviewee. During discussions with various cluster participants in pharmaceuticals, a great deal of information on trends, interrelationships, as well as recommendations emerged during interviews. The team needs to maintain the role of active listener, looking for information that supports the hypotheses or arguments framed earlier, as well as look for cues that launch a different discussion strand that is equally important to the core research

agenda. In short, the interview process should be left to a team member with demonstrated experience in managing agenda-focused interviewees.

A.12. Table A.1 below lists the various elements for discussion with relevant participants during the interview process.

Table A.1 - Key Factors to Analyze in Cluster

Firm Strategy and Rivalry	Demand Conditions	Factor Conditions	Supporting Institutions	Government
Company and strategies	Direct contact with sophisticated and demanding consumers	Climate	Competitive and high quality supplier	Political will
The quality of sustained commitment of capital and resources	Size and segmentation of local demand	Land	Financial sector	Supportive laws
Industry cooperation	Number of independent buyers	Location Proximity	Business services	Enabling regulations
The level of domestic rivalry	The speed of growth	Availability of basic inputs	Strong business associations	Bureaucracy and second-tier constraints
Possibility of new business formation	How fast the home market gets saturated	Inexpensive Labor Skilled Human Resources	Strong ties with research institutions	Transparency
The nature of dialogue with labor	Mobile local buyers	Knowledge resources	Quality of private-public dialogue	Capacity of enforcing authority
Fairness of local competition	Ability to monitor and respond to trends	Access to capital resources	Quality of education and training providers	Presence/credibility of semi-autonomous institutions
Parastatals and monopolies		Infrastructure: availability of ports		Private sector input in institutions
Leadership characteristics		Institutions		Public-private partnership programs
Protection				
Quality of firm level strategy				
Reactive vs. Proactive				
Hi-end vs. low-end				
Price vs. Differentiation				
Distribution channels				
Number of competing firms				
Commodities vs. Specialized products				

Step 3: Analysis and Recommendations

A.13. The workshops and interviews will provide a wealth of information that will clarify desk research, provide new perspectives, and suggest recommendations to strengthen the cluster. The sources of this information will be as varied as the number of participants in the cluster. The team must organize and prioritize this information and turn it into meaningful, actionable recommendations to policymakers.

A.14. The report's recommendations will come from two sources. First, from the team itself, who will make recommendations after reviewing information gathered and including international experience of some members of the team. Second, from participants in the cluster, who may simply state an opinion or provide arguments to support the recommendation. The team must verify recommendations made by participants wherever possible, through independent follow up research if possible. Not all recommendations will be verifiable, e.g. a strategic recommendation by an experienced industry to improve vocational training for long-term betterment of the cluster.

A.15. The team must organize the recommendations along a systematic framework. In this case we used Porter's model of five factors. For example, the recommendation to improve vocational training would fall under the area of supporting industries and institutions, one of the five factors in Porter's model. A table will thus be developed similar to the one in Part Four of this Report.

A.16. What will emerge at this stage is a complete diagnosis of the cluster, with commentary organized along an analytical framework, and proposed (albeit broad) recommendations to improve and strengthen the cluster.

Step 4: Planning the Way Forward

A.17. The diagnosis pointed to the general direction that the cluster should take. At this stage, the general direction should be turned into concrete recommendations. In order to help policymakers focus on the core issues, the recommendations should be organized along a common theme. In pharmaceuticals, for instance, recommendations relating to strengthening the support industry and institutions were placed under one heading – institutional support. Some may be further sub-divided – for example, a North American/European strategy and an Arab market strategy for exports. The pharmaceutical recommendations also re-iterated and summarized the supporting rationale (for example, paraphrasing the European export prospects) provided in the earlier diagnosis section, in order to create a 'stand-alone' section.

A.18. The team should also provide concrete tasks under each recommendation. For example, a recommendation proposing that pharmaceutical enterprises lobby Arab governments to eliminate technical barriers to trade must be translated into specific tasks such as contracting a lawyer in Egypt, Iraq and Saudi Arabia, and undertaking a minimum of two government relations missions to these countries in 2003. The team must ensure that tasks provide clear orders to the implementing agent. Chapter Four – Strategy for Building Competitiveness in the Pharmaceutical cluster analysis provides the format for presenting these recommendations.

ANNEX B

CONSULTANT SCOPE OF WORK

I. Specific Challenges Addressed by this Consultancy

Accelerating foreign direct investment is crucial to achieving higher rates of growth. Technical assistance under AMIR targeted the Jordan Investment Board based on the assumption that it could become a world-class, private sector led agency for stimulating FDI. However, the overall results of efforts to strengthen JIB have been disappointing.

In late 2001, HM King Abdullah II appointed an Investment Task Force to address this problem and to provide recommendations for restructuring Jordan's existing investment and trade promotion organizations. The ITF commissioned Booz-Allen to examine international best practices and recommend a model most appropriate to Jordan's needs. Based on this study, the ITF recommended adopting a structure similar to Ireland's Forfás, a semi-autonomous umbrella agency that controls and coordinates all of Ireland's national trade and investment promotion and facilitation activities, and functions as the principal source of advice and recommendations to Government on trade and investment policy and strategy. The ITF recommended that existing bodies charged with investment and trade promotion functions (JIB, the Jordan Export Development Corporation, the Jordan Industrial Estates Corporation and the Free Zones Corporation) be subsumed under this new agency – the Jordan Authority for Economic Development.

A key objective of the AMIR 2.0 Program is to support this effort and to provide whatever technical assistance is required for JAED to function properly. Pending the creation of JAED, investment and trade policy remains under the joint responsibility of the Ministry of Industry and Trade and the ITF. The ITF had been instructed to present to His Majesty, by April 30, 2002, a set of investment and trade policy and strategy recommendations for immediate action. The ITF, in the absence of any alternate vision to that proposed by Booz-Allen, presented the recommendations of that study as its own, with minor modifications adopted by the Investment Committee. For the establishment of JAED and related activities, the Investment Committee with AMIR Program support has developed a detailed set of recommendations that owes as much to the Committee's own research and deliberations as it does to the recommendations contained in the original study.

No such research or discussion has taken place with respect to current investment and trade strategy with the result that the recommendations contained in the Booz-Allen study are likely to be adopted without modification. The Booz-Allen study examined some 10 existing sectors and proposed immediate actions to improve the export and investment performance of these sectors. Terming them “Quick Fixes”, it recommended sweeping reforms touching on tax codes, international agreements, regulatory and legal reforms, infrastructure development and more. These sector analyses and recommendations were based in part on prior sector studies carried out by Deloitte & Touche.

The potential danger in adopting these recommendations for “quick fixes” is that it may commit Government to a long-term course of action based on short-term considerations rather than in the context of a long-term set of policies and strategies. Such action could require the new JAED to focus to a large degree on undoing possible harmful consequences of these “quick fixes” instead of developing a coherent basis for national investment and trade policies and strategies. It is essential, therefore, to examine the recommendations presented in the Booz-Allen report and to propose an alternative approach based on existing strategies and on the initiatives that AMIR is supporting in respect of JAED and its affiliated implementing agencies.

II. Objective

The objective for the consultant under this particular SOW is to produce a “model” cluster analysis in the context of AMIR work toward a national investment strategy that will help consolidate rigorous economic analysis into investment promotion through JAED. The intention is for those who promote both FDI and DDI in Jordan to understand their task in the context of an investment strategy, with knowledge of Jordan’s comparative advantages by industry and sector, and promote an incentive structure that will contribute to long-term growth rather than short-term investor gain. The ability to underpin the new JAED’s mandate with rigorous analysis and solid metrics will greatly enhance the reputation of the new body and in turn promote Jordan as a destination of capital.

Although some work has been done on clusters in Jordan, the concept of competitiveness and the benefits of cluster-based policy are not sufficiently understood by policy-makers. Both Government and the private sector are eager to improve the competitiveness of Jordan but appear not to recognize that it is Jordanian enterprises that compete, both domestically and internationally, by upgrading their capabilities and increasing productivity while operating within developed and well-functioning clusters. Clusters encompass an array of linked industries, including suppliers of specialized inputs and support services. Clusters therefore extend to manufacturers of complementary products and to companies of industries related by

skills, technologies or common inputs. They naturally include all related and supporting industries, and enterprises of all sizes. The value of cluster policy is to reinforce the development of all clusters and not to select so-called “winners” and protect them with special tax concessions or subsidies.

The intention is to develop a model, benchmark cluster analysis, based on existing material, for one or two sectors (eg. Pharmaceuticals and/or Medical services). The Competitiveness Unit of the Ministry of Planning (MOP) has “Cluster Analyses” for 13 clusters, but these are incomplete (and slightly out of date). While they provide good descriptive information, they do not draw conclusions or recommendations. The mission would be to update and more importantly to upgrade the existing study(ies) so that they act both as case studies for the clusters included, but more importantly as methodological and formal templates for further cluster studies.

This SOW would put the theory into practice, by upgrading existing studies in such a way as to increase policy-making capacity in JAED, MIT and MOP, if desired. To this end, selected staff of these bodies would be tied to the study team, either formally or de facto, so that they benefit from on-the-job training. The anticipated outcome would therefore be both a full cluster analysis (or two) and a practical methodology that can be duplicated in evolving future policy advice.

III. Specific Tasks of the Consultant(s)

Under this Scope of Work, the Consultant(s) shall perform, but not be limited to, the tasks specified under the following categories:

A. Background Reading Related to Understanding the Work and Its

Consultant(s) shall read, but is/are not limited to, the following materials related to fully understanding the work specified under this consultancy:

- AMIR Work Plan
- Investment Task Force Executive Summary and Accompanying Report
- Strategic Plan of the Ministry of Industry and Trade
- TIJARA Draft Plan
- AMIR 1.0 Report “Investor Targeting Strategy for the Investment Promotion Corporation”

- AMIR presentations on JAED and implementing agencies
- MOP's Competitiveness Unit Cluster Studies
- AMIR Backward Linkages, Enterprises Connections Program Pilot Assessment

B. Background Interviews Related to Understanding the Work and Its

The Consultant(s) shall interview, but is/are not limited to, the following individuals or groups of individuals in order to fully understand the work specified under this consultancy:

- Steve Wade, Chief of Party, AMIR 2.0 Program
- Charles Krakoff, PSPI Team Leader, AMIR 2.0 Program
- Barry O'Connell, IVP Sub-Component Leader, AMIR 2.0 Program
- HE Dr Salah Al-Bashir, Minister of Industry and Trade
- Mr Nadeem Muasher, Chairman, Investment Committee
- Dr Khaled Al-Wazani, Economic Advisor to HM King Abdullah
- Jon Lindborg, Jim Barnhart and Jamal Al-Jabiri, USAID

C. Tasks Related to Achieving the Consultancy's Objectives.

The Consultant(s) shall use his/her education, considerable experience, and additional understanding gleaned from the tasks specified in A. and B. above to:

- Update the data and information contained in one or two of the cluster studies of MOP
- Upgrade these cluster studies in such a way as to draw clear and

practicable policy recommendations aimed at improving the clusters' performance

- Upgrade the studies in such a way as to make them models of cluster analysis for future duplication on these and other (existing and potential) clusters
- In light of the cluster analyses, evaluate the existing proposals before Government and recommend appropriate near-term and intermediate-term actions
- Draft a 12-month research agenda for JAED/MIT/MOP that will enable Jordan to identify appropriate long-term investment and trade policies and strategies by focusing on clusters.

IV. Consultancy Qualifications

The Consultant(s) shall have the following minimum requirements:

Educational Qualifications

- Master's Degree or higher in the area of economics or public policy from a recognized international university

Work Experience Qualifications

- At least 6 years international experience in enterprise development, export and investment development, competitiveness and related areas
- Practical and theoretical expertise in a wide range of areas including trade and industrial policy appraisal and reform, enterprise development, and cluster analysis

ANNEX C

INFORMATION SOURCES

- Dr. Mohammed Al Atrash, General Manager, Arab Pharmaceuticals
- Roche Pharmaceutical Company
- Samir Mansour, PHARMA
- Aref Al-Farra, Ministry of Industry and Trade
- Maher Matalka, JAPM
- Nasreen Barakat, Competitiveness Unit, Ministry of Planning
- Naseem Rahahaleh, Competitiveness Unit, Ministry of Planning
- Dr Fatma Afifi, Dean of Pharmacy, Jordan University
- Dean, Jordan University Hospital
- Hikma Pharmaceuticals
- Jamal Al Jabiri, USAID Mission
- HE Dr Salah Al-Bashir, Minister of Industry and Trade
- Charles Krakoff, PSPI Team Leader, AMIR 2.0 Program
- Barry O’Connell, IVP Sub-Component Leader, AMIR 2.0 Program
- Ibrahim Osta, AMIR
- Rami Al-Qusus, Ministry of Industry and Trade
- Maisaa Al Saket, Ministry of Health
- Mazin Hamoud, Jordan Investment Board
- Mohammad Asfour, Jordan Investment Board
- Jordan Exporters Association
- Mr. Ortiz, US Embassy – Jordan

ANNEX D

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