No.

DIRECTORATE GENERAL OF INDUSTRY,
DIRECTORATE GENERAL OF SME DEVELOPMENT,
MINISTRY OF COMMERCE AND INDUSTRY, THE SULTANATE OF OMAN

STUDY

ON

MASTER PLAN FOR INDUSTRIAL DEVELOPMENT

IN

THE SULTANATE OF OMAN

(SUMMARY)

FEBRUARY 2010

JAPAN INTERNATIONAL COOPERATION AGENCY

UNICO INTERNATIONAL CORPORATION

IDD
JR
10-020

Map No. 3730 Rev. 4 UNITED NATIONS
January 2004

Department of Peacekeeping Operations
Cartographic Section

Abbreviations

CDM	Clean Development Mechanism
COMTRADE	UN COMTRADE
CSP	Concentration Solar Power Plant
CSR	Corporate Social Responsibility
EB	Ethyl-benzene
EEG	Erneuerbare Energie Gesetz, Germany
EG	Ethylene Glycol
EIA	Energy Information Administration
EOR	Enhanced Oil Recovery
EPC	Engineering, Procurement and Construction
EPS	Expanded Polystyrene
EU	European Union
FTZ	Free-trade Zone
FZ	Free Zone
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GNI	Gross National Income
GRE	Glass-fiber Reinforced Epoxy
GRP	Glass-fiber Reinforced Plastic
HACCAP	Hazard Analysis and Critical Control Point
HDPE	High-density Polyethylene
ICT	Information and Communication Technology
IE	Industrial Estates
ITA	Information Technology Alliance
IWPP	Independent Water and Power Producer
JCF	Japan Carbon Finance, Ltd.
JET A-1	Jet A1 Aviation Fuel
KOM	Knowledge Oasis Muscat
LLDPE	Linear Low-density Polyethylene
LNG	Liquid Natural Gas
LPG	Liquid Petroleum Gas
MEOR	Microbial Enhanced Oil Recovery
MFR	Mina Al-Fahal Refinery
MIS	Main Interconnected System

MNE	Ministry of National Economy
MOA	Ministry of Agriculture
MOCI	Ministry of Commerce and Industry
MOG	Ministry of Oil and Gas
MOGAS	Motor Gasoline Fuels
MOTC	Ministry of Transport and Communication
MTPA	Metric Tons Per Annual
MW	Mega Watt
NEDO	New Energy and Industrial Technology Development Organization, Japan
OCC	Oman Cement Company
OCCI	Oman Chamber of Commerce and Industry
OCIPED	Oman Center for Investment Promotion and Export Development
OCTAL	Octal Petrochemicals
ODB	Oman Development Bank
OEM	Original Equipment Manufacturing
OFCC	Oman Formaldehyde Chemical Company LLC
OGC	Oman Gas Company
OLNGC	Oman Liquefied Natural Gas Company
OMC	Oman Methanol Company LLC
OMIFCO	Oman India Fertilizer Company SAOC
OPA	Polyamide
OPIC	Oman Petrochemical Industries Company
OPP	Oman Polypropylene LLC
OPWP	Oman Power and Water Procurement Company
ORPC	Oman Refineries and Petrochemicals Company
OSS	Oman Solar System
OTI	Oman Trading International
Oxy	Occidental Petroleum Corporation, Oman
PAEW	Public Authority for Electricity and Water
PDO	Petroleum Development Oman
PE	Polyethylene
PEIE	Public Establishment for Industrial Estate
PET	Polyethylene Terephthalate
PP	Polypropylene
PPR	Polypropylene Random Copolymer

PS	Polystyrene
PTA	Purified Terephthalic Acid
PV	Solar Photovoltaic
PVC	Polyvinyl Chloride
PX	Paraxylene
QLNG	Qalhat LNG
RAECO	Rural Areas Electricity Company
RFCC	Residue Fluid Catalytic Cracking
RO	Omani Rial
SIE	Sohar Industrial Estate
SITC	Standard International Trade Classification
SIUCI	Sohar International Urea and Chemical Industries
SMC	Sohar Methanol Company or Salalah Methanol Company
SME	Small and Medium-sized Enterprises
SPC	Sohar Power Company
SQU	Sultan Qaboos University
SRC	Sohar Refinery Company
SWOT	Strength, Weakness, Opportunity and Threat
UNESCO	United Nations Educational, Scientific and Cultural Organization

Table of Contents

Executive Summary

1 Review and Recommendation on Industrial Development Plan and Strategies

1.1 Prospective Areas for Industrial Development

The objective of defining the prospective areas and the priority areas for industrial development is to provide policy support to promote development in the areas as required, and encourage investment on the areas.

Based on the review of the existing industries in Oman, the prospective industrial areas for industrial development were selected as follows:

(1) The industrial areas which are considered competitive on the basis of the analysis of the existing industries

In Chapter 4 (of the Main Text of the Report), the existing industrial areas were reviewed and their competitive edges were analyzed. According to the result of the analysis, the major industrial areas developed in Oman can be categorized one of the following:

1. Industrial areas which are based on the considerable size of the existing demand in the local and neighboring countries' markets
2. Industrial areas leveraging the resources which is available locally with significant advantage

These industrial areas are expected to be prospective in the future too, though there will be needs to challenge to solve the constraints for future development which are found in these areas.

The *"industrial areas which are based on the considerable size of the existing demand in the local and neighboring countries' markets"* can be found in two areas. One is the areas of food industries, and industries of goods of daily necessity character. However, it should be noted that the Omani products in these industrial areas are found only in the market segments of quality goods, specialty goods which are sold with close interaction with the customers, since the Omani products are hard to compete with the mass-produced imported goods due to their small size of production. Actually, in these market segments, the competition with the mass-produced imported goods is less.

Another area is the industrial areas of construction and building materials and machineries, which include materials industries of non-metallic minerals, and machinery industries related to

infrastructure construction and plant construction.

The *"industrial areas leveraging the resources which is available locally with significant advantage"* are the industries based on oil and natural gas. However, the country's natural gas resources are losing surplus capacity that has previously attracted large-scale industrial projects, forming the largest constraint for future industrial development.

Therefore, the future development should be focused on the industries which leverage the industrial basis thus established, or in other words, the downstream areas of these petrochemical industries and smelting industries.

Besides the oil and natural gas, the resources of lime stone, aggregates, gypsum, and marble, etc., which are abundantly endowed in Oman, have also been used as the sources of construction and building materials, and these industries are also expected to be prospective.

(2) The industrial areas, which are still minor areas but prospective for the future development with some potential advantage according to the current development experience

This potential may be found in the following three areas:

a) ICT related area:

Here, the focus is placed on dissemination of use of ICT among the enterprises in the manufacturing industries, in view of upgrading of the manufacturing industries themselves.

b) Industrial areas of energy alternatives to oil and natural gas:

Not only because of the fact that Oman cannot depend on oil and natural gas alone as the future energy sources, but also because of the fact that Oman has environmental potential to use solar and wind power for power generation, the manufacturing sector is necessary to be involved in the development of the energy alternatives in a proactive manner. On the other hand, considering the fact that the oil and natural gas resource is the most decisive competitive edge for industrial development in Oman, development of the alternative energy sources will enable Oman to use the oil and energy resource to other valuable purposes, such as development of middle-level energy consuming industries.

c) Industrial areas leveraging the Country's geographical advantages:

The country's geographical advantage is utilized only in a limited extent so far. Investment focusing on the geographical advantage is also focusing on the advantage of cheap and abundant supply of oil or gas, generally. However, as seen in the case of investment of automotive parts manufacturer in Salalah FZ, which is focusing on the proximity to Europe, with Salalah port as the calling port of the world major container line, the geographical advantage will still have the high potential to attract investments.

(3) Industrial areas need for development in view of overcoming the weakness, and strengthening the advantageous position of the industries in Oman

This areas of industries are not advantageous in Oman, instead lacking critically at present. However, at the same time, these areas have potentials for development considering the industrial concentration observed currently in Oman. Further, development is advised to be started as early as possible regardless of feared difficulties to be faced.

a) Metal working and machining works
b) Plant engineering
c) Packaging materials

1.2 Recommendations on the Industrial Development Plan and the Strategy

1.2.1 Recommendation on the primary challenges

(1) Transformation from oil-dependent economy, and industrial diversification

The following should be the essential point of the policy for industrial diversification:

1. To use existing infrastructure in the most efficient way
2. To maximize the economic effect of use of oil and gas resources
3. To take steady steps toward the maximum use of alternative energy

While many investment projects achieve a good return, the rate of reinvestment in the country as a whole is not very high due to import of producer goods and payment to foreign workers, etc. To ensure the efficient use of capital, therefore, the following policies need to be pursued.

1. Promotion of business startup and production by Omani people
2. Formation and development of inter-industrial linkages

(2) Creation of opportunities for business startup and employment *for Omani people*

While many businesses have been created in the country, together with employment opportunities, they have not necessarily created the opportunity for Omani people.

While the Strategy proposes a variety of instruments to implement employment-related policies, actual programs and their implementation are largely left to the Ministry of Education and the Ministry of Manpower. However, human resource development can be accomplished effectively in the actual working environment that provides practical learning experience, rather than educational / training environment. It is therefore desirable to implement a program that provides such training opportunity. In particular, the MOCI needs to give priority to such program to facilitate practical training for Omani workers as a formal institution outside ordinary

education and training.

(3) Establishment of strategic priority areas for industrial development, and promotion of investment providing incentives

It is important to define the areas of priority, categorizing the objectives for its priority so that the government agency in charge of implementation can make the strategy into the detailed policy measures / programs. The proposed prospective and priority areas can be classified into the following groups according to the policy objectives.

1. Industrial areas for which investment and business development should be encouraged
2. Industrial areas for which the government should carry out development support projects
3. Industrial areas for which research and development should be encouraged
4. Industrial areas for which transformation (fundamental reforms) should be encouraged under support programs

1.2.2 Recommendation on capacity enhancement of the implementation body of the Strategy

(1) Establishment of the industrial council

Efforts should be made to promote accumulation of knowledge and experience on industrial development within the MOCI and the industrial sector, with view to strengthen the implementation system. For the MOCI, a better arrangement is to organize industrial councils according to the major category of development policies under active participation of related industries. Also, considering the fact that there are excellent Omani industrialists and managers, their experience should be respected and mobilized.

(2) Capacity building of Directorate General of Industry

The Directorate General of Industry, which is responsible for leading implementation of the Strategy, should enhance its capability to understand the current state of industries, including problems facing them.

1.3 Recommended Policy Measures and Programs Based on the Strategies for Industrial Development

The position of the Government is to support voluntary efforts of the private sector in the industrialization process, and therefore, its basic industrial development policy should focus the

development and upgrading of the business environment, including infrastructure (see 6.3.1 of the Main Text of the Report). In addition, the government should implement more aggressive policies and programs to encourage or facilitate private initiatives conducive to industrial development (see 6.3.2 through 6.3.4 of the same). Further, for the industrial areas that are considered to be critical in future industrial development but which development cannot be effectively promoted by the above policies and programs ("priority areas"), additional policies and programs focusing on them need to be provided (see 6.3.5 of the same).

On the other hand, for SMEs that are disadvantaged in comparison to large companies because of small size and other factors and that cannot rely on a market mechanism alone to maintain competitive position, special policy consideration is required as part of industrial policy, including government support in line with the above mentioned development strategy (see 7.3.1 of the Main Text of the Report).

Furthermore, small enterprises (including micro enterprises) and entrepreneurs should require special treatment from an additional viewpoint (relating to social policy), and special support programs should be called for accordingly (see 7.3.2 of the same).

1.3.1 Recommended industrial development policy and measures

(1) Industry-friendly business environment

The existing infrastructure cannot keep up with the rapid pace of industrial development, and expectations for further infrastructure development and service upgrading are voiced by many companies.

It is recommended to take action for items that can be immediately dealt with, while taking alternative measures for difficult ones.

(2) Shift to the knowledge based industry

Because of the small local and neighboring markets, Oman cannot enjoy a competitive advantage in terms of economies of scale, except for the areas where it has a good cost advantage in terms of raw material and utilities.

Meanwhile, the manufacturing industry is facing intensifying competition worldwide as hardware production has reached very high levels in terms of technology, volume, and cost. Instead, software (or additional value) incorporated into (represented by) hardware is increasingly becoming a differentiating factor for sustainability and prosperity.

Upgrading the ability to explore or create a new market is critical for Omani companies if they

are to expand into the international market, and time has come to make conscious efforts in that direction. Shift to the knowledge based industry is a key word for promoting such efforts.

There is a competitive threat for Omani companies so long as they serve the local markets, for quality of mass market products will likely be improved as seen in developing countries that went through the industrialization process. It is therefore imperative to explore export markets by leveraging their strength that has been fostered through the domestic experience.

This policy aims to deliver broad programs that help companies to obtain capabilities required for exploring export opportunities.

1) Dissemination of success stories (case study):
   The program is designed to introduce cases studies relating to knowledge based management to individual companies for the purpose of inspiring and encouraging business development pursuing niche opportunities.
2) Comprehensive support for R&D and product development activities:
   The program is designed to provide technical and financial support for companies doing R&D and product development. It will be financed by a special fund established for the purpose.
3) Creation of a loan scheme targeting equipment modernization:
   Modernization (modification) of equipment is required to develop the knowledge based industry capable of market creation. This may entail substantial investment. Note that equipment modernization leads to the improvement of the working environment and the enhancement of employment opportunities for Omani people.

(3) Promotion of investment and business startup in strategic areas

The primary purpose is to encourage investment and business startup in areas where vigorous business activities are not seen but investment is strategically desirable.

1) Development of the downstream sector for heavy and chemical industries:
   Final products in petrochemical and chemical (natural gas based) sectors are plastics. If a manufacturer of plastics products is to locate in Oman, it will not be able to maintain competitiveness so far as it targets the local market (including other GCC countries). Otherwise, it will face fierce price competition with mass produced imports. Again, it has to develop niche products that can be clearly differentiated from mass products.
   As for the downstream sector for the aluminum smeltery, intermediate products, when manufactured, can be supplied to existing manufacturers of aluminum products and then to other markets, so long as they are cost competitive. Also, the aluminum processing

industry may attract new entrants. It should be noted, however, that they need competitiveness other than price if they try to serve a distant market.

The same thing can be said about the steel industry. In all the cases, therefore, Omani companies need to offer comparative advantages other than price.

2) Use of non-metal mineral resources:

Oman is reportedly endowed with a variety of non-metal mineral resources, and those exploited on a commercial basis are lime, gypsum, marble, and crushed stone.

Efforts should be made to develop and market higher valued added products from available resources, rather than the materials itself.

3) Processing and repackaging industries leveraging the country's geographical advantage:

They cannot simply rely on the country's strategic location, which is one geographical advantage but does not constitute comparative advantage by itself. As discussed earlier, the country is not suitable for mass production because of the small market size. The geographical advantage should be combined with industrial efforts in relation to innovative product development and marketing strategy.

(4) Challenge for Sustainable Development

At present, Oman's manufacturing sector relies almost entirely on foreign technology and makes few efforts to develop or upgrade their own.

This policy element, therefore, aims to foster industrial capabilities required for spontaneous and sustainable development. Note that such capabilities should be transferred to not only companies but also Omani engineers and technicians.

Under the policy agenda, the following two programs are recommended.

1) Establishment of a central metalworking and machining workshop, including a foundry:

This program is designed to establish a metalworking and machining joint venture under the government's capital contribution and in cooperation of companies that have high levels of metalworking and machining technology to be operated on a minimum/ non-profit basis. It will also receive Omani people each year as special trainees under government scholarship to provide field training for around seven years. These trainees who have completed the training program will be certified as a "specially trained engineer/technician under the national program."

2) Plant engineer training program:

Under the program, around five special trainees under government scholarship will be accepted from college graduates and company workers with specific experience. In cooperation of PDO, they will receive field training for around seven years. These trainees who have completed the training program will be certified as a "specially trained

engineer/technician under the national program."

1.3.2 Sector specific recommendations for the priority areas of industry

This policy element aims to create an impetus for development of priority areas, particularly by combination with other programs.

(1) Industrial development seminar on the downstream sector for heavy and chemical industries (existing, under construction, and under planning)

The seminar is designed to advertise business opportunities in relation to downstream development and to give guidance to potential investors. In coordination with the program to provide technology and market information (as discussed earlier), it will ensure collection of information and continuous support.

(2) Promotion of IT used by companies

1) IT promotion program for companies:

A special campaign will be made to promote use of IT to companies, especially SMEs. It will be accompanied by a loan program to provide necessary funds for SMEs. Clearly, IT

2) Software development support program for IT-related startups:

The program will be implemented concurrently with the above IT promotion program and is designed to encourage business startup relating to development of IT software.

(3) Joint verification and research project on optimum systems for solar and wind power generation

The project will be conducted jointly by industry, academic circles and government to perfect solar and wind power generation systems optimized for commercial operation in Oman (and other GCC countries) through field verification tests.

(4) Central metalworking and machining workshop project (see 1.3.1 (4)-1)

(5) Special training program for plant engineers and technicians (see 1.3.1 (4)-2)

(6) Packaging technology center

The center will perform, among other things, provide consultation, guidance and support services relating to improvement of packaging for SMEs.

1.4 Recommendation on Regional Industrial Development Plans in the Selected Areas

1.4.1 Regional industrial development in Sur

1) Development of a gateway for tourism development and products targeting tourists:
   A gateway facility is recommended to be constructed within the industrial estate in order to attract tourists who use the expressway, and specialty products be developed to sell them at the facility.
2) Support for startup or inducement of industries serving local demand:
   Establishment of an incubator facility is recommended in the industrial estate to support the startup companies that serve local demand.
3) Startup support for small IT companies:
   A facility (office) to support small companies providing service for local industries, typically software development, should be provided within the industrial estate.
4) Industrial development targeting India:
   A part of the industrial estate is recommended to be designated as a free zone to attract SMEs from India. It should be accompanied by construction of a general cargo port that can accommodate small ships for direct transport service to and from the west coast area of India.
   In this conjunction, a prospective area is found in glass and ceramics industries with medium-level energy consumption. Also, repacking of food by using Oman's packaging technology seems to be viable.

1.4.2 Regional industrial development in Nizwa

1) Promotion of cluster development of the oil drilling industry cluster:
   Promote concentration of oil drilling and related industries (such as production and supply of related materials, assembly and repairing of equipment and components, processing and machining of parts, engineering service relating to oil drilling and pipeline transportation, transportation of heavy articles, etc.), together with the related support functions of research and development, and testing, and metalworking and machining services, and encourage deployment of the expertise and technology thus concentrated, to the related industrial areas for expanded industrial activities.
2) Creation of a tourist center as a hub for the visitors, and encourage development of products targeting tourists:
   A tourist center facility is recommended to be established in the industry estate to attract

tourists who visit various attractions in the area, while products featuring local materials or cultures should be developed for sales at the center.

3) Support for startup or inducement of industries of food processing and production of building materials from non-metal minerals serving local demand:

   Establishment of an incubator facility is recommended in the industrial estate to support the startup companies that serve local demand.

4) Startup support for small IT companies:

   A facility (office) to support small companies providing service for local industries, typically software development, should be provided within the industrial estate.

1.4.3 Regional industrial development in Al Buraymi

1) Support for startup or inducement of industries serving local demand (including the UAE market) :

   Establishment of an incubator facility is recommended in the industrial estate to support the startup companies that serve local demand.

2) Startup support for small IT companies:

   A facility (office) to support small companies providing service for local industries, typically software development, should be provided within the industrial estate.

2 Review and Recommendation on Direction, Policy and Measures for SME Promotion

2.1 Current Situation of SMEs in Oman

Officially in Oman, medium sized enterprises are defined as the enterprises with employees between 99 and 10, whereas the small enterprises are defined as those with less than 10 employees.

The enterprises with less than 70 employees are found to have characteristics of typical SME. The enterprises with less 30 employees have characteristics of small or micro enterprises, having mostly no internal management organization, and depending their management totally on capability of the owner/ manager.

The MNE estimates that there are around 112,800 SMEs in the country.

2.2 Direction of SME Promotion in Oman

Four directions of SME promotion are proposed by taking into account industrialization in Oman and the role expected for SMEs.

(1) Promotion of SME conducive for diversification and deepening of industrial development

1) Promotion of SMEs to form support industries
2) SME promotion for the benefit of supporting research and development
3) SME promotion as the means to diversify tourism
4) SME promotion in relation to the ICT industry

(2) SME promotion as a measure to nurture industrialist entrepreneurs

So far, most of Omani entrepreneurs tend to be involved in the industries as investors, and not the industrialists.

Nurturing of industrialist entrepreneurs, who can identify the needs of new businesses based on their operations, is essential, considering that the SMEs are expected to play an active role in creating new businesses based on the needs identified through their operation, which lead to diversification and deepening of industries.

(3) SME promotion for creation of job opportunities for Omani people

The job creation by SMEs in Oman was significant. Yet, they do not contribute much to job creation for Omani people.

To encourage job creation for Omani people, SMEs are expected to offer unskilled job

opportunities, while establishing the working environment favorable to unskilled workers. This entails the shifting to the more automated and capital-intensive operation, i.e., mechanization to reduce the needs for manual skills of foreign workers.

(4) Support for development and deployment of new business models in small-scale commerce and service sectors

To encourage participation by local people, introduce new business models, which could promote modernization and reduce dependence on specific skills, thereby to facilitate operation by local workforce. It will be useful for job creation in rural areas.

2.3 Recommendations on SME Promotion Policies, Programs and Systems

In the case of SME promotion in Oman, it is necessary to consider the specific feature of SME management observed in Oman, which are described in the following, in developing the support policy and measures for SMEs. Further, the policy and measures should be established with due consideration of the support needs of SMEs, which may vary depending on the stage of SME from startup to operation, while defining the policy targets and the policy objectives.

1) In the case of Oman, even the SME hires a manager who has knowledge and experience of the industry, and therefore, the needs for support in the field of technology and management is minimal. Rather, the technical and managerial support of the government should be focused mainly on small scale individual entrepreneurs for their business startup and operation.
2) However, the SME's capability to access to the information on markets and technologies are rather limited, and the government support in this field is vital importance.
3) Generally, SMEs in Oman can get loans for operation from the banks. In addition, local investors are available including those of other GCC countries.
4) However, for the small and micro scale entrepreneurs and enterprises, most of them are expatriates, they have difficulty in providing guarantee or collateral at the request of the bank, and loan access is very hard for them, as conceivable from the rushed application for the soft loan programs by the government for SMEs, and other loan programs specific to SMEs provided by other SME agencies.
5) Business startups and job creation have shown significant progress in Oman, but the startups of businesses by Omani entrepreneurs and creation of job for Omani workers are still to progress.

2.3.1 Policies, programs and systems for promotion of small and medium-sized enterprises

In the conjunction of a general direction of SME promotion, key points in promotional efforts targeting the medium-sized enterprises are summarized as follows.

1) Promotion of industrial diversification
2) Encouragement of deployment to areas that require reinforcement in the context of the industrial structure, such as the formation of support industries and the development of downstream industries
3) Refocusing on improvement of competitiveness (as the current size of operation and management style will make competition with imported products more and more difficult)
4) Improvement of the working environment to create employment opportunities for Oman people (many of the medium-sized enterprises cannot retain local people for a long time due to the poor working environment, so that SME promotion does not necessarily lead to job creation)

To accomplish these policy goals, the following three programs are proposed.

Program	Policy objective			
	Promotion of industrial diversification	Encouragement of deployment to areas to be reinforced	Enhancement of competitiveness	Improvement of the working environment
(1) Business matching program for promotion of industrial diversification	✓	✓		
(2) Preferential treatment of SME products in government procurement and public works	✓	✓	✓	
(3) SME factory modernization support program			✓	✓

(1) Business matching program for promotion of industrial diversification

To promote diversification of industries and deployment into areas to be reinforced in relation to industrial development, the program will build a set of databases that can be shared and used by government and technical support organizations engaged in SME support as well as potential entrepreneurs who intend to start up their own business.

(2) Preferential treatment of SME products in government procurement and public works

The program is designed to require preferential treatment of products and services supplied by SMEs in government procurement or public works, thereby to increase business opportunities for SME products, including opportunity for improving competitiveness.

(3) SME factory modernization program

The program is designed to promote modernization of production facilities and equipment of SMEs, including mechanization, in order to improve cost competitiveness and the working environment, thereby to improve productivity and stability of Omani employees.

2.3.2 Recommendations on promotion policies, measures and systems for small and micro enterprises, and business startups

Promotion of manufacturing enterprises of this size should focus on the encouragement of new startups in priority fields for industrial development, particularly for the interest of fostering industrialist entrepreneurs.

Not very many enterprises of this size are started by Omani people, probably due to the poor working environment, so that promotion of small enterprises does not lead to job creation for local people. Thus, efforts should be made to create business opportunities for Omani people, such as the upgrading of the business environment.

To accomplish these policy goals, the following three programs are proposed.

Program	Policy objective		
	Promotion of industrial diversification	Encouragement of deployment to areas to be reinforced	Improvement of the working environment
(1) Development of industrial estates for SMEs with the incubator function to support business startup and to foster industrialist entrepreneurs	✓	✓	
(2) Entrepreneurship education program	✓		
(3) Startup promotion program for small-scale commerce and service operators			✓

(1) Development of industrial estates for SMEs with the incubator function to support business startup and to foster industrialist entrepreneurs

A small industrial estate having an incubator function will be established within an industrial estate and will provide support in the business planning and preparation stages as well as in the initial stage of business startup.

(2) Entrepreneurship education program

The education program is designed to encourage business startup by Omani people, while creating business opportunity for them.

(3) Startup Promotion Program for Small-scale Commerce and Service Operators

The program is designed to develop a franchise business model to operate local-oriented small businesses in a more favorable environment and to encourage its dissemination to Omani people. In the process, the program aims to ensure transfer of business know-how to Omani entrepreneurs, while increasing the number of local employees.

2.3.3 Intensification of financing program for SME

Most of SMEs have been able to access to the ordinary loans of the commercial banks in the case of Oman, while the smaller-medium enterprises[1] and small/micro enterprises have difficulty in access to finance.

Considering the above, following two programs are recommended as the programs to intensify the SME support in the field of financing:

(1) Establishment of credit guarantee system for SMEs

The program is designed to establish a credit guarantee scheme as one of key elements for facilitating SME finance.

The program is to establish a credit guarantee system, which assumes strict appraisal of loan application, and covers selected industries.

The credit guarantee organization is assumed to be established under financial contribution by commercial banks, and the government. They will also provide working capital of the guarantee organization. Using these funds, the credit guarantee organization will guarantee repayment of loans made by the commercial banks.

[1] These are the SMEs with less than 70 employees in general. However, all of them do not necessarily have difficulty in access to finance. If these enterprises are defined as those with less than 30 employees, the definition is too narrow to represent the target SMEs.

In addition, a re-guarantee scheme will be established to back up the organization's guarantee service by maintaining insurance with the government to cover 70% - 80% of the amount to be indemnified in the case of default.

(2) Government Soft Loan for Small Enterprises with Conditions of In-advance and Continuous Guidance on their Management

ODB provides soft loan to small and individual entrepreneurs for business startups. However, the non-repayment rate under this program has been as high as 18.5%. The high non-repayment rate is attributable mainly to limited business experience of the entrepreneurs, and insufficient market information, resulting in fail of business in a short period after startups.

This program is to prevent the early operation stage of small enterprises from the management fail, providing them with the government soft loan and management guidance as a package.

2.3.4 Other recommendations related to development of small enterprises

2.3.4.1 Prospective industrial areas for small enterprises

It is noteworthy fact that the most effective promotional intervention is related to that for startup of the businesses, and not the support for operation of the existing enterprises. In the case of Oman, following will be the demand which generates high opportunities for small business start-ups:

1) Community based demand
2) Demand to be expected from tourists
3) Demand for computer software development for the local companies to use IT for their business management

2.3.4.2 Recommendation on support system for small businesses

Considering the support for small enterprises in the various fields, the following support system is proposed:

Area of support	Support program / system	Person / staff to be contacted directly by small enterprises	Source of resource persons	Supervising agency / institution
Managerial	Business incubator (see 7.3.2.1)	Counselor	Consulting Firms	PEIE
		Advisor (*2)	Private companies	
Technical	Test, analysis, and consultancy service	Research / consulting staff of Industrial Technology Center	Industrial Technology Center	Industrial Technology Center
	Technical mentor program	Researcher of universities	University network	
Financial	Government soft loan program with managerial advisory service (see 7.3.3.2)	Counselor, or Business Advisor	Consulting Firms and Private companies	ODB

Notes:
(*1) Consultants who have sufficient knowledge on the existing SME support programs which are provided by the government agencies and other organizations.
(*2) Professionals / experts in a specific fields of management with business experiences

2.3.4.3 Registration of small businesses

Creation of a new registration system specific for small enterprises is not recommendable. Nevertheless, following are recommended:

1) Implementation of periodical sampling surveys of small enterprises to study the business conditions of the small enterprises
2) Creation of an internal group-organization of small enterprises within OCCI

2.3.4.4 Promotion of small enterprises through linkages with large or medium enterprises

Considering the fact that focus of small enterprise promotion in Oman should be placed mainly on startup of businesses by the Omani entrepreneurs, instead of providing technical or marketing services to the existing SMEs, the support by the large enterprises should be expected for the following:

1) Encouraging registration of their staff, who have business experiences in a specific management or technical filed, to the Business Advisor registration system
2) Provision of test and analysis service to small enterprises, using their testing facilities
3) Participation to business forum among those from the different industrial areas, for exchange of business and technical information with small enterprises

1 Background and Framework of the Study

1.1 Background of the Study

Oman is one of the major oil exporting countries. Its oil resources, however, are limited, and the establishment of the sustainable system for economic development in the non-oil sector is one of the major issues faced by the Oman Government. Substantial efforts for industrialization have been made for many years, to reduce dependency on oil and diversify economic activity.

JICA had conducted a master plan study on industrial development at the request of the Oman Government in 1994. Since then, for more than 15 years, the Oman Government has made many efforts to develop a system to support industrial promotion on the basis of the recommendations made by the Study.

Nevertheless, reduction of dependence on oil still remains one of the important challenges in the current Seventh Five Year Development Plan, having been the primary challenge since the first stage of industrialization, and still so, despite the significant achievement of industrialization in non-oil sector.

In the meantime, with advancement of information technology and development of transportation, relevant industries such as IT and tourism, are now getting greater attention. Considering this, the industrial promotion policy of the Government now requires updating.

In keeping with the above situation, the Oman Government requested the Japanese Government to conduct a study with objective of establishing an updated direction of industrial development policy, taking into account the socio-economic changes as stated above. This document reports the results of that study.

1.2 Framework of the Study

(1) Objective of the Study

The objective of the study is, on the basis of review of performance of the Omani industry, business environment in Oman, and SWOT of industry in Oman as compared to other GCC countries,

1) To develop recommendations for the industrial sub-sectors, as a whole, and, translate them into:
   a) Recommendations for realization of the Future Industrial Strategy
   b) Recommendations for realization of the current Five Year Plan
   c) Recommendations on prospective industries for development

d) Recommendations on Regional Development Plans in selected regions in view of policy for promotion of manufacturing sector

2) Recommendations on the direction of SME policy, with

- Recommendations on SME support policies and measures in the field of manpower development and finance

The recommendations thus prepared is expected to be reflected in the Eighth Five Year Development Plan.

(2) Scope of Work

The scope of work, which was agreed upon by JICA and MOCI on April 3, 2009, is as follows:

<Phase 1 Review and Analysis of the Present Situation>

1. Situation analysis

<Phase 2 Comparative Analysis and Formulation of the Recommendation>

1. Comparative analysis of Omani manufacturing sector among Gulf countries
2. Recommendation for the development of manufacturing sector in Oman based on analysis
3. Seminar for the dissemination of the analysis and recommendation

<Phase 3 Current Analysis and Formulation of recommendation for SME policy in Oman>

1. Analysis of selected SME sectors in Oman
2. Any recommendation on the promotion of SME in Oman
3. Seminar for introducing the SME policy and the existing situation surrounding SME in Japan

(3) Target Area of the Study

The Study covers the whole area of the Sultanate, but for the study on the selected regional Industrial Development Plans, it was limited to the following:

- Al Buraymi
- Nizwa
- Sur

2 Economic Conditions and National Economic Development Plans

2.1 Current State of Economy and Economic Development

The Oman economy has steadily grown for over the past three decades or since 1975, when the first Five Year Development Plan started. Over the Six Five Year Plan periods (1975-2005), per capita nominal GDP increased sixfold from US$2,258 to US$12,302. During the same period, nominal GDP grew by 16 times, from R.O. 722 million to R.O. 11,883 million.

For the Oman economy, growth with less dependence on the oil sector is its most important, long-term challenge.

The oil sector's GDP share stood at more than 60% up until the early 1980s. Then, it declined gradually to 32% in 1998. It rose again after 2000 and has remained at around 45%. In 2008, the share rose to 51.3% as crude oil production expanded by 6.8% (277 million barrels) in response to the sharp rise of crude oil prices.

The percentage contribution of industrial activities to GDP grew firmly from 12.6% in 1998 to 16.8% in 2007. Within that category, the manufacturing sector (including petrochemicals and chemicals) showed substantial growth of over 10% (real basis) annually since 2000, and its GDP contribution rose from 4.8% in 1998 to 10.6% in 2007.

(1) External Trade and Current Account Trends

The country's crude oil exports, as a percentage share of the total, still maintains a high level, although it declined to 75.8% in 2007 (down 16% in comparison to 1998).

The total value of exports (FOB basis) reached R.O. 9.5 billion in 2007, around twice that in 2000. Notably, the composition of exports has significantly changed. In 1992, major export items (including re-exports) were livestock, food, textiles and base metal. Recently, industrial products such as petrochemical products and machinery account for major portions, whereas livestock, food, and textile lost share after 2005, and now are at less than 10% each.

The total value of imports has increased rapidly since 2000. It reached R.O. 6.2 billion (estimate, CIF basis) in 2007, three times the 2000 level. Sector-wise, machinery and transport equipment accounted for nearly 50% of the total.

(2) Employment

The country's labor market has been growing steadily, fueled by the high economic growth since 2004. Recently, the local workforce is clearly on the increase but growth is concentrated in the public sector, which employs 85% of the total in 2007. In contrast, foreign workers represent sizable portions in the private sector. Sectors with a high percentage of foreign workers include construction (38% of the total), wholesaling, retailing and automotive repair (15%), service (12%), and manufacturing (11%).

(3) Government Finance

The Oman government's principal revenue source is the oil and gas sector, accounting for more than 75% of the total in 2007. Tax revenue remains low at around 7%.

2.2 Industrial Development Plan and Industrial Strategy

A National Development Plan has been prepared every five years in Oman to indicate the basic direction and targets of development of the country. The industrial development plan is a constituent part of this Development Plan. At present, it is the period of the Seventh Five Year Plan for 2006 through 2010.

In June 1995, the Cabinet approved the second Long Term Development Strategy (1996-2020), or "Oman Vision 2020."

The manufacturing sector is assumed to accomplish the following:

1) A large expansion in the petrochemical industry, based on gas as a feedstock
2) Expansion of oil based industry, and in particular, oil refining
3) Expansion of raw materials production, especially materials derived from agricultural, fishing and mining sectors
4) Creation of assembly-line industries, including hardware, IT and telecommunication
5) Application of a high value added strategy
6) Adopting an export-directed strategy for converting the industry
7) Increase the foreign investment contribution in the sector as a result of policies to encourage foreign investment
8) Creation of an investment friendly environment through direct policy aimed at adjusting the real exchange rate of the Oman Rial

In the Seventh Five Year Plan, implementation of the following projects, which are designed for promotion of economic diversification, will be the most important part of the Plan, in terms of

industrial development:

- Gas-based mega industrial projects
- Petrochemical industrial projects
- Tourism related projects

It also emphasizes the importance of development of R&D activities for construction of an Oman Digital Society, and promotion of local and foreign investment to increase the level of investment to the level never accomplished before.

The development targets, and policy and implementation mechanism, were set on the basis of the understanding of the following issues, which have been confronted by the Omani manufacturing sector:

1) The high production costs of manufacturing in the Sultanate compared with GCC States.
2) Absence of a legislative and institutional framework to protect the national economy against harmful practices in world trade.
3) Delay in implementation of a number of projects, due to lack of management experience of investors, inappropriate or insufficient pre-investment studies, weak financial ability of some investors, and absence of a clear marketing policy by entrepreneurs.
4) Lack of organizations or institutions to provide appropriate consultancy services to managements, and provide services to conduct feasibility studies at reasonable prices. Also important is the organization to provide guidance to existing projects, on improvement of production efficiency, etc.
5) Absence of a government body to serve to the medium and small scale industries.
6) Lack of human resources having skills in the key industrial fields
7) The lengthy government procedures and centralized government services such as customs exemptions that have not yet been subject to simplification or improvement
8) Limited industrial funding due to reluctance of commercial banks regarding loans and investments in industrial fields

Future Strategy for Industrial Development

Implementation of the Future Industrial Strategy is placed as the top agenda item of 14 policy mechanisms to achieve the plan of the Seventh Five Year Plan for the manufacturing sector.

The Strategy is not the specific strategy for a certain time. Instead, it is a body of strategies which have been updated time to time.

The Strategy consists of 11 agendas (the following table, with a comparison to the 13 items in the Seventh Five Year Plan).

	The Future Industrial Strategy	7th 5 year Plan (*)
Setting of strategic priority areas for industrial development, and its promotion	1) Science- and knowledge- based industry 1. Comprehensive and effective ICT promotion policy 2. Promotion of KOM 2) Six new industrial sectors and two existing industries requiring restructuring **New industrial sectors** 1. IT, software, e-business and knowledge-intensive activities 2. Biotechnology based modern industries 3. Petrochemical industries 4. Low energy consuming industries (e.g., assembly and knowledge-based industries) 5. Free Zones trade and assembly & re-export industries 6. Tourism related industries **Existing industries requiring re-structure** 1. SMIs associated with international companies 2. High value added industries (including food industries based on fisheries and agricultural industries, and engineering industries)	1) Petrochemical industries 2) Assembly and re-export industries 3) Downstream industries of gas-based mega industries 4) Industrial clusters of competitive advantage and ability of grow
Improvement and enhancement of support measures and institutional systems for industrial development	**Financial support** - Amending the mechanisms for granting Government soft loan **Non-financial support** 1) Provision of assistance for restructuring companies facing difficulties (Encouraging mergers, etc.) 2) Activating R&D 3) Implementing the strategy of exporting non-oil products of Omani origin	1) Encouraging operations and integration among industrial companies to improve competitiveness 2) Provision of R&D service 3) Support of SMEs in manufacturing sector

Improvement of business/investment environment	Improving the level of services and industrial incentives to keep abreast with what is provided in competitive neighboring countries Developing and applying the legal and legislative framework for creating the appropriate environment	1) Provision of institutional, legislative and infrastructure environment 2) Simplification of investment procedures, and unifying the local and foreign investment law and the company law 3) Speed up the executive aspects of the GCC unified industrial regulation law 4) Speed up the formulation of executive laws and regulations to protect the industry against harmful practices in world trade
Human resource development in the field of industry, and increased participation of Omani people in industry	1) Training Omani businessmen 2) Developing abilities of national manpower	1) Provision of work opportunities for national labor force 2) Coordination with concerned authorities to introduce the manufacturing subjects as a basic part of academic curricula in all the education stages
Harmonization of economic development and environmental regulations	- Balancing between the economic development objectives and environmental stipulations	(Not applicable)

Note (*): "1-3-4 Policies and mechanisms to achieve the manufacturing sector objectives in the Plan" (Seventh Five Year Plan)

3 Present State and Future Outlook of Supply and Demand of Oil, Gas and the Alternative Energies

The supply and demand of oil and natural gas, and that of the energies derived from them, are the critical factors affecting industrial development in the Sultanate.

3.1 Supply and Demand of Oil

Oman's oil production in 2008 is estimated at 760,000 barrels per day (bbl/d) in total, composed of 670,000 bbl/d of crude and 90,000 bbl/d of condensate. In the foreseeable future the production level of 760,000 to 800,000 bbl/d is expected to be maintained, which will consist of 700,000 bbl/d of crude and 100, 000 bbl/d of condensate.

On the demand side, 680,000 bbl/d of the 760,000 bbl/d are exported as Omani crude and petroleum products (Oil Liquids), while the remaining 80,000 bbl/d are consumed domestically as the raw materials for petroleum products and petrochemical products. The export of petroleum products and petrochemical products is equivalent to 90,000 bbl/d.

3.2 Natural Gas

Oman's natural gas production in 2008 is estimated at nearly 848 billion cubic feet (Bcf) and the production volume is projected to reach 1,200 Bcf by 2013. In addition, Oman imported 12 Bcf of natural gas from Qatar to meet the supply shortage.

Around 55% of the natural gas produced are consumed for LNG production, in the case of the year 2008, and most is exported under long-term contracts. Approximately 8% of the gas was used for production of methanol and urea, both being exported under long-term contracts.

The remaining 37% of the gas were used as fuel for electricity generation and desalination.

It is not clear whether Oman can keep the production level at 1,200 Bcf in and after 2014.

3.3 Alternative Energy

The most feasible alternative energy sources in Oman are solar and wind power. Geothermal power generation seems to be very difficult to commercialize because of insufficient temperature to produce steam. Wave power is not feasible due to low energy density. Finally, biomass power generation using wastes and dung are found to be impractical partly because they are already used to make organic fertilizer within the country and partly because a large amount of such raw materials needs to be collected for commercial power generation, resulting in a high cost.

(1) Solar Power Generation

The following pilot projects are under way in Oman to define the feasibility of solar power generation.

1) A pilot plant project by Rural Areas Electricity Co. (RAECO)

The project is for establishment of a hybrid system of small scale community-based power generation combining the existing diesel power generation with wind power generation or photovoltaic generation.

The objective of the project is not only to confirm the performance and efficiency of the proposed system, but also to provide the enterprises in Oman with the opportunity to operate and maintain such system. The size of the system is small with the generation capacity in-between 10 kV and 200 kV. The proposed system is assumed to be operated without connecting to the main grid such as MIS[1].

2) A Large-scale Solar Power Project by PAEW

The project is a feasibility study on photovoltaic power generation with the capacity between 100 MW and 200 MW.

In Oman, sunlight has fairly high energy density, especially in desert areas, making the country suitable for solar power generation. In coastal areas, however, energy density is relatively low due to short hours of sunlight as a result of rainfall in summer (Salalah) and foggy weather in Sur.

The results of pilot operation conducted by Authority for Electricity Regulation (AER) indicate that efficiency of power generation decreases by 10% in comparison to installation in non-desert areas, partly due to a high atmospheric temperature at the installation and partly due to contamination of the module surface by sand.

Research conducted to this date indicate that the largest problem relating to solar power generation in the country is high generation cost; R.O. 80/MWh (US$207/MWh) for CSP (solar thermal plant) and R.O. 96/MWh (US$250/MWh) for large scale connected PV installations, well above R.O. 12/MWh) (US$31/MWh) for conventional gas-fired power generation.

[1] Main Interconnected System

(2) Wind Power Generation

The following program is under way in Oman regarding the power generation by the use of wind:

- Wind Monitoring Program：To start preparation of a Wind Map in 2010
- Construction of wind farms

It is reported that the wind power generation cost in Oman is estimated at R.O. 28/MWh (US$74/MWh), more than twice that for conventional gas-fired power generation, R.O. 12/MWh (US$31/MWh).

4 Industry Sector

4.1 Overview of the Industrial Sector in Oman

(1) The Industrial Sector in the GDP

The share of the industrial sector in Oman's GDP, which was even less than 0.3% in 1975, started to increase steadily from 1980, achieving 2.3% in 1985, 3.7% in 1990 and 4.3% in 1992. After 2000, the increase has been accelerated further and reached 10% in 2006.

Shares in GDP and Annual Growth Rates by Industry in Oman
(at current prices)

(Unit: %)

	Shares in GDP			Annual Growth Rates		
	1999	2006	2007	1999	2006	2007
Oil	40.4	47.6	45.2	40.7	14.7	7.3
Crude oil	39.3	43.5	40.7	42.0	13.3	5.9
Natural gas	1.1	4.1	4.4	5.2	31.7	21.7
Non oil	59.9	54.1	56.4	-2.0	22.0	17.9
Of which, Manufacturing	4.4	10.8	10.5	4.2	51.6	10.0
Petroleum products	0.6	0.4	0.8	-9.0	8.0	143.2
Chemicals & products	0.3	7.3	6.4	2.4	79.4	-0.9
Others	3.5	3.2	3.4	7.3	15.9	20.0

Source: MOCI

(2) Size of Local Markets, and Domestic Production Rates

The estimated local market size (in current prices) has escalated by five- fold from R.O. 1.42 billion in 1991 to R.O. 7.04 billion in 2007. The market size for chemical products and petroleum products has expanded the most among the industrial subsectors, to R.O. 2.84 billion in 2007, due to increases in oil- and gas-based production. The market size of the machine and electrical machine subsector followed with R.O. 2.48 billion, reflecting an increase in machine and vehicle imports.

Though the size is comparatively smaller than the above two, the markets for food and beverages and for non-metallic mineral products, which are mainly utilized for construction, followed with R.O. 0.7 billion and R.O. 0.33 billion respectively.

Basic metal products subsector shows the highest self-sufficiency rate (local production ratio vis-à-vis the domestic market size) of 230% in 2007, because of the fact that the greater portion

of the products are manufactured for export. Next to them, the chemical products and petroleum products subsector and the non-metallic mineral products subsector, which are also export oriented, follow with 93% and 84% respectively.

On the other hand, the self-sufficiency rates of the food and beverage subsector and paper products subsector remains at the level of 40% because both of them are local oriented products. Further, that of machine and electric apparatus subsector, which is heavily dependent on imports, remains as low as 12%.

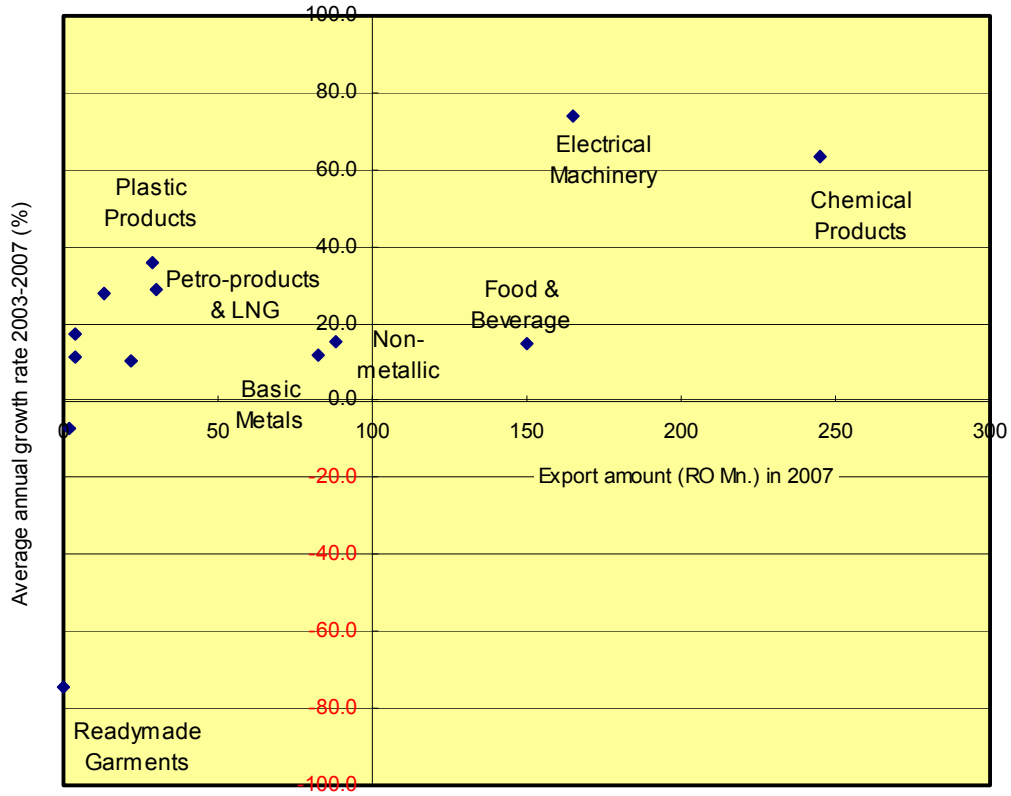
Changes in the self-sufficiency rates have been an increase from 15% in 1991 to 47% in 2007 in the case of the food and beverage sector, but a much more conspicuously increase, from 66% to 93%, in the chemical and petroleum products sector. The rate has declined drastically in the apparel sector, from 46% to 3.5% signifying a destructive blow to its exports.

(3) Export of Industrial Products

From the viewpoint of export contribution, the subsectors may be categorized into the following:

1) Subsectors with rapid export growth and large volume of exports
   - Chemical products subsector
   - Machine and electric apparatus subsector
2) Subsector with large export volume with slowly growing export market
   - Food and beverage products subsector
3) Subsector with small-scale exports with lower but constant growth
   - Non-metallic mineral products subsector
   - Basic metal products subsector

The readymade garments subsector was successful in export trade until 2004, however the exports decreased rapidly and are now barely profitable.



Source: Compiled from the data of MOCI.

Figure 4.1-1 Export of Industrial Products and Its Average Annual Growth Rates (2003-07) by Industrial Subsector

GCC countries are the largest export destination of non-oil products excluding LNG, accounting for 45.6% of the total. UAE takes more than any other GCC country.

(4) Imports and Industrial Subsector

As far as industrial products are concerned, finished goods account for R.O. 465 million, which is 7.6% of total imports. If one adds the transport equipment (most of which are vehicles and their parts), which amounted to 28.1% (or R.O. 1.727 billion), the total will account for 35.7% of total imports.

Meanwhile, the raw material and fuels for industrial production account for 3.1% of total import, and machine and parts 23.7%.

The total value of imports (including those not classifiable) has increased by five times from R.O. 1.28 billion in 1991 to R.O. 6.14 billion, of which, raw material and semi-manufactured products (including food and fuel) have shown an increase of 5.1 times from R.O. 479 million to R.O. 2.487 billion.

(5) Distribution of Enterprises by Subsector

There are 725 companies in the manufacturing sector, and the non-metallic mineral products subsector is dominant within the category of those with less than 100 employees, with 162 enterprises. Of them 59 are in the tile and, block subsectors, followed by crasher, concrete subsector of 42 enterprises. Further, the food processing subsector has 123 establishments, among which 25 are in the bakery subsector, and 20 in the ice-making subsector.

Table 4.1-1 Number of Enterprises by Subsector and by Number of Employees

Subsector	Total	Number Enterprises by Number of Employee			% of Total		
		Over 100	10-99	Less than 10	Over 100	10-99	Less than 10
Food Product & Beverages	151	28	69	54	23.5	19.1	22.0
Readymade Garments	3	3	0	0	2.5	0.0	0.0
Products of Wood Except Furniture	35	4	6	25	3.4	1.7	10.2
Paper/Paper Products	13	8	5	0	6.7	1.4	0.0
Printed Materials / Recorded Media	37	2	26	9	1.7	7.2	3.7
Refined Petro-Products & liquid gas	15	3	10	2	2.5	2.8	0.8
Chemical/Chemical Products	47	11	31	5	9.2	8.6	2.0
Rubber & Plastic Products	46	4	41	1	3.4	11.4	0.4
Other Non-Metallic Products	183	21	85	77	17.6	23.5	31.4
Basic Metals	18	6	5	7	5.0	1.4	2.9
Fabricated Metal Products	102	13	40	49	10.9	11.1	20.0
Machinery & Equipment nec.	13	1	10	2	0.8	2.8	0.8
Electrical Machinery/Apparatus	13	4	8	1	3.4	2.2	0.4
Medical, Precision/Optical Instrument	1	0	1	0	0.0	0.3	0.0
Motor Vehicle, Trailers	6	0	3	3	0.0	0.8	1.2
Furniture Manufacturing	30	7	17	6	5.9	4.7	2.4
*Other Manufacturing	12	4	4	4	3.4	1.1	1.6
Total	725	119	361	245	100.0	100.0	100.0

Note: Data in 2007, except for data on enterprises with employees less than 10, which are in 2005.
Source: MOCI

4.2 Manufacturing Sectors

4.2.1 Food and Beverage Sector

Table 4.2-1 Yearly Shipment by Manufacturing Sector by Commodity

(Food and Beverage Subsector)

SITC	Commodity	Shipment						Average Annual Growth Rate (%)		
		2002		2005		2007				
		(T.R.O.)	% of total	(T.R.O.)	% of total	(T.R.O.)	% of total	2002-2005	2002-2007	2005-2007
1512	Fish processing	14,419	1.0	18,250	0.7	25,874	0.6	8.2	12.4	19.1
1531, 1533, 1541, 1543	Grains and grain products	59,587	4.3	81,755	3.2	104,757	2.5	11.1	11.9	13.2
1513	Fruits & vegetables	7,769	0.6	11,093	0.4	19,364	0.5	12.6	20.0	32.1
1514	Edible oil & fats	15,807	1.1	31,973	1.3	58,453	1.4	26.5	29.9	35.2
1520	Daily products	31,829	2.3	55,166	2.2	63,429	1.5	20.1	14.8	7.2
1554	Mineral water and ice making	29,841	2.1	39,558	1.6	45,880	1.1	9.9	9.0	7.7
Other 15xx	Other foods & beverages	14,784	1.1	21,316	0.8	36,509	0.9	13.0	19.8	30.9
15	Processed foods & beverages	174,036	12.5	259,111	10.3	354,266	8.6	14.2	15.3	16.9
Manufacturing Sector Total		1,391,504	100	2,526,661	100	4,111,166	100	22.0	24.2	27.6

Source: MOCI, "Yearly Industrial Statistical Book" (Data: 2002, 2005 & 2007)

4.2.1.1 Overview

The food and beverage industry in Oman produces almost all the necessary foodstuffs, such as bakery and confectionary goods, snack food production, meat and fishery processing, vegetable and fruits processing, oil and fats processing, grain milling, and bottling of water and soft drinks.

This subsector is mainly oriented toward the domestic market, but a part of its output has been exported, while the fish processing subsector was established specifically as an export oriented industry.

Of the domestic demand 64% (E / G in the table) was satisfied by Omani products, while 55% (F / E in the table) of Omani products were exported.

In 2007, 150 manufacturing enterprises were identified in the food and beverage sector which accounts for around 21% of all the manufacturing enterprises. As for the scale of employment, 64% of the total enterprises are fall into the group of enterprises with less than 29 employees.

As for the sub-sectors, small businesses with employees less than 29 are particularly common in the bakery and ice making sub-sectors. On the other hand, a few large companies exist in most of the subsectors. Particularly, in the case of the sub-sector comprising cooking oil, animal feed and grain mills, only a few companies are seen.

The food and beverage industry can be divided into three categories.

The first category represents small and micro size enterprises with less than 30 employees supplying daily foods to the local markets within limited areas, close to the enterprises. This category can be found particularly in the bakery, ice making and fish processing sub-sectors using limited investment and ordinary technology.

The second category with 30-150 employees are those using certain types of machinery which are sophisticated compared with those used in the above category of firms, but are mostly dependent on labor. They aim particularly at niche markