

**Access to Microfinance & Improved Implementation of Policy Reform  
(AMIR Program)**

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**ANALYSIS AND RECOMMENDATIONS FOR  
THE ESTABLISHMENT OF A  
BACKWARD LINKAGE PROGRAM  
IN JORDAN**

**FINAL REPORT**

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## 1. Introduction

### 1.1 Purpose of Study

The Services Group (TSG) was contracted by the United States Agency for International Development (USAID), under the four-year AMIR Program, to design a Backward Linkage Program tailored for Jordan, including the design of an 18-month pilot program, an installation plan, and training program for Jordanian officials who will be involved in the pilot program. This report sets out the findings and recommendations of the TSG consultants regarding the potential and strategy for the development of the Backward Linkage Program for Jordan.

### 1.2 Economic Context

Over the past five years, the Government of Jordan (GOJ) has undertaken a series of reforms in order to stimulate foreign investment (FDI) into the Kingdom, including legal and policy reforms, institutional reforms, as well as the creation of the Jordan Investment Board (JIB), the official agency responsible for the promotion of FDI into the Kingdom. Since 1996, the value of annual FDI inflows has more than doubled, increasing from JD 77 million in 1996 to JD 155 million in 1998; the first 10 months of 1999 yielded FDI inflows valued at more than JD 171 million.

While there is significant room to increase the inflow of FDI into the Kingdom (and there are currently a number of programs in place to assist the Jordan Investment Board in enhancing its ability to generate FDI inflows), there is also an opportunity to increase the benefits of any incoming FDI, as well as existing investment, to the Jordanian economy. One of the most dynamic benefits of FDI is the potential to develop backward linkages with domestic industry – a benefit that has only been marginally realized in the Jordanian context. For the most part, incoming investors meet the majority of their demand for intermediate inputs through imports from abroad.

A broad review of Jordanian industries' current import requirements and existing domestic supply capacity indicates strong potential for the development of new domestic linkages. For example, Jordanian industry imports approximately US\$40 million (1997/98) of plastic building and other products, an industry in which Jordan already has a significant supply capacity, producing US\$130 million of output, including a substantial proportion in building products that are imported from outside Jordan. Similarly, Jordanian industry imports a substantial amount of manufactured metal products (US\$160 million), a proportion of which can be supplied by Jordan's existing US\$100 million metalworking industry. Annex B provides details of Jordan's current import requirements and its existing supply capacity in potential linkage industry sectors.

The development of a Backward Linkage Program will play an important role in linking foreign investment to Jordan's domestic industry base and increasing the returns to the Jordanian economy.

### 1.3 Methodology

The strategy for the development of a Backward Linkage Program in Jordan is based on key two factors:

- **International best practices** in backward linkage program structures and operations. International experience provides evidence of the key factors that drive the success of linkage programs, including institutional and organizational structures, program management, and program approach and operations. This strategy builds on the experience of the most successful linkage programs worldwide, including:
  - Ireland's National Linkage Program (NLP);
  - Thailand's BOI Unit for Industrial Linkage Development (BUILD) program;
  - Singapore's Local Industry Upgrade Program (LIUP); and
  - Taiwan's Center-Satellite Development program (CSD).
- **A review of Jordanian industry and institutions** relevant to linkage program development. TSG consultants, Mr. David Lovegrove and Ms. Sheri Pitigala, interviewed representatives from more than 30 entities in Jordan, including public and NGO institutions, bilateral and multilateral donor agencies, and private companies. A list of these interviews is included in Annex A of this report.

### 1.4 Report Structure

The remainder of this report is structured as follows:

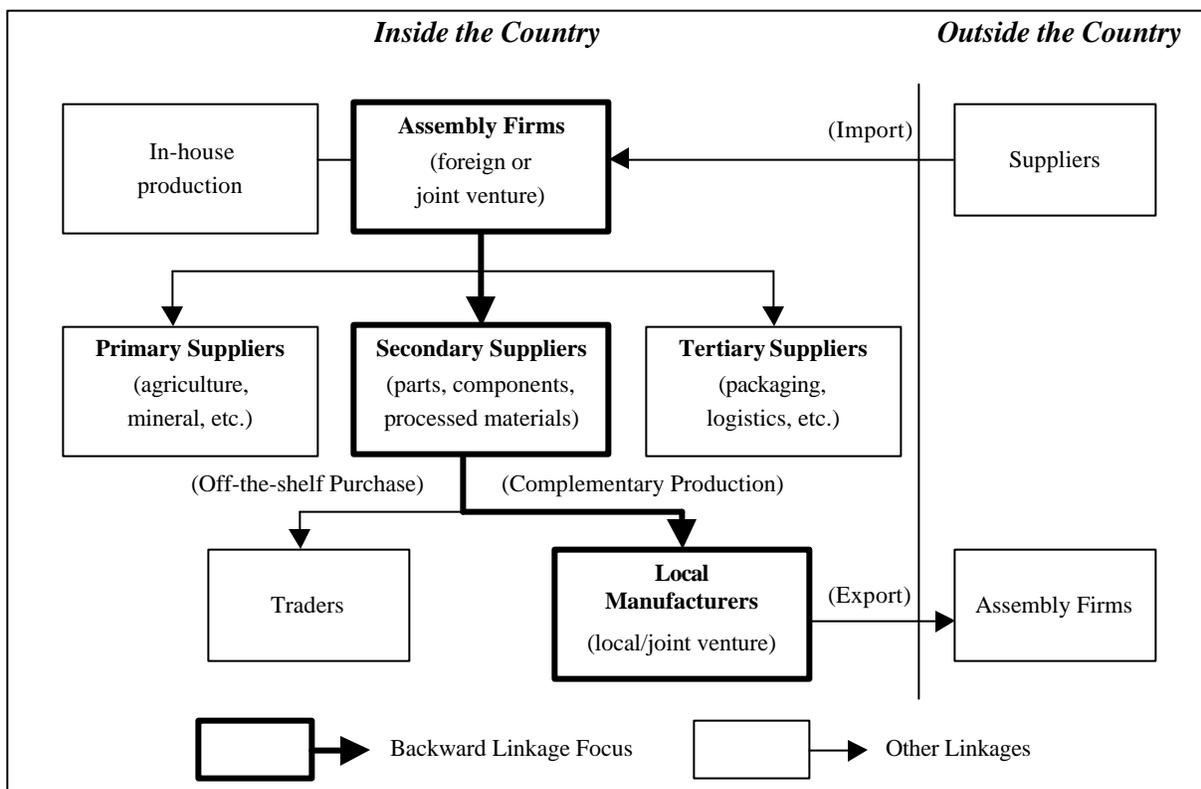
- Chapter 2 provides an overview of the backward linkage concept and best practice in linkage program development, including a case study of Ireland's National Linkage Program.
- Chapter 3 provides an outline strategy for the development of a linkage program in Jordan, including.
- Chapter 4 provides an outline for an 18-month pilot program to test and refine the linkage mechanisms.
- Chapter 5 sets out the training program for the Jordanian officials recruited to manage and run the program.

## 2. Backward Linkage Programs

### 2.1 Backward Linkages: Concept and Benefits

The term “backward linkages” refers to inter-firm relationships in which a company purchases intermediate goods and services as its production inputs on a regular basis from one or more local companies in the production chain. Figure 2.1 provides a schematic diagram of the backward linkage relationship in the manufacturing sector. Similar relationships can be constructed for the other economic sectors.

**Figure 2.1: The Backward Linkage Relationship<sup>1</sup>**



The development of backward linkages benefits a country’s industrial base by strengthening local suppliers and stimulating foreign investment. Backward linkages have the potential to:

- **Generate additional economic activity** – increased demand for locally supplied inputs translates into additional income as well as employment generation.

<sup>1</sup> Adapted from Joseph Battat et al, *Suppliers to Multinationals*, FIAS.

- **Stimulate improvements in the products and services of local suppliers** through technology transfer and skills upgrading.
- **Give local suppliers a foothold in international markets** by exposing local suppliers to international production and quality standards.
- **Attract foreign investment** by offering the advantage of a local supplier base capable of offering quicker delivery times and reduced transportation and inventory costs.

## 2.2 FDI and Backward Linkages

The concept of “backward linkages” is as old as the process of industrial development, and is frequently quoted as one of the main benefits of FDI in terms of the dynamic effects on the host country’s economic base. However, empirical evidence suggests that backward linkages have not been strong in most developing countries, even in those countries that have succeeded in generating significant inflows of foreign investment. For instance, Indonesia attracted approximately US\$2.5 billion in FDI in 1994 including a high proportion of consumer electronics firms – prime candidates for stimulating backward linkages – yet these foreign-owned producers purchased only 25 percent of their intermediate inputs from local suppliers. In Mexico, which attracted approximately US\$6 billion in FDI in 1994, foreign companies purchased less than two percent of their inputs from Mexican companies.

The main reasons cited by foreign investors for the low proportion of purchases from local suppliers include:

- Concerns that the goods and services offered by local suppliers do not meet their requirements in terms of quality, price, and/or delivery
- Local suppliers are often unresponsive to requests that they improve the quality, delivery and prices of their goods and services.

## 2.3 Filling the Gap

However, while the backward linkage concept is old, the mechanisms to give it effect are generally new and, in some cases, still being developed and refined. In order to stimulate backward linkages, developing country governments have used a variety of approaches, including import restrictions, local content requirements, and institutional backward linkage programs.

Experience suggests that the former two approaches - import restrictions and local content requirements - do little to promote backward linkages and create disincentives to foreign investors, by reducing their competitiveness in the international marketplace, as local suppliers often cannot meet quality or price requirements. Import restrictions and local content requirements and other compulsory schemes designed to promote backward linkages can also harm local industry as well as being a disincentive for FDI:

- Such schemes shield local producers from international competition, providing little incentive to these companies to upgrade technology or raise its production standards, thereby reducing their competitiveness in the world market.
- Such schemes discourage economies of scale as local suppliers respond only to domestic demand.

On the other hand, backward linkage programs, which provide institutional support to potential suppliers and in which all parties participate on a voluntary basis, can and do promote the development of backward linkages. Such programs do not discourage FDI, as participation is purely voluntary. In addition, such programs aim to assist potential domestic supply companies to meet international standards by improving production technologies, product standards, as well as design capabilities. It is a win-win situation for both foreign investors and domestic suppliers.

## 2.4 Key Components of Backward Linkage Programs

The basic concept behind a linkage program is to *encourage* companies to maximize the purchase of their inputs locally rather than importing them. In order for this to work effectively, it is necessary to have:

- A critical mass of companies whose inputs constitute a real opportunity for domestic supply – these constitute the demand-side of the linkage equation.
- A pool of domestic companies capable of supplying the goods and services as required by the demand companies to their standards and specifications – these constitute the supply-side of the linkage equation.
- A series of mechanisms to bring about the effective “linking” together of the demand- and supply- sides of the equation.
- A series of support and/or developmental mechanisms to assist the potential domestic companies to achieve the standards required to become suppliers to multinational, other large companies and ultimately to move into export markets.

Each of these components is detailed below.

- **Critical Mass of Purchasing Companies.** It is most unusual to have a situation where the purchasing requirements of one company constitute sufficient demand for supply companies. It is normally an aggregate of the inputs or purchasing requirements of a number of companies that constitutes the critical mass necessary for backward linkages to occur. Apart from the pure economics of requiring a critical mass of inputs, it is also desirable, from the supply companies’ perspective, to have a number of companies making up their market rather than rely on one or two companies who can dictate terms and conditions in an unfair manner.

Experience suggests that the potential for backward linkage is greatest with those industries that require a large number of materials, parts and components, such as:

- the automobile industry (requiring parts and components constituting 70 percent or more of final sale value),
- machinery and precision instruments involving primarily assembly activities (50 percent or more),
- the consumer engineering electrical and electronics industry (40 to 50 percent),
- construction,
- hotel services.
- the consumables of large capital-intensive projects.

- **Pool of Domestic Supply Companies.** In most developing countries that attract FDI, it is the quality and competence of the domestic supply companies that limits the potential of any linkage program. The domestic companies that participate in a linkage program should be selected based on their ability to supply the goods and services required by the purchasing companies only when they demonstrate the qualities necessary to satisfy the stringent demands of these companies. It must be stressed that purchasing companies have demands of quality and performance placed on them by their customers. The purchasing companies in turn must ensure that companies who supply them with inputs meet the same requirements. In effect, domestic companies in Jordan, by supplying to companies locating in Jordan, will have to meet international standards for quality, performance, delivery and standards compliance.

For sectors on the supplier side, typical target industries include:

- metal working,
- light engineering and electrical components,
- production of plastic parts and components,
- mold and die manufacturing,
- printing and packaging, and
- business services (accounting, legal, IT services).

- **Mechanisms to Effect Linkages.** Experience has shown that purchasing companies are reluctant to participate in linkage programs unless they have some control over the selection of the supply companies. They will not accept the recommendation of State officials that a certain company is world class and can meet all required specifications. Because of this it is necessary to put in place a series of mechanisms that will allow the purchasing company to participate and have confidence in the process that selects potential supplier companies for inclusion in the linkage program.

It is normal practice for the linkage team – usually State employees – to work closely with the purchasing companies. An effective manner is to operate in conjunction with private sector organizations (trade associations, industry federations, etc.) using representatives from

these, along with some purchasing managers, to form the basis of a “Management Committee” for the linkage program.

The selection process typically includes the following steps:

- Aggregated demand statistics are drawn up to identify areas of opportunity;
- Linkage team establishes list of potential supply companies;
- An audit of capability is carried out on the potential supply companies by the linkage team, operating within the requirements of the “Management Committee”. Only those companies that meet the requirements or demonstrate a willingness to develop are selected to participate in the linkage program.

The establishment of a system that allows for the careful selection of potential supply companies is essential to gaining the confidence and participation of the purchasing companies.

- **Support Mechanisms to Assist Potential Sub-Supply Companies.** Reviews of linkage programs that have not been successful usually identify the lack of support mechanisms to assist potential supply companies to achieve the necessary standards of the purchasing companies as the prime reason for failure. The main pillars of support required to bring domestic supply companies up to international standards includes:

- Technology upgrading to improve production processes and product standards;
- Manpower development and managerial training to work with new technologies and to develop the skills necessary to move into international markets; and
- Access to financing to enable these companies to acquire new capital equipment and training or to expand as required.

In most economies there is a group of companies whose standards of production set them apart from the rest. These companies have no difficulty in becoming suppliers to large companies and in most instances, in addition to supplying purchasing requirements within their own market, will also be supplying the global requirements of the purchasing company’s group. These are generally not the companies at which a linkage program is aiming. The primary focus is to assist companies below this level to acquire the skills, knowledge, technology, machinery, etc. to enable them to become suppliers. By assisting such companies, the pool of good domestic companies increases with the following results:

- A drop in imports as more goods are manufactured domestically;
- The country becomes more attractive to FDI due to the increased pool of good quality supply companies;

- The supply companies, in turn, have demands for increased goods and services, and so a multiplier effect is created;
- The domestic companies, by achieving the required standards to become supply companies, can then move into exports, thus assisting the balance of payments.

In order to assist domestic companies to become qualified supply companies it is necessary to put into place mechanisms to facilitate the process. These normally include:

- An audit of the potential supply company's ability to identify areas of deficiency. This includes a review of the following:
  - Existing machinery;
  - Technical ability of management and staff;
  - General level of technology applied and ability to meet international standards;
  - Production processes;
  - Quality of production and ability to produce to set standards;
  - Finance available for investment;
  - General administrative practices.
- A detailed review involving the management of the company as to what needs to be done to address the identified deficiencies.
- An agreed program of activity to help the company overcome its deficiencies. This may include:
  - Funding to acquire new technology and/or machinery;
  - Technical assistance provided by the linkage team, purchasing managers or technical staff in the purchasing companies;
  - Technical and administrative training provided by State or private training institutes, visits to sectoral trade fairs in other countries, etc.

## 2.5 The Irish Model

The following section provides an overview of one of the most successful linkage programs – Ireland's National Linkage Program.

The Irish National Linkage Program was established in 1985, following detailed research, as part of the Irish Government's planning for balanced industrial development. The program was established as a national program, coordinated by the Industrial Development Authority (IDA Ireland), which was an Agency of the Department of Industry and Commerce. In order to keep a commercial focus and to maintain industry support, a high profile and well-respected industry chief

was recruited to head the program and a team of experienced management and technical personnel were recruited from State agencies and the private sector to provide the necessary technical support. The “Irish Model” is generally regarded as being very successful and well structured.

- **Primary Objective.** To maximize the amount of raw material components and services sourced locally by manufacturing industries. The program initially targeted the electronics sector but was expanded later to cover engineering, chemical, pharmaceuticals, consumer products and the food sector.
- **Working with Purchasers.** The National Linkage Program works closely with over 250 multinational and large Irish companies in all the major manufacturing sectors to identify new business opportunities for local suppliers.

The program also works with multinational companies to monitor technology and business trends and to establish criteria for successful supply relationships including quality, cost and service requirements. Seminars, sector review studies and other National Linkage Program development activities are strongly supported by the multinational companies.

- **Developing the Supplier Base.** The National Linkage Program works closely with supplier companies on specific development areas related to the multinational customer base. This includes necessary development in operational management and control, quality systems, finance and marketing.

Strategic growth issues are also addressed and appropriate opportunities are targeted. The program encourages the formation of partnerships, strategic alliances and joint ventures in pursuit of profitable growth. The National Linkage Program also works to eliminate barriers that might exist between local suppliers and the chosen customers. The program works on a less formal basis with more than 100 other Ireland-based suppliers.

- **Looking to the Future.** The National Linkage Program will continue to work in bringing more Irish suppliers to world-class capability and to encourage strategic alliances both inside and outside the country. A focus will also be maintained on helping supplier companies to achieve the scale that is critical to success in many of the sub-supply markets. Given Ireland’s position on the periphery of Europe, the Linkage Program will work with supplier companies to utilize information technology and/or electronic data interchange to improve their competitive edge.

Working closely with major multinational corporations in Ireland and overseas, identifying business opportunities and technology trends will continue as major roles for the Linkage Program. In addition, the program will study successful overseas suppliers with a view to developing existing and new Irish vendors in line with the best international business practices.

A number of new key initiatives aimed at improving the current process have recently been implemented:

- Early introduction by IDA Ireland of the Linkage Program to companies contemplating an investment in Ireland.
- Visits to the corporate headquarters of major foreign companies in Ireland by the Linkage Team to better understand their corporate purchasing policy.
- Detailed discussions, at the pre-startup stage, between linkage executives and the purchasing managers of all major projects setting up in Ireland.
- The development of a database on global sourcing departments in multinationals.

### 3. Outline Strategy For Jordan

#### 3.1 Rationale

The strategy underlying the development of a Linkage Program for Jordan is to improve the capacity of Jordanian companies to enable them to supply components that are currently being imported and to increase their potential to move into export markets. The program that is being proposed for Jordan is based on the tried and tested mechanisms of the highly successful Irish model with modifications to take account of the Jordanian economy and available support systems.

Due to the lack of a well-defined sub-supply sector a critical element of this strategy is aimed at developing indigenous companies and helping to overcome their deficiencies.

The rationale for the proposed strategy is to:

- Increase the local factor content associated with overseas plants, and in particular the development of Jordanian-owned sub-suppliers;
- Decrease the import intensity of export growth and to increase even more the positive balance of payments impact of overseas investment;
- Transfer the benefits of increasing technical capabilities, improved standards, skill development and similar spillovers from the multinationals to the host economy;
- Support the growth of the Jordanian-owned sub-supply industry generally, both nationally and internationally, by using the market potential of the Jordanian based multinationals and large purchasing companies as a base for sales growth and a possible door to becoming a global supplier; and
- Increase the attractiveness of the Jordanian economy for both overseas and domestic enterprises – the more developed the sub-supply base, the easier it is to attract companies to Jordan and to help them develop.

#### 3.2 Elements of the Strategy

The factors described above affecting corporate decisions on internal production and out-sourcing and on purchasing domestically or abroad are both complex and dynamic. The elements of the strategy to influence these corporate purchasing decisions are to:

- Provide a developmental program aimed at *improving the capacity* of domestic companies;
- *Increase the motivation* of companies to purchase locally;

- Provide *information on the current sub-suppliers* in the Jordanian economy, especially for new companies coming into Jordan who tend to be more familiar with overseas suppliers;
- Provide *information on and introductions to potential purchasers* for domestic sub-suppliers;
- Help *build up individual Jordanian-owned sub-suppliers* both for the generalized inputs required by particular sectors within Jordan and for specialist company inputs that can lead to the sub-supplier being adopted as a global supplier to a multinational's plants world-wide.

### 3.2.1 Location of Linkage Program

It is recommended that the Linkage Program be located within the JIB and that the Program's Management Committee be structured as a committee of the Board of the JIB. A number of possible locations for the Program were reviewed and in making their recommendation the consultants considered the following:

- The majority of the world's leading national linkage programs are located within the State agency charged with the task of promoting inward investment to the country.
- The JIB has confirmed that it will make the necessary back-up resources available within its structure.
- By locating both the program and the Management Committee within the JIB, it gives them a legal framework within which to operate.
- The information gathered on supplier companies can be useful to the JIB in marketing Jordan as a location for FDI.
- The JIB, like most FDI promotional agencies is criticized for not doing enough to assist Jordanian industry. The publicity from the Linkage Program will help counter these criticisms.
- As most new investments coming into Jordan will be handled by JIB it will allow early access for the linkage executives to assess the potential for linkages from new investments at an early stage.
- The JIB already has formal links established with the Free Zone Corporation, the Industrial Estates Corporation and other relevant Agencies involved in industrial development.
- The total aggregated demand of currently imported products, which are not deemed possible to be supplied by domestic companies (primarily due to lack of technology) provides the JIB with valuable market information to attract overseas companies into Jordan to satisfy that requirement.

The following table outlines the manner in which the JIB can influence the purchasing decisions of new FDI locating in Jordan.

**Table 3.1: Influencing Purchasing Decisions of Investors**

Stage of Investment Process	Linkage Input <i>Options for Development</i>
1) Company contacted in JIB marketing campaign	Linkages material is provided with briefing documentation. (A brochure with a common message and examples of sub-suppliers is to be prepared).
2) Company Visits Jordan	JIB signals impending visits of major projects to Linkage Team. Linkage Team is involved in all major and other relevant projects. Linkage Team makes a presentation on sub-supply as part of the site visit.
3) Company negotiates contract to Set-up in Jordan	For all major projects, in coordination with JIB, Linkage Team participates to understand and influence their procurement policy in relation to Jordan.
4) Company starts project in first 6-12 months	For all major and other relevant projects Linkage Team visits the company’s purchasing manager in Jordan and overseas, if necessary, to ask how the Linkage Team can help in sub-supply and to assess the real potential of purchases

The following sections provide a broad overview of the various components of the proposed program, including:

- Private sector participation, involved in both the selection of purchasing and supplier companies;
- Linkage mechanisms;
- Team of auditors;
- Management Committee; and
- Next steps required to establish the Linkage Program.

### 3.3 Private Sector Participation

For this program to succeed, the participation of the private sector in its design and management is essential. It is neither desirable nor feasible for a program of this nature to be driven totally from within the public sector. It is best practice to involve relevant Trade and/or Industry Associations representing the sector(s) suitable for inclusion in the program. However, in the case of Jordan, associations in the sectors suitable for participation in the program either do not exist or, if they exist, they appear to be non-representative. In addition, while there are well established Chambers of Industry located in the main industrial areas (Amman, Aqaba, Zarqa, and Irbid), there is no single umbrella organization that could represent all their interests. Accordingly, it will be necessary to develop the program outside the structure of these organizations and instead request their support and possible participation on the Management Committee.

#### 3.3.1 Sector Selection

It is important to recognize that the Linkage Program has the greatest potential in sectors with the largest capacity to source components and services within the domestic market. Based on experience with linkage programs elsewhere, and reviewing the situation in Jordan (including current import requirements, as outlined in Chapter 1), the following sectors offer the best opportunities to develop backward linkages in Jordan:

- Large Capital Intensive Companies
- Heavy Engineering
- Electronics and Electrical Appliances
- Electrical Engineering
- Construction

These industry sectors require a wide diversity of components and other intermediate inputs, many of which can be supplied by domestic companies. Experience has shown that opportunities exist also at the construction stage and, accordingly, it is recommended that these sectors form the basis of the pilot program and, following the pilot project review, can be extended to other sectors that demonstrate potential.

#### 3.3.2 Supplier Company Selection

It needs to be stressed that the program being developed is a highly focused, company-specific program involving a lot of “hands on” time allocated to each company. This requires that only selected companies –*i.e.* those meeting the defined criteria – can participate in the program. There is obviously a political issue involved here and, for the success of the program, it is essential that companies without potential be excluded from the program. Apart from utilizing valuable staff resources, they would bring the success of the program into question.

Participation in the Linkage Program will be limited to supplier companies that are either identified by the purchase company or selected by the Linkage Team and demonstrate some or all of the following characteristics:

- Have management that is committed to the concept of development and who are willing to assign a member of the Senior Management Team (or owner) to oversee the implementation of the development plan in full.
- Have an existing manufacturing facility – the program is not suitable for start-up entrepreneurs.
- Have funds available or access to funds to finance part of the development plan.
- Manufacture a sub-component or end product.
- Be willing to undergo a rigorous technical audit by a team comprising auditors from purchaser companies.
- Accept that the non-achievement of the targets set in the development plan will exclude the company for further participation in the Linkage Program.
- Have the vision to understand that participation in the Linkage Program will open up markets other than those immediately identified.
- Be willing to produce product to the standards and specifications demanded by companies operating in the international market place.

There is currently no structured supply sector evident in Jordan. Naturally, there *are* linkages but these happen in an *ad hoc* manner and are facilitated by the small size of the business community in the country. While it is difficult to get precise information about the capacity of certain sectors, there is evidence that capacity does exist within the indigenous sector to supply the requirements of some companies within the Kingdom.

The real issues are:

- The scale and numbers of such indigenous companies;
- Their technical ability;
- The quality of the management and operatives; and
- The ability and/or willingness of these companies to upgrade their facilities.

These questions can only be answered through a vigorous technical audit carried out by professionals fully qualified and experienced to do so and this will be one of the key tasks of the linkage team as part of the technical audits.

One of the main requirements of a successful linkage program is the element of selectivity. Given the intensity of the interaction with the companies, it is essential that only those sectors with the most potential to deliver results and the companies within these sectors with the ability and desire to upgrade are included. This is a difficult issue in that the companies excluded from the program may feel aggrieved and could make their views known through the media and/or politically. In addition it is possible for selected companies to be competitors of those not selected, thus complicating the situation.

It is of interest to note that some companies in Jordan who, in other economies, would buy in components, are manufacturing the components themselves. A good example is Middle East Complex for Engineering, Electronics and Heavy Industries PLC that manufactures washing machines, TVs, heaters and refrigerators. As part of the manufacturing plant (located at Al-Hassan Industrial Estate), the company does its own metal pressing, injection molding, enamel baking, etc. The company stated that they went this route due to the lack of available supply companies that could produce to their specifications. In this case it is interesting to note that they would normally be classified as a purchasing company (due to the diverse range of components required); however, for the purpose of categorization, they will also be classed as a supplier company due to the excess capacity they have for injection molding and other component production.

### *3.3.3 Purchasing Company Participation*

Preliminary research has failed to identify a sufficiently large critical mass of purchasing companies, within one sector, to be the driving force for the development of local supply companies. In this case, it will be necessary to work with a range of companies in different sectors in order to quantify sufficient demand. However, it is clear that there is currently an opportunity for limited linkage interaction even without the company development mechanisms being put in place. These opportunities would quickly be realized by the program and, while they would allow some early successes, they do not form the basis of a sustainable linkage program.

As Jordan attracts more and more FDI, the opportunities for an enhanced linkage program will expand. A dynamic effect will be created:

- The more FDI that locates, the better are the opportunities to develop a world-class supply sector.
- The better the supply sector, the more attractive Jordan will become for FDI.

It is important that the Linkage Team be involved at the early stages of the investment process in Jordan so that all potential opportunities - from construction to production and ultimately required services - are identified. This will require close cooperation between the JIB, the Jordan

Industrial Estates Corporation and the Free Zone Corporation, as well as the construction industry.

### 3.4 Linkage Mechanisms

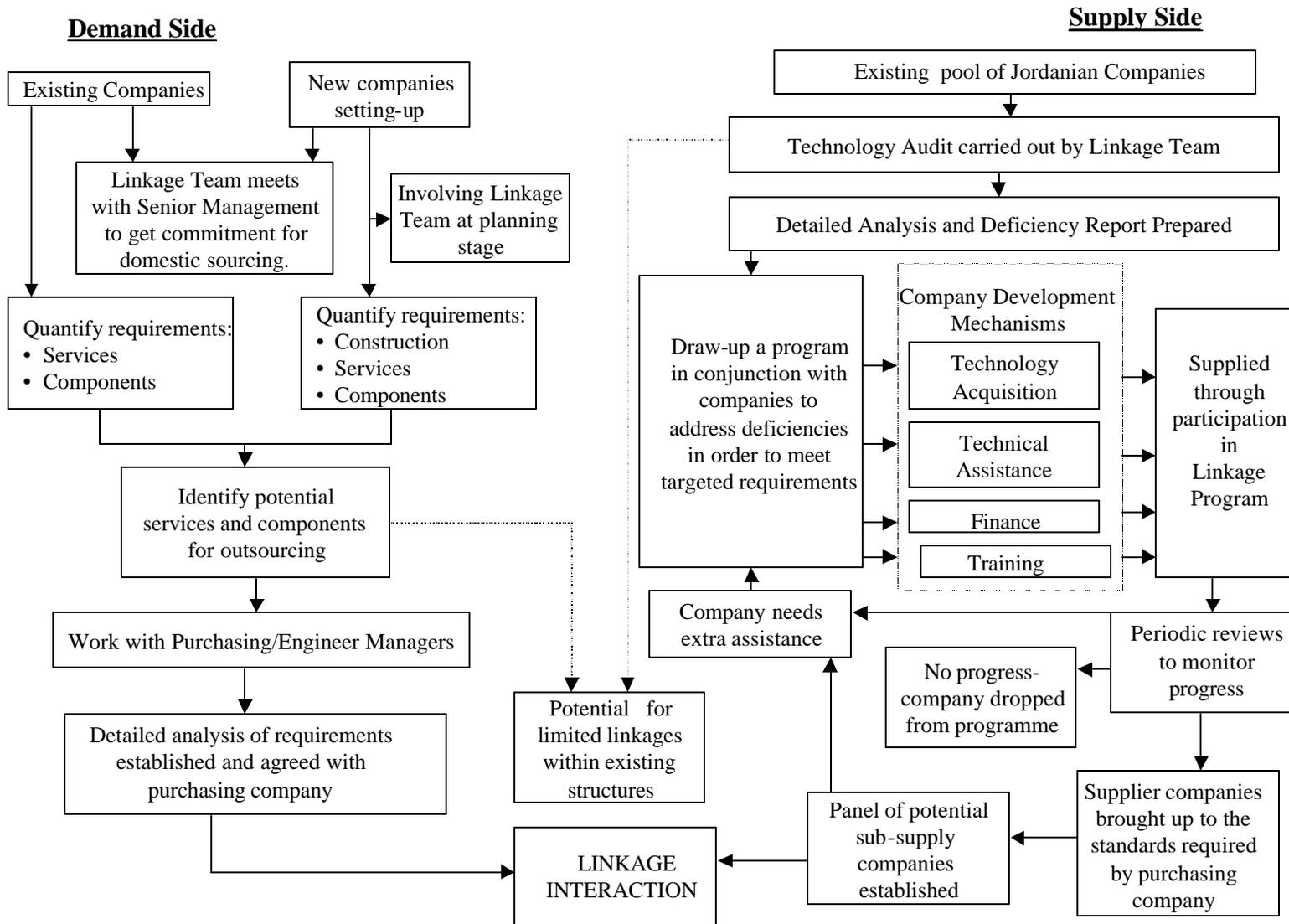
This section outlines the mechanisms that will be used in the Linkage Program (including the Pilot Program) in Jordan. Figure 3.1 on the following page sets out in a schematic form how the program will work and the various stages involved.

There are a number of technical assistance projects currently operating in Jordan. The critical issue in designing the Linkage Program is to ensure that the Program does not duplicate facilities already available. Instead the Program sets as an objective the utilization of these other resources to achieve the aims of the Linkage Program. Below is a summary of the facilities offered:

- **Technology.** The company can acquire its identified technology requirements through two methods:
  - **Technology Acquisition.** In this case, an existing technology is identified and a technology transfer arrangement is put in place. There are at least two such programs already in existence in Jordan:
    - Jordan - US Business Partnership (JUSBP) administers a US technology search program called Global Technology Network (GTN). This program is aimed at identifying relevant US technology and facilitating a system for Jordanian companies to acquire technology.
    - EU Private Sector Development Program, administered by the Euro-Jordanian Business Service Team assists Jordanian companies, participating in the program to acquire new manufacturing technology as well as assistance with quality management and design and product innovation. These features will be of major assistance to the Linkage Team. In addition, the EU also operates a system of identifying European technology that is available via technology transfer arrangements.
    - There are other technology acquisition programs available, run through other country trade delegations. Company specific technology assistance is also available, although this normally entails purchasing machinery from the company offering the expertise.

The inclusion of these and other relevant programs in the linkage program would be most desirable, not only to increase the range of technology available, but also to eliminate duplication of existing resources.

Figure 3.1: Linkage Program Model for Jordan



- Technical Assistance. In this case, we are dealing with the “software” of technology enhancement. This form of assistance is delivered through advice from companies and/or persons familiar with the technology being developed in the company. There are a number of ways in which this can be effected:
  - Technical staff from the purchasing company can work with the staff in the supplier company. A system similar to this is already operated by the Arab Potash Company (APC) where, on a regular basis, they assign some of their technical staff to work with a potential supply company in order to help it achieve the required standards to become suppliers to APC. This is a system that has worked well in other countries and is an effective method of assisting potential supply companies to understand the requirements of purchasing companies.
  - Technical staff from the supplier company can spend time in the purchasing company in order to understand exactly what standards and specifications are required, and why.
  - Technical experts from other sources can be used.
- **Training.** The enhancement of skills, both for management and operatives, is an important element of the program and can be effected in a number of ways:
  - As indicated above, through the placement of supplier company staff in a purchasing company.
  - Through formal training - in this case, a very positive meeting was held with the Director General of the Vocational Training Corporation (VTC) who indicated his willingness to participate in the program. The VTC is currently organizing company-specific training and would be happy to extend this to individual companies participating in the Linkage Program. However, this agreement will have to be formalized between the VTC and JIB. In addition, the standard training modules are of interest for general training. The only negative is the fact that the VTC does not train and certify to internationally recognized standards.
  - The EU, through its Industrial Modernization Program (IMP), is developing a program for vocational training. The program components have not yet been finalized.
  - The Jordan Management Institute provides management training to Jordanian industrialists. Approximately 17,000 managers have been trained to date.

- The Japan International Cooperation Agency (JICA) has a program to improve the management capacity within Jordan's manufacturing sector, which would provide a useful resource for the Linkage Team. There are two elements of the program:
  - The HAPPI program provides technical advice (by visiting consultants) on quality control and capacity to a number of manufacturing companies.
  - Case Study Development. This program, being run in conjunction with the Ministry of Industry and Trade, operates in the electrical and electronic sectors. A number of case studies are being developed, using diagnostic methods, and will be represented at a seminar/workshop later this year. The intention is to establish a *modus operandi* for assisting manufacturing companies in Jordan to improve their management skills. JICA intends on finalizing the case studies and then passing the system over to the Ministry to implement and expand.

- **Finance.** The ability to provide some form of preferential access to finance will be a requirement of the Linkage Program. Experience has shown that supplier companies, implementing a program of development, have a requirement for funding to:

- Purchase technology,
- Pay for wages of staff while on training,
- Pay for training,
- Purchase new equipment,
- Extend premises, and/or
- Increase working capital.

Many other countries operating linkage programs provide financial support to assist supplier companies undertake the expenditure necessary to achieve the targets set in their development plans. For example, in Ireland, Enterprise Ireland the State agency charged with the task of promoting indigenous industry provides grants (non-interest bearing and non-refundable finance) to help companies acquire the fixed assets deemed necessary. In addition grants are also given to offset the costs of training both management and operatives.

An examination of the situation in Jordan indicates that the availability of cheap money is difficult to organize. The commercial banks in Jordan have very onerous collateral requirements, which, coupled with the norm of providing project funding through overdraft facilities, rather than long-term debt, makes it very difficult for Jordanian companies to fund expansions.

The Industrial Development Bank (IDB) has confirmed that it would be interested in participating with the Linkage Program as a preferred supplier of finance. It is recommended that this be pursued and a formal arrangement be entered into between the IDB and JIB. Currently the IDB has lines of credit with the European Investment Bank (EIB), which enables it to offer finance at about 2 to 4 percent below commercial banks. It may be desirable for the Linkage Team to approach the EIB and IDB in order to receive a line of

credit that can be made exclusively available, through the IDB, for companies participating in the Linkage Program.

Other non-commercial sources of finance and guarantee programs include:

- JICA is organizing a financial assistance program for small-scale industry. The details and criteria for this program have not yet been agreed. The IDB and the Central Bank of Jordan are working with JICA officials to finalize this element.
- The EU, through its Industrial Modernization Program (IMP), is organizing a financial assistance program. The program components have not yet been finalized but will be linked to several local banks and the Loan Guarantee Corporation.
- Inter-Arab Loan Guarantee Corporation provides loan guarantees to Arab-owned companies throughout the Middle East.

Basically the Linkage Program does not propose to cut across any of the above projects and duplicate their facilities – with the exception of the technical audits, which by their nature will have to be done by each Program because they are evaluating against different criteria. The key difference between the Linkage Program and the other projects is that the Linkage Program is getting companies to develop in order to supply a specifically identified demand whereas the other projects assist companies to develop generally. In assisting the potential supplier companies to achieve the targets set in the development plan the Linkage Program will utilize the range of facilities offered by other projects.

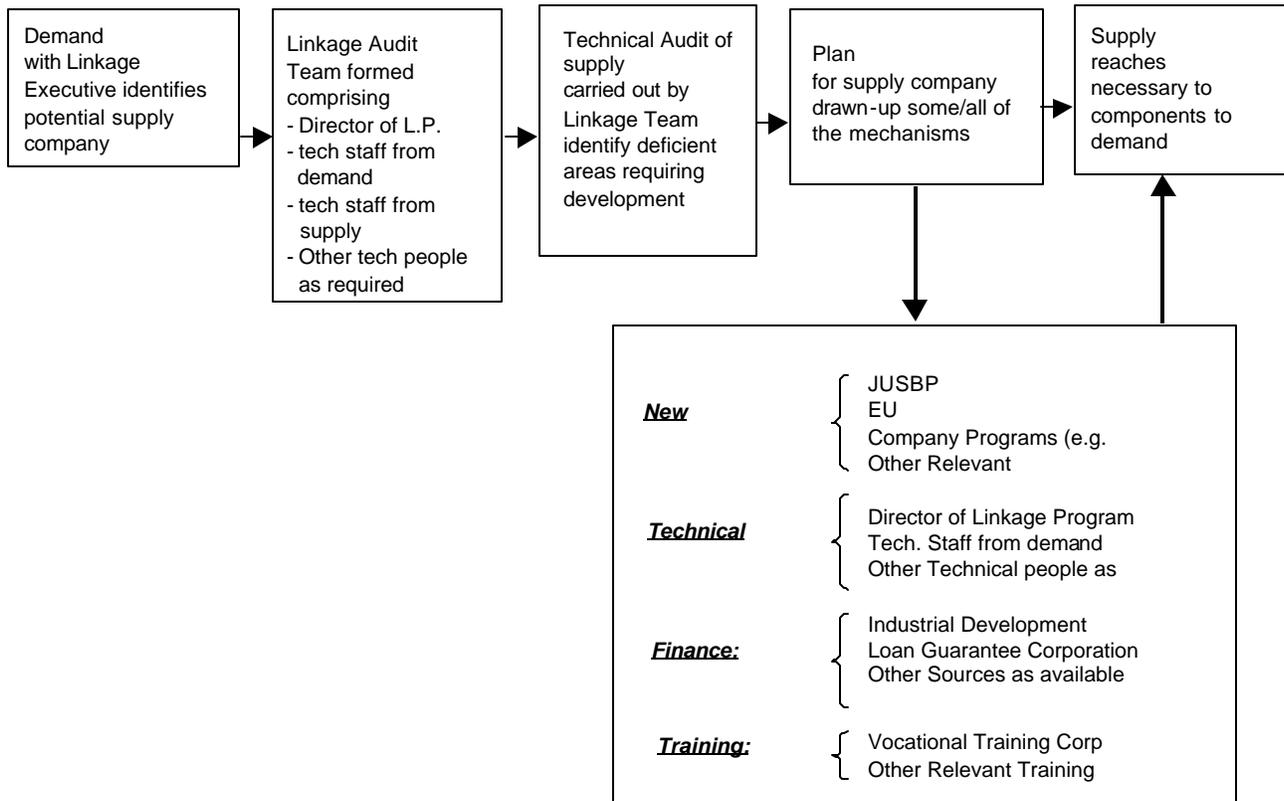
### **3.5 Linkage Audit Teams**

The auditors that carry out the company audits should be comprised of technically competent professionals. In addition, it is essential that they are sufficiently experienced in production engineering so as to enable them to quantify deficiencies in the supplier companies and to put in place an integrated program to remedy them.

The Linkage Program will need to recruit at least two executives to participate in the audits and to manage the linkage process. It is recommended that one be a mechanical/production engineer with extensive knowledge of production processes while the other, should be knowledgeable in the construction sector. It is envisaged that these two executives will form the management of the Linkage Program with other experts joining them, as required, to undertake audits. These other auditors would ideally come from the technical areas of the purchasing companies participating in the program as well as from the other Technical Assistance programs joining with USAID.

The following figure highlights the main steps in the Company Audit and Development Process.

**Figure 3.2: Company Audit and Development Process**



### 3.6 Management Committee

It is recommended that a private sector driven advisory Management Committee for the program be established. It should be comprised of:

- Three representatives of the private sector
- Three representatives from Business Associations/Chambers of Commerce and Industry
- Three representatives from relevant GOJ agencies, such as the JIB, JIEC, etc.
- One representative from the Industrial Development Bank
- The Linkage Program Director.

This Management Committee will be purely advisory and will not have any legal status. Its functions will be to guide the direction and scope of the program in order to ensure the maximum benefit possible. It should be structured as a Committee of the Board of JIB as allowed for in the proposed legislation.

## 4. Pilot Program

### 4.1 Pilot Program Location

In order to test the mechanism and systems that are proposed for the Jordan Linkage Program it is recommended that a pilot program be run within the JIB. This will give the opportunity of ensuring that the program suits local conditions and that the expected results merit the inputs.

A proposal has recently been submitted to UNIDO, by the Ministry of Industry and Trade (MIT), to provide technical assistance and funding for a project aimed at supporting a 'conducive business environment'. One component of this project is aimed at improving Jordanian industry's sub-supply capacity. The intention is that the UNIDO project be 'incubated' within the Industrial Development Directorate of MIT for a period of up to 2 years before being spun-off and located in one of the autonomous agencies under the Ministry. The declared preference is JEDCO.

The development of this proposal raises a number of issues for the proposed JIB Linkage Program:

- There can be only one National Linkage Program in Jordan. Accordingly, it is necessary for the Ministry of Industry and Trade to review its plans in the light of the proposed Linkage Program in the JIB. The most effective method of proceeding would be for the Ministry to coordinate the activities of UNIDO and USAID in this area in order to bring their combined resources and strengths together to produce a world class Linkage Program.
- In the past, a sub-component supply project was located within JEDCO. However, this project, which was driven by a database, failed when the software collapsed and the data was lost. Apart from this fact, JEDCO is not a logical location for a linkage program as it is focusing on promoting exports, rather than developing the capacity of companies to supply the requirements of purchasing companies within Jordan (exports are a longer-term goal of the program). Given the functions of the JIB and the fact that worldwide almost all of the most successful Linkage Programs are based in Development Agencies, it is more logical to locate the Linkage Program in JIB.
- Given that this report proposes an 18-month pilot linkage program to be based in JIB, it would be better for the 'incubation' period of the project to be in the Agency to which it will ultimately be assigned so that the lessons learnt and systems developed are known within the ultimate host Agency. In addition, it is likely that the private sector will cooperate more readily with the JIB (which has private sector representation on its Board) than with the MIT.

### 4.2 Duration

Due to the fact that it will take time to establish the inter- agency and inter-organizational linkages and actually get results, the Pilot Linkages Program should be for a minimum of 18 months. There should be a review at the end of the first 6-month period and a detailed review at

the end of the pilot program. This detailed review will, in effect, determine whether or not the program should be continued.

### 4.3 Geographic Focus

It would be normal practice for a pilot linkage program to focus on a specific geographic region and then expand nationally when the program is proven successful. The consultants examined this issue in detail, identifying a number of potential regional focuses, i.e. Amman, Zarqa, and Irbid. However, it is recommended that the pilot program be introduced nationally from the start. The reasons for this decision are:

- The concentrations of industry and associated commerce are widely dispersed throughout the country. By selecting one or two regions the potential for linkages would be minimized.
- Jordan is small geographically, and distances between the main centers are not great.
- The number of companies (both demand and supply) that will be able to participate in the Program is very limited. By curtailing the Pilot Program to a small regional area, a number of good companies would be excluded, which could mean the difference between the program's success and failure.

### 4.4 Focus Sectors

The Consultants' Scope of Work suggests two purchasing sectors for consideration: textiles and tourism. While these are both sectors in which there is a relatively large flow of investment currently (and planned) to Jordan, they do not, unfortunately, offer a great range of products or potential for sub-supply linkages. It is necessary to select sectors that meet the following criteria:

- There is a wide range of sub-component products required by the demand companies.
- There is an increasing demand for products within the sector.
- There is a well-established critical mass of companies, who, with the assistance of the Linkage Program will be able to:
  - Take on new technology to improve an existing product;
  - Diversify into new product ranges; and
  - Move into export markets.

Having considered the above criteria, and taking into account the current and expected FDI flows, it is recommended that the following sectors form the basis of the Pilot Program:

- **Heavy Industry and Infrastructure Sectors.** The heavy industry (Dead Sea minerals, Phosphates/Fertilizers, etc.) and infrastructure (primarily power, water, and telecommunications) sectors account for a relatively large share of investment in Jordan. These companies have a wide variety of consumable requirements, including spare parts. These sectors offer excellent opportunities for the development of the engineering, metalworking, plastic and plastic-molding sub-sectors of the Jordanian economy. In turn, these sub-sector industries can take advantage of the strengths of existing training establishments in Jordan, including those of the Vocational Training Corporation.
- **Engineering and Electrical Sector.** The engineering and electrical sector comprises a large proportion of Jordan's indigenous industrial sector. Similar to the heavy engineering sector, the engineering sector offers a wide range of opportunities to develop the electrical engineering, metalworking and plastic-molding sub-sectors.
- **Construction Sector.** The construction sector clearly has excellent potential for sub-supply given the wide range of products used in building new office blocks, hotels, etc. Similar to the other two sectors, the construction industry offers opportunities to develop the engineering, metalworking, plastic and plastic-molding sub-sectors. However, the potential for linkages in the construction sector may be negatively impacted by the way the sector operates in Jordan.<sup>2</sup> The existing system, with virtually no monitoring, opens the door for construction companies to ignore building specifications and utilize cheap imported products. There is large potential for Jordanian companies to supply products to the construction industry if the building specifications were policed, thus eliminating cheap, below-specification products for the market. Despite the negative features of the construction sector it is recommended that it be included in the pilot program with the intention of:
  - getting proper regulatory control introduced;
  - focusing on existing sub-supply companies to upgrade their products.

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<sup>2</sup> The following features combine to make it difficult for Jordanian supply companies to this sector to develop:

- The construction market in Jordan is very price conscious with clients willing to forego quality for price. This leads to large-scale imports from low cost countries such as China and South East Asia. In trying to compete on price, Jordanian companies are operating at break-even levels and find it difficult to consider new investments.
- There is no controlling authority to ensure that contractors adhere to accepted standards and specifications. While an Approval Syndicate and Local Authority approve building plans, there is little or no monitoring to ensure that buildings are constructed in accordance with the design specifications and in conformity with Ministry of Public Works Building Specifications manuals. While there is a requirement that buildings over 400m<sup>2</sup> require permanent supervision to ensure the construction is in accordance with the designed specifications, in most cases this does not happen, opening the opportunity to substitute with sub-standard products.

- While not a sector-based target area for the Linkage Team, another recommended focus for the pilot program is the many manufacturing companies in Jordan that currently act as agents for overseas companies. The objective will be to upgrade these companies to manufacture certain products rather than act as import agents for foreign manufacturers.

## 4.5 Work Program

This section sets out the work to be undertaken to give effect to the Linkage Program. It sets out a step-by-step plan of activities that needs to be put in place in order for the Program to work.

### 4.5.1 Establishment of Management Committee

The Management Committee of the Linkage Program should be established as a Committee of the Board of JIB, with its composition as outlined in Chapter 3 of this report. The proposed legislation allows for the Board to establish Committees. By placing the Committee within the JIB it will give the Board control over the direction of the Program while at the same time give the Committee a legal status. However, as the Committee will be purely advisory there should not be any legal liabilities attached to the members of the Committee. If, for some reason, a legal issue should arise, the members will be protected by the legal status of the JIB.

The purpose of the Committee is to guide the development of the Linkage Program and to use the expertise of its members to assist the linkage team in achieving the targets. The Management Committee should meet monthly with the purpose of:

- Reviewing the overall progress of the Linkage Program;
- Reviewing achievements against targets;
- Ensuring all resource organizations being used by the Program are fully cooperating;
- Identifying blockages to the successful implementation of the Program and finding solutions;
- Monitoring the work program of the linkage executives and linkage team;
- Preparing a monthly report for the Board of JIB on the progress of the Program and recommending areas requiring action.

### 4.5.2 Recruit Staff

To a very large extent the success of the Linkage Program will depend on the quality of the staff recruited to run and manage it. They will need to be of a quality and display a knowledge that will command respect from both the demand and supply companies. It is recommended that the JIB assign two executives to the Program. The background and qualifications, given the targeted sectors for the Pilot Program, should encompass the following:

- **Senior Production Engineer/Linkage Program Director.** The executive assigned to cover the heavy engineering and electrical engineering sectors should be a well-experienced Production Engineer with at least 15-20 years practical experience of production in manufacturing companies. The Program Director should possess sufficient hands-on experience to be able to:

- Lead technical audits on supply companies;
- Diagnose, with the assistance of other technical experts, the technical deficiencies in selected supply companies and be able to draw-up action plans (using the linkage mechanisms) to remedy the situation;
- Liaise effectively with the technical departments of the demand companies so as to ensure their participation in the program;
- Relate to international best practice in all aspects of sub-component supply requirements.

This key person will need to be recruited by the JIB; a job description is located in Annex A. It will be necessary to pay in excess of current pay scales in the JIB in order to get a person of the right caliber, experience and qualifications. It cannot be stressed enough that this person is the key to the success of the Program. It is a lesson that has been learnt at a cost in other national linkage programs where it was decided to use public sector officials. This person must be accepted by the private sector, be able to work with the private sector, and command the respect of the private sector.

- **Linkage Program Executive.** It will be necessary to assign a second executive to the Linkage Program. The key features of this role are as follows:

- Be familiar with the workings of JIB and the State sector;
- Have a good knowledge of the business sector in Jordan and be able to relate to and work with senior management in companies;
- Have a good knowledge of the construction sector;
- Be able to organize seminars and conferences and generally give back-up assistance to the Program Director.

- **Secretarial Support.** It will be necessary to recruit/assign a secretary to support the two linkage executives and to manage the administration of the Program. The person selected should have good secretarial and administrative experience and, ideally, should have worked in a senior administration position in private industry.

- **Driver.** As a consequence of the Program being developed nationally and the need for the linkage executives to spend a large portion of their time visiting companies, it will be necessary to have a driver assigned to the project.

#### *4.5.3 Establish Working Linkages with Other Organizations*

A key feature of the Linkage Program as developed is that it does not duplicate the services offered by other organizations and agencies. Instead it focuses on pulling these facilities together in order to provide a fully integrated package to assist Jordanian Industry. Accordingly, it will be necessary for the Program to create links and coordinate its activities with other key organizations engaged in technology acquisition, manpower development and management training and access to finance, including those identified in Chapter 3 of this report.

The task of establishing these linkages will fall to the JIB through its Board members, members of the Management Committee to the Linkage Program, and the senior management of the JIB.

#### 4.5.4 Establish Demand Potential

The demand potential for products and sub-components will be established by the linkage team in the following manner:

1. **Program Announcement.** The Linkage Program, once organized, should publicly announce its mission and purpose through the local media and through briefings to be held with the Chambers of Commerce and Industry, relevant Business Associations, etc.
2. **Purchaser Company Contacts.** The Linkage Team, through the above channels, should solicit the input of companies with large purchasing requirements. The Linkage Team should also contact directly any companies they feel would be of interest.
3. **Purchaser Company Visits.** The Linkage Team should visit the identified companies and draw up a list of products and components with potential for local manufacturing. Where similar requirements, arising in more than one company, are identified, they are added together to arrive at an aggregated value. In this manner, the total demand of a number of companies could lead to a viable linkage operation while each one alone would not.

As a result of meetings during the two missions, the following companies were identified by the consultants as being those with potential to participate as purchaser companies:

- **Arab Potash Company (APC).** APC already has a program in place to establish linkages with local supply companies for spare parts and construction gear (pipes, welding gear, etc.), as well as consumables. APC indicated its willingness to participate in the Linkages Program, including its willingness to provide technical support to potential supply companies.
- **Royal Jordanian (RJ).** RJ has an impressive engine repair and maintenance operation and is a consumer of large quantities of spare parts. RJ operates its own metalworking shop but indicated its willingness to work with other potential suppliers in Jordan to meet its requirements. In turn, while RJ's metalworking shop is designed to fulfill its own needs for spare parts, the shop's high quality production has the potential to be expanded to meet the demands of other industries in Jordan.
- **Jordan Electric Power Company Ltd.** The Jordan Electric Power Company has substantial ongoing supply requirements, including wires, cables, transformers, and switch gear. While a large proportion of their needs are already fulfilled through local suppliers (mostly low voltage wire and cables, as well as low-voltage equipment). In addition, they have a growing need for electric meters (80,000 per annum required), as they are in the process of replacing all old meters in the country. Jordan already has the required feeder industries to make such a production facility viable.
- **Jordan Phosphate Mines Company (JMPC).** JMPC has ongoing requirements for spare parts made from scrap metal. a portion of which they already contract out to local

metalworking shops in Aqaba and Amman. While JMPC typically farms out its requirements to a wide variety of local workshops, it indicated its willingness to participate in a Linkage Program to enhance the capabilities of selected workshops.

- **Middle East Complex for Engineering, Electronics and Heavy Industry.** Middle East Complex is one of the largest consumer electronics and household appliance producers in Jordan, producing under license to LG Electronics. Current production lines include televisions, mobile phones, and refrigerators. While Middle East Complex has their own plastic molding operation (which could make them a potential supply company to other purchaser companies in Jordan), they also have ongoing demand for many parts that may be sourced locally.
- **Arab Engineering Industries Co (AEICO).** AEICO is the first major steel foundry in Jordan. They produce casted parts for the cement, mining and other industries in Jordan. Like other heavy industry projects, AEICO has ongoing requirements for spare parts and accessories, many of which could be sourced from local supply companies.

#### 4.5.5 *Identifying Potential Supply Companies*

The identification of domestic companies with potential for inclusion in the Linkage Program will be achieved as follows. While working with the purchaser companies to identify products and sub-components for domestic manufacture, the linkage team will request the technical staff in the purchaser company to identify domestic companies that they feel have the potential, subject to improving and meeting the requirements of the purchaser company, to supply their requirements. In addition, the linkage team operating through Chambers of Commerce, Trade and Industry Associations and through personal knowledge will identify other companies with potential. Technical audit teams will then be formed to carry out audits and produce a development plans for the potential supplier companies.

#### 4.5.6 *Establish Audit Teams*

The task of the Audit Team is to review the capacity and capability of the potential supplier company and to draw up a list of areas (deficiencies) that will need to be addressed in order for the supply company to achieve the standards required by the purchaser company. An Audit Team will only be established where one or more purchaser companies identify a specific supply company as having the potential to become a supplier company to the purchaser companies. In this case the Audit Team will be made up of:

- the Director of the Linkage Program
- technical staff from the purchasing companies
- technical staff from the potential supplier company
- other technical people as necessary

Each Audit Team will be different and will be structured according to each evaluation.

An audit report, subsequently produced, will form the basis of the development plan that will be implemented by the potential supplier company using the support of the linkage team and the mechanisms of the Linkage Program.

#### **4.6 Technical Assistance to Linkage Program**

In order to ensure that the program is implemented in accordance with best practice internationally it is recommended that funding be allocated to the project to enable an expert with detailed knowledge of Backward Linkage Programs, to be recruited as an Advisor to the National Linkage Program.

The advisor will undertake the following tasks:

- Participate in the selection of the linkage staff, including the Linkage Director;
- Advise on establishing the formal and informal relationships with the other key resources that make up the linkage mechanisms (*i.e.* technology acquisition, human resource development, and financing programs);
- Advise on establishing the internal systems and administration;
- Participate in discussions with purchaser and potential supplier companies;
- Advise on the composition of the technical audit teams;
- Advise on the technical audits;
- Advise on drawing up development plans;
- Advise, but not be a member of, the Management Advisory Committee;
- Evaluate the program – its successes and failures – and to recommend amendment, as required.

Six to nine months after the Linkage Program is initiated, the Advisor should submit a report with recommendations for change (where required) so as to give time for the amendments to be effected and produce results prior to the detailed review at the end of the 18-month pilot program phase.

It is recommended that the technical expert be appointed for a minimum of one year after which time the Linkage Program will be well advanced in achieving its objectives.

In addition to long-term assistance, it is recommended that short-term assistance be provided by an expert with knowledge of Linkage Program operations to make presentations on the program to interested parties during the start-up phase, including local industry groups, donor agencies, potential resource organizations, etc.

#### **4.7 Pilot Program Targets**

The key output of this pilot program is new business development – and that is the critical item that should be measured. Given the current state of the sub-supply industry in Jordan and the lead times involved in actually effecting linkages, it is difficult to establish a realistic target for

new business development. However, it is necessary to establish a target that can, if required, be modified as the pilot project progresses, with the approval of the Management Advisory Committee.

Accordingly it is recommended that the following targets be adopted for the 18-month Pilot Program:

**Table 4.1: Pilot Program Targets**

Criteria	Program Target
Number of Participating Purchaser Companies	30 companies
Number of Identified Potential Supplier Companies	50 companies
Number of Technical Audits Completed	25 audits
Number of Development Plans Drawn Up	15 plans
Number of Development Plans Completed	10 plans
Value of New Production from Linkages Achieved as a Result Development Plans	JD 500,000
Value of New Production from Linkages Achieved without Development Plans	JD 500,000

#### 4.8 Pilot Program Budget

The following is an estimate of the annual costs involved in running the pilot program.

The cost for the 18-month Pilot Program would be approximately \$172,500-202,500. The assumptions in the above estimates are as follows:

- Salary scales are given by JIB for good quality staff.
- Salary range for Linkage Director based on whether a suitable person is available in Jordan (\$40,000) or will have to be attracted from overseas (\$60,000).
- Figures for car, equipment expenses and consumables are best estimates.
- As part of JIB, the Linkage Team will incur no additional costs for accommodation.

**Table 4.2: Budget for 18-month Pilot Program**

Line Item	Budget (US\$)
Salary for Linkage Director	60,000-90,000
Salary for Linkage Executive	30,000
Salary for Administrator	15,000
Salary for Driver	7,500
Consumables	7,500
Car	20,000
Traveling Expenses	15,000
Other Expenses	7,500
Equipment (Computers, Furniture etc)	10,000
<b>TOTAL BUDGET</b>	<b>172,500-202,500</b>

## **4.9 Implementation Plan**

Figure 4.1 on the following page sets out the main activities, along with associated timing, of the key elements in the Pilot Program.

**Figure 4.1: Implementation Plan for Pilot Linkages Program**

	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11
1 Decision to Set-Up Program	X										
2 Set-Up Management Committee	X										
3 Publicize Program											
4 Identify & Appoint Long-term Technical Advisor											
5 Recruit Program Director and other Staff											
6 Establish Linkages with Other Organisations											
7 Brief Chamber of Commerce etc Industry Associations											
8 Establish Linkage Audit Teams											
9 Establish Demand Potential											
10 Effect Immediate Linkages											
11 Training Module 1 in Jordan											
12 Technical Advisor to Linkage Program											
13 Training Module 2 in Other Linkage Program, Overseas											
14 Evaluate Supply Companies											
15 Six-Month Review											
16 Management Committee Meetings and Report to JIB	X	X	X	X	X	x	X	X	X	X	X
17 Major Review of Pilot Program											

## 5. Training Program

An important element in the development of the Linkage Program will be the training for the staff recruited to run and operate the Program. In order for the Program to be effective and maximize its potential, the staff will have to be fully familiar with the mechanisms and how they are to be used in achieving effective linkages.

Three training modules are recommended as follows:

### **Module 1**

The training should take place in Jordan, immediately after the recruitment of the Linkage Executives. It should be carried out by someone who has practical experience in the management and running of a world class National Linkage Program. The module should cover the following:

- Overall objectives of the Jordanian Linkage Program;
- Briefings on the mechanisms that have been developed and how they are to be used;
- Visits to the various organizations participating in the Linkage Program (program resources in the three support areas);
- Visits to demand companies to advise on how a structured approach to quantifying demand products is carried out;
- Visits to potential supply companies to advise on how a technical audit is carried out;
- Briefing for the Management Committee on exactly how the Program will work and what role the Board will play in the process;
- Briefing the Board of JIB on the Program and how it will function.

The overall objective of this module is to ensure that the linkage executives and all others involved are fully briefed and completely understand exactly how the Linkage Program will work. A few weeks after the training program is completed it is recommended that Module 2 be undertaken.

### **Module 2**

The objective of Module 2 of the training program would be to give the Jordanian executives first-hand experience of how a successful National Linkage Program is managed and operated. This module should take place 'on-location', at the headquarters of the selected National Linkage Program.

The training program should cover the following:

- Detailed briefings with the Manager and executives of the Linkage Program on exactly how the Program works;
- Meetings with demand companies;
- Meetings with supplier companies who have benefited greatly (new technology, new products, new markets, moving into exporting etc) through their participation in the Program;
- Meetings with trade/industry associations that have participated in the Program;
- Meetings with promotion agency executives, who will cover the importance of the National Linkage Program in attracting FDI;
- Any other meetings as relevant or as requested.

The purpose of this training program will be to show how the mechanisms, developed for Jordan (while differing for local conditions) can and should be developed in the light of the knowledge gained through seeing the detailed workings of a world class Linkage Program.

## **Annex A**

### **Job Description for Director of Linkage Program**

Following is a brief job description for the Director of the Linkage Program:

#### **KEY TASKS**

- Assess the capacity and capability of potential sub- supply companies
- Carry out, with other professionals, audits of selected potential supply companies
- Based on audits, shortlist potential suppliers for development
- Work with purchasing company technical staff to review capabilities, targeting companies for development
- Assist suppliers in drawing up business plans aimed at winning new business contracts
- Assist suppliers in drawing up development plans aiming at becoming accredited suppliers
- Assist suppliers in gaining access to finance, technology and training
- Manage the Linkage Program under the direction of the Management Committee
- Be responsible for the achievement of the Program's targets
- Represent the Linkage Program as required

#### **KEY SKILLS**

- While the Director will be expected to work as part of a team, he/she must be capable of working on his/her own initiative
- Good communication skills
- Experience of project management
- Good management and inter-personal skills
- Experience of working with small and medium sized companies

#### **PRACTICAL EXPERIENCE**

- A background in production engineering with at least 15 years of practical experience in manufacturing industry
- Experience in developing business plans, including an understanding of finance
- Experience of working with/in multinational companies
- Knowledge of existing supply infrastructure and local institutions

## **Annex B**

### **Import Requirements and Production Capacity of Jordanian Industry**

The following table provides a breakdown of existing Jordanian industry production capacity and import requirements for broad sector categories. A number of products, based on existing production capacity and current import requirements, appear to provide opportunities to establish new linkages in the Jordanian economy (products are marked in italics), though a full analysis of demand and supply potentials are required to identify specific linkage opportunities. All data is derived from the Jordan Department of Statistics publications.

	Local Production (US\$ millions)		HS Codes		Imports (US\$ millions)		
	1996	1997			1996	1997	1998
Manufacture of rubber products (not tires)	1.64	1.59	4001	Natural rubber, balata, gutta-percha, guayule, chicle and similar natural gums, in primary form or in plates, sheets or strip	0.29	0.30	0.16
			4002	Synthetic rubber and factice derived from oils, in primary forms or in plates, sheets or strip; mixtures of any product of heading no.40.01 with any product of this heading, in primary forms or in plates, sheets or strip	1.71	1.04	1.67
			4003	Reclaimed rubber in primary forms or in plates, sheets or strip.	0.00	0.03	0.01
			4004	Waste, parings and scrap of rubber (other than hard rubber) and powders and granules	0.06	0.00	0.06
			4005	Compounded rubber, unvulcanised in primary forms or in plates, sheets or strip	1.15	1.17	0.75
			4006	Other forms (for example, rods, tubes and profile shapes) and articles (for example, discs and rings) of unvulcanised rubber	0.29	0.08	0.07
			4007	Vulcanised rubber thread and cord	0.45	0.43	0.46
			4008	<i>Plates, sheets, strip, rods and profile shapes, of vulcanised rubber other than hard rubber</i>	1.03	0.92	1.39
			4009	Tubes, pipes and hoses, of vulcanised rubber other than hard rubber, with or without their fittings (for example, joints, elbows, flanges)	1.19	1.30	1.12
			4010	Conveyor or transmission belts or belting, of vulcanised rubber.	3.73	3.88	3.40
			Total:	9.92	9.15	9.08	
Manufacture of plastic products	96.58	131.91	3917	<i>Tubes, pipes and hoses, and fittings therefore (for example, joints, elbows, flanges), of plastics</i>	12.12	4.82	3.43
			3918	Floor coverings of plastics, whether or not self- adhesive, in rolls or in the form of tiles; wall or ceiling coverings of plastics, as defined in note 9 to this chapter	0.86	0.88	1.19
			3919	Self-adhesive plates, sheets, film, foil, tape, strip and other flat shapes, of plastics, whether or not in rolls	2.90	3.60	2.99
			3920	Other plates, sheets, film, foil and strip, of plastics, non- cellular and not reinforced, laminated	10.52	10.08	10.12
			3921	Other plates (sheets) film, foil and strip, of plastics.	7.77	6.49	7.33
			3922	Baths, shower- baths, wash- basins, bidets, lavatory pans, seats and covers, flushing cisterns and similar sanitary ware, of plastics	0.97	0.79	0.62
			3923	Articles for the conveyance or packing of goods, of plastics; stoppers, lids, caps and other closures, of plastics	3.49	3.97	6.39
			3924	Tableware, kitchenware, other household articles and toilet articles, of plastics	1.66	2.40	3.40
			3925	Builder's ware of plastics not elsewhere specified or included.	0.41	0.14	0.18
			3926	<i>Other articles of plastics and articles of other materials of heading nos.39.01 to 39.14</i>	6.32	5.22	4.92
			Total:	47.02	38.39	40.57	

Local Production (US\$ millions)	HS Codes		Imports (US\$ millions)				
	1996	1997		1996	1997	1998	
Manufacture of metal products	55.47	54.35	7208	Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or more, hot-rolled, not clad, plated or coated	16.47	15.98	12.47
			7209	Flat - rolled products of iron or non-alloy steel, of a width of 600 mm or more, cold - rolled (cold - reduced), not clad, plated or coated	16.35	8.60	12.67
			7210	Flat-rolled products of iron non-alloy steel, of a width of 600 mm or more, clad, plated or coated	25.41	18.66	18.28
			7211	Flat-rolled products of iron or non-alloy steel, of a width of less than 600 mm, clad, plated or coated	2.51	0.54	0.76
			7212	Flat - rolled products of iron or non - alloy steel, of a width of less than 600 mm. cold plated or coated	0.35	0.60	0.30
			7213	Bars and rods, hot - rolled, in irregularly wound coils, of iron or non - alloy steel	8.63	7.38	5.66
			7214	Other bars and rods of iron or non - alloy steel, not further worked than forged, hot-rolled, hot- drawn or hot-extruded, but including those twisted after rolling	3.85	3.24	2.59
			7215	Other bars and rods of iron or non-alloy steel.	3.20	0.71	1.25
			7216	Angles, shapes and sections of iron or non - alloy steel.	6.01	6.58	6.57
			7217	Wire of iron or non-alloy steel	2.50	2.64	2.19
			7219	Flat - rolled products of stainless steel, of a width of 600 mm or more.	2.14	2.11	1.99
			7220	Flat - rolled products of stainless steel, of a width of less than 600 mm.	0.75	0.33	1.13
			7221	Bars and rods, hot - rolled, in irregularly wound coils, of stainless steel.	0.41	0.24	0.20
			7222	Other bars and rods of stainless steel; angles, shapes and sections of stainless steel.	0.27	0.44	0.36
			7223	Wire of stainless steel.	0.02	0.13	0.05
			7225	Flat - rolled products of other alloy steel, of a width of 600 mm or more	0.58	0.86	0.07
			7226	Flat - rolled products of other alloy steel, of a width of less than 600 mm.	0.24	0.28	0.24
			7227	Bars and rods, hot - rolled, in irregularly wound coils, of other alloy steel.	0.04	0.02	0.62
			7228	Other bars and rods of other alloy steel, angles, shapes and sections, of other alloy steel; hollow drill bars and rods, of alloy or non - alloy steel.	1.12	0.40	0.39
			7229	Wire of other alloy steel.	0.13	0.56	0.26
			7301	Sheet piling of iron or steel, whether or not drilled, punched or made from assembled elements; welded angles, shapes and sections, of iron or steel.	0.78	0.41	0.12
			7302	Railway or tramway track construction material of iron or steel, the point rods and other crossing pieces, sleepers (cross-ties), fish plates, chairs, rails, check-rails and rack rails, switch blades, crossing frogs, chair wedges, sole plates	0.03	0.08	0.13
			7303	Tubes, pipes and hollow profiles, of cast iron.	0.67	1.38	0.46
			7304	Tubes, pipes and hollow profiles, seamless, of iron (other than cast iron) or steel	4.48	3.11	4.56
			7305	Other tubes pipes (for example, welded, riveted or similarly closed), having internal and external circular cross - sections, the external diameter of which exceeds 406.4 mm, of iron or steel.	6.65	0.79	0.57
			7306	Other tubes, pipes and hollow profiles (for example, open seam or welded, riveted or similarly closed), of iron or steel.	22.37	11.99	8.90

Local Production (US\$ millions)	HS Codes		Imports (US\$ millions)			
	1996	1997	1996	1997	1998	
Manufacture of metal products (continued)		7307	<i>Tube or pipe fittings (for example, couplings, elbows, sleeves), of iron or steel</i>	5.85	6.72	4.32
		7312	Stranded wire, ropes, cables, plaited bands, slings and the like, of iron or steel, not electrically insulated.	1.53	0.65	0.72
		7313	Barbed wire of iron or steel; twisted hoop or single flat wire, barbed or not, and loosely twisted double wire, of a kind used for fencing, of iron or steel.	0.03	0.05	0.06
		7314	Cloth (including endless bands), grills, netting and fencing, of iron or steel wire; expanded metal of iron or steel.	1.18	1.07	0.72
		7315	Chain and parts thereof, of iron or steel.	0.53	0.45	0.30
		7316	Anchors, grapnels and parts thereof, of iron or steel	0.03	0.00	0.01
		7317	Nails, tacks, drawing pins, corrugated nails, staples (other than those no. 83.05) and similar articles, of iron or steel, whether or not with heads of other material, but excluding such articles with heads of copper.	0.39	0.25	0.41
		7318	<i>Screws, bolts, nuts, coach-screws, screw hooks, rivets, cotter pins, washers (including spring washers) and similar articles, of iron or steel.</i>	4.87	4.33	3.45
		7319	Sewing needles, knitting needles, bodkins, crochet hooks, embroidery stiletos and similar articles, for use in the hand, of iron or steel; safety pins and other pins of iron or steel, not elsewhere specified or included.	0.11	0.05	0.07
		7320	Springs and leaves for springs, of iron or steel	0.66	0.54	0.52
		3722	Radiators for central heating, not electrically heated, and parts thereof, of iron or steel; air heaters and hot air distributors (including distributors which can also distribute fresh or conditioned air), not electrically heated, incorporating a motor	4.95	3.86	4.05
		7324	Sanitary ware and parts thereof, of iron or steel.	3.33	2.37	2.73
		7325	Other cast articles of iron or steel.	1.98	1.99	0.32
		7326	Other articles of iron or steel.	1.98	2.04	2.07
		7407	Copper bars, rods and profiles.	1.43	1.28	2.70
		7408	Copper wire.	6.50	12.72	8.09
		7409	Copper plates, sheets and strip, of a thickness exceeding 0.15 mm.	0.27	0.33	0.45
		7410	Copper foil (whether or not printed or backed with paper, paperboard, plastics or similar backing materials) of a thickness (excluding any backing) not exceeding 0.15 mm.	1.18	1.12	0.81
		7411	Copper tubes and pipes.	1.28	1.54	0.76
		7412	<i>Copper tube or pipe fittings (for example, couplings, elbows, sleeves).</i>	2.44	2.41	1.57
	7413	Stranded wire, cables, plaited bands and the like, of copper wire; expanded metal of copper	0.01	0.02	0.04	
	7414	Cloth (including endless bands), grill and netting of copper wire; expanded metal of copper	0.02	0.01	0.05	
	7415	Nails, tracks, drawing pins, staples (other than those of heading no. 83.05) and similar articles, of copper or of iron or steel with heads of copper screws, bolts, nuts, screw hooks, rivets, coppers, cotter - pins, washers (including spring washers) and	0.03	0.00	0.01	
	7416	Copper springs.	0.00	0.00	0.01	

	Local Production (US\$ millions)		HS Codes		Imports (US\$ millions)		
	1996	1997			1996	1997	1998
Manufacture of metal products (continued)			7417	Cooking or heating apparatus of a kind used for domestic purposes, non-electric, and parts thereof, of copper.	0.21	0.16	0.19
			7419	Other articles of copper.	0.25	0.26	0.18
			7604	Aluminium bars, rods and profiles.	0.88	2.38	3.68
			7605	<i>Aluminium wire.</i>	2.01	1.55	6.52
			7606	<i>Aluminium plates, sheets and strip, of a thickness exceeding 0.2 mm.</i>	7.87	10.95	6.04
			7608	Aluminium tubes and pipes.	0.21	0.10	0.12
			7609	Aluminium tube or pipe fittings (for example, couplings, elbows, sleeves).	0.05	0.08	0.02
			7610	<i>Aluminium structures (excluding prefabricated buildings of heading no.94.06) and parts of structures (for example, bridges and bridge-sections, towers, lattice masts, roofs, roofing frameworks, doors and windows and their frames and thresholds for door</i>	0.71	1.12	1.36
			7614	Stranded wire, cables, plaited bands and the like, of aluminium, not electrically insulated	0.01	0.01	0.00
			7616	<i>Other articles of aluminium.</i>	1.04	1.39	1.15
			7803	Lead bars, rods, profiles and wire.	0.11	0.07	0.14
			7806	Other articles of lead.	0.03	0.01	0.01
			7904	Zinc bars, rods, profiles and wire.	0.00	0.01	0.01
			7905	Zinc plates, sheets, strip and foil.	0.08	0.00	0.02
			Total:	180.02	149.93	136.49	
Manufacture of tanks, reservoirs and containers of metal	11.13	4.07	7309	<i>Reservoirs, tanks, vats and similar containers for any material (other than compressed or liquefied gas of iron or steel, of a capacity exceeding 300 l, whether or not lined or heat insulated, but not fitted with mechanical or thermal equipment.</i>	1.10	2.08	1.50
			7310	<i>Tanks, casks, drums, cans, boxes and similar containers for any material (other than compressed or liquefied gas), of iron or steel, of a capacity not exceeding 300, whether or not lined or heat insulated, but not fitted with mechanical or thermal equipment.</i>	2.58	1.59	1.85
			7311	<i>Containers for compressed or liquefied gas, of iron or steel.</i>	4.05	3.16	4.53
			7611	Aluminium reservoirs, tanks, vats and similar containers, for any material (other than compressed or liquefied gas), of a capacity exceeding 300 l, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment.	0.00	0.01	0.08
			7612	<i>Aluminium casks, drums, cans, boxes and similar containers (including rigid or collapsible tubular containers), for any material (other than compressed or liquefied gas) of a capacity not exceeding 300 l, whether or not lined or heat-insulated</i>	1.43	1.21	1.90
			7613	Aluminium containers for compressed or liquefied gas.	0.00	0.00	0.00
			Total:	9.17	8.04	9.86	

Local Production (US\$ millions)	HS Codes		Imports (US\$ millions)				
	1996	1997		1996	1997	1998	
Manufacture of cutlery, hand tools, and general hardware	2.96	2.44	7323	Table, kitchen or other household articles and parts thereof, of iron or steel; iron or steel wool; pot scourers and scouring or polishing pads, gloves and the like, of iron or steel	5.34	4.86	4.41
			7418	Table, kitchen or other household articles and parts thereof, of copper; pot scourers and scouring or polishing pads, gloves and the like, of copper, sanitary ware and parts thereof, of copper.	0.12	0.12	0.15
			7615	Table, kitchen or other household articles and parts thereof, of aluminium; pot scourers and scouring or polishing pads, gloves and the like, of aluminium; sanitary ware and parts thereof, of aluminium.	0.87	0.51	1.35
			8201	Hand tools, spades, shovels, mattocks, picks, hoes, forks and rakes; axes, bill hooks and similar hewing tools, secateurs of any kind; scythes sickles, hay knives, hedge shears, timber wedges and other tools of a kind used in agriculture, horticulture	0.88	0.55	0.46
			8202	Handsaws; blades for saws of all kinds (including slitting, slotting or toothless saw blades).	0.73	0.64	0.56
			8203	Files, rasps, pliers (including cutting pliers), pincers, tweezers, metal cutting shears, pipe-cutters, bolt croppers and similar hand tools.	0.29	0.41	0.25
			8204	Hand-operated spanners and wrenches (including torque meter wrenches but not including tap wrenches); interchangeable spanner sockets, with or without handles	0.54	0.44	0.39
			8205	Hand tools (including glaziers, diamonds) not elsewhere specified or included; blow lamps; vices, clamps and the like, other than accessories and parts of, machine tools; anvils; portable forges; hand or pedal- operated grinding wheels with frameworks.	2.09	1.69	1.89
			8206	Tools of two or more of the heading nos.82.02 to 82.05 put up in sets for retail sale.	0.20	0.09	0.03
			8207	Interchangeable tools for hand tools, whether or not power-operated, or machine-tools (for example, for pressing, stamping, punching, tapping, threading, drilling, boring, broaching, milling, turning, or screw driving), including dies for drawing or extruding	0.95	1.01	1.41
			8208	Knives and cutting blades, for machines or for mechanical appliances.	0.79	0.65	0.72
			8209	Plates, sticks, tips and the like for tools, unmounted of sintered metal carbides or cermets.	0.01	0.00	0.00
			8210	Hand-operated mechanical appliances, weighing 10 kg or less, used in the preparation, conditioning or serving of food drink.	0.12	0.08	0.07
			8211	Knives with cutting blades, serrated or not (including pruning knives), other than knives of heading no.82.08, and blades therefore.	0.61	0.47	0.59
			8212	Razors and razor blades (including razor blade blanks in strips).	1.36	1.38	1.50
			8213	Scissors, tailors' shears and similar shears, and blades	0.15	0.17	0.11
			8214	Other articles of cutlery (for example, hair clippers butchers' or kitchen cleavers, choppers and mincing knives, paper knives); manicure or pedicure sets and instruments (including nail files).	0.40	0.39	0.38
8215	Spoons, forks, ladles, skimmers, cake-servers, fish knives, butter-knives, sugar tongs and similar kitchen or tableware.	0.82	1.30	1.67			
			Total:	16.29	14.76	15.95	
Manufacture of other fabricated metal products n.e.c.	44.73	53.10	8301	<i>Padlocks and locks (key, combination or electrically operated), of base metal; clasps and frames with clasps, incorporating locks, of base metal; keys for any of the foregoing articles, of base metal.</i>	2.46	2.05	3.17

	Local Production (US\$ millions)		HS Codes		Imports (US\$ millions)		
	1996	1997			1996	1997	1998
			8302	<i>Base metal mountings, fittings and similar article suitable for furniture, doors, staircases, windows, blinds, saddlery, chests, caskets, the like; base metal hat-racks, hat-pegs, brackets and similar fixtures; castors with mountings of base metal, automatic door</i>	5.40	4.96	5.27
			8303	<i>Armored or reinforced safes, strong-boxes and doors and safe deposit lockers for strong-rooms, cash or deed boxes and the like, of base metal.</i>	1.30	0.44	0.43
			8304	<i>Filing cabinets, card-index cabinets, paper trays, paper rests, pen trays, office -stamp stands and similar office or desk equipment, of base metal, other than office furniture of heading no.94.03.</i>	0.22	0.22	0.08
			8305	<i>Fittings for loose-leaf binders or files, letter clips, letter corners, paper clips, indexing tags and similar office articles, of base metal; staples in strips (for example, for offices, upholstery, packaging), of base metal.</i>	0.48	0.30	0.39
			8306	<i>Bells, gongs and the like, non-electric, of base metal statuettes and other ornaments of base metal, photograph, picture or similar frames of base metal; mirrors of base metal.</i>	0.19	0.16	0.09
			8307	<i>Flexible tubing of base metal, with or without fittings.</i>	0.13	0.11	0.14
			8308	<i>Clasps, frames with clasps, buckles, buckle-clasps, hooks, eyes, eyelets and the like, of base metal, of a kind used for clothing, footwear, awnings, handbags, travel goods or other made up articles; tubular or bifurcated rivers, of base metal; beads and spangles</i>	1.14	0.73	0.75
			8309	<i>Stoppers, caps and lids (including crown corks, screw caps and pouring stoppers), capsules for bottles, threaded bungs, bung covers, seals and other packing accessories, of base metal.</i>	2.25	3.01	2.73
			8310	<i>Sign-plates, nameplates, address-plates and similar plates, numbers, letters and other symbols of base metal, excluding those of heading no.94.05. carbids, coated or cored with flux material, of a kind used for soldering, brazing, welding or deposition</i>	0.10	0.13	0.15
				Total:	13.67	12.10	13.20
Manufacture of other general purpose machinery	15.98	18.51	8543	<i>Electrical machines and apparatus, having individual functions, not specified or included elsewhere in this chapter.</i>	2.51	3.76	1.46
Manufacture of electric motors, generators and transformers	1.22	n/a	8501	<i>Electric motors and generators(excluding generating sets).</i>	8.93	16.20	6.33
			8502	<i>Electric generators sets and rotary converters .</i>	2.64	1.71	1.61
			8504	<i>Electrical transformers, static converters (for example, rectifiers ) and inductors</i>	4.74	19.52	15.24
			8507	<i>Electric accumulators, including separators therefore whether or not rectangular(including square) .</i>	2.61	3.22	3.07
				Total:	18.91	40.64	26.25

	Local Production (US\$ millions)		HS Codes		Imports (US\$ millions)		
	1996	1997			1996	1997	1998
Manufacture of electricity distribution and control apparatus	n/a	5.01	8505	Electro-magnets; permanent magnets and articles intended to permanent magnets after magnetization; permanent magnet chucks, clamps and similar holding devices; electro-magnetic lifting heads .	0.07	0.18	0.04
			8507	Electric accumulators, including separators therefore whether or not rectangular(including square) .	2.61	3.22	3.07
			8511	Electrical ignition or starting equipment of a kind used for spark-ignition compression - ignition internal combustion engines generators and cut-outs of a kind used in conjunction with such engines .	0.60	0.25	0.20
			8512	Electrical lighting or signaling equipment (excluding articles of heading no.85.39),windscreen wipers, defrosters and demisters, of a kind used for cycles or motor vehicles .	0.30	0.44	0.61
			8532	Electrical capacitors, fixed, variable or adjustable (pre-set) .	0.91	2.76	0.48
			8533	Electrical resistors ( including rheostats and potentiometers ), other than heating resistors .	0.21	0.27	0.01
			8534	Printed circuits	0.04	0.04	0.07
			8535	Electrical apparatus for switching or protecting electrical circuits, for making connections to or in electrical circuits(for example, switches, fuses, lightning arresters, voltage limiters, surge suppressors, plugs, junction boxes), for a voltage exceeding 100	8.56	9.97	3.65
			8536	Electrical apparatus for switching or protecting electrical circuits, for making connections to or in electrical circuits(for example, switches, fuses, lightning arresters, voltage limiters, surge suppressors, plugs, junction boxes), for a voltage exceeding 100	17.02	21.76	17.75
			8537	Boards, panels (including numerical control panels), consoles, desks, cabinets and other bases, equipped with two or more apparatus of heading no.85.35 or 85.36, for electric control or the distribution of electricity	4.96	11.59	6.96
			8541	Diodes, transistors and similar semi-conductor devices; photosensitive semi-conductor devices, including photovoltaic cells whether or not assembled in modules or made up into panels; light emitting diodes; mounted piezo-electric crystals	0.87	0.13	0.09
8542	Electronic integrated circuits and microassemblies	0.93	0.91	1.29			
			Total:	3.59	4.09	3.92	
Manufacture of insulated wire and cable	63.28	27.78	8544	Insulated (including enameled or anodized), wire cable (including co-axial cable), and other insulated electric conductors, whether or not fitted with connectors; optical fiber cables, made up of individually sheated fibers, whether or not assembled with e	34.64	57.65	23.94
Manufacture of accumulators, primary cells and batteries	n/a	n/a	8506	Primary cells and primary batteries .	4.31	1.98	3.22
			8507	Electric accumulators, including separators therefore whether or not rectangular (including square) .	2.61	3.22	3.07
				Total:	6.91	5.19	6.28

	Local Production (US\$ millions)		HS Codes		Imports (US\$ millions)		
	1996	1997			1996	1997	1998
Manufacture of other parts and accessories	n/a	n/a	8480	<i>Molding boxes for metal foundry; mould bases; molding patterns; moulds for metal ( other than ingot rubber or plastics .</i>	6.34	5.08	4.79
			8481	<i>Taps, cocks, valves and similar appliances for pipes , boiler shells, tanks, vats or the like, including pressure reducing valves and thermostatically controlled valves .</i>	20.61	30.36	16.99
			8482	<i>Ball or rolled bearings .</i>	5.27	3.70	2.52
			8483	<i>Transmission shafts ( including cam shafts and crank shafts ) and cranks; bearing housings and plain shaft bearings; gears and gearing; ball screws; gear boxes and other speed changer, including torque converters; flywheels and pulleys , including pulley</i>	17.83	9.78	11.54
			8484	<i>Gaskets and similar joints of metal sheeting combined with other material or of two or more layers of metal; sets or assortments of gaskets and similar joints dissimilar in composition, put up in pouches, envelopes or similar packings .</i>	2.35	0.00	0.00
				<i>Total:</i>	52.41	52.97	39.87
<b>TOTAL</b>	<b>292.98</b>	<b>298.76</b>			<b>395.07</b>	<b>396.68</b>	<b>326.87</b>

## Annex C List of Interviews

Following is a list of interviews held by TSG consultants during their missions to Jordan in October 1999 and March/April 2000 for the Backward Linkages study.

Name	Title	Organization
Ms. Reem Badran	Director General	Jordan Investment Board
Mr. Steve Wade	Program Director	AMIR
Mr. Andy Griminger	Project Administrator and Grant Manager	AMIR
Dr. Khalil Elian	Senior Economist	AMIR
Mr. T. Asfour	Architect and entrepreneur	
Gen. Mohammed Abu-Atmeh	Manager	Al-Hassan Industrial Estate
Dr. Mohammed Smadi	Director General	Amman Chamber of Industry
Eng. Daoud Shakboua	Manager	Amman VTC Training Center
Mr. Mohammad Khir Balqar	Vice President for Technical Affairs	Aqaba Regional Authority
Eng. Ali Obeidat	General Manager	Arab Engineering Industries Co.
Capt. Moh'd Khawaldeh	Aqaba Site Manager	Arab Potash Company
Mr Amin M. Ramdan	Head of Local Procurement	Arab Potash Company
Mr. S. Al-Aloul	General Manager	Construction Company
Mr. Fernando Garces de los Fayos	First Secretary	EU Delegation
Ms. Martine Leveque	Economic Counsellor	EU Delegation
Mr. Poul Gadegaard	Business Counsellor	Euro-Jordanian Business Service
Mr. Ali Madadha	Director General	Free Zone Corp.
Mr. Hani Falah Al-Gharaibeh	Head of Investment Division	Free Zone Corp.
Mr. Tayseer Wahbeh	General Manager	Industrial Development Bank
Mr. Faisal Bashiti	Chairman	International Arabian Development Group Co.
Ms. Myassar Al-Azzam	Executive	Irbid Chamber of Industry
Eng. Marwan Bushnaq	Director and General Manager,	Jordan Electric Power Company Ltd
Mr. Joudeh Khalaf	Assistant Technical Manager,	Jordan Electric Power Company Ltd
Mr. Awni Abdul-Rahim	Director, Investment Dept.	Jordan Industrial Estates Corp.

<b>Name</b>	<b>Title</b>	<b>Organization</b>
Dr. Rajai Muasher	Chairman	Jordan National Bank
Mr. Hani A. Dukhqan	DMD for Aqaba Affairs – Industrial Complex Manager	Jordan Phosphates Mines Co.
Mr. Laith Al-Quasem	CEO	Jordan Technology Group
Mr. Lewis Reade	President and CEO	Jordan-US Business Partnership
Mr. Farah Nushaiwat		Jordan-US Business Partnership (GTN)
Mr. Abdul Rahim Taha	General Manager	Mechanical Engineers and Contractors
Mr. Subhi A. Souri	Sales and Marketing Manager	Mechanical Engineers and Contractors
Mr. Mohammed Khier Bitar	Owner	Mechanical Turnery Technical Workshop
Mr. Ayman M Khalili	Vice President	Middle East Complex for Engineering, Electronics and Heavy Industries Plc
Mr. Hashim Al-Thabbah	Assistant General Manager for Factories	Middle East Complex for Engineering, Electronics and Heavy Industries Plc
Mr. Toshio Takatsuno	Plant Manager	Nippon Jordan Fertilizer Co.
Mr. Zuhair Dahman	Vice President	Royal Jordanian Airlines
Mr. Mohamed Kalimat	Assistant Vice President	Royal Jordanian Airlines
Mr. Sami Arekat	Vice President	Royal Jordanian Airlines
Mr. Jehad Faqir	Director, Service Engineering	Royal Jordanian Airlines
Mr. Quassem Omari	Assistant Vice President, Engine Overhaul	Royal Jordanian Airlines
Mr. A. Abdel-Jaber	ADG/Technical Affairs	Vocational Training Corp.
Mr. Muzahim Muhaisin	Director General	Vocational Training Corp.
Mr. Mohd Arslan	Manager	Zarqa Chamber of Industry
Dr. Maher Waked	General Manager	Industrial Development Bank
Mr. Tenaka	First Secretary	Embassy of Japan
Dr. Hindawi	Director	Ministry of Industry & Trade, IDD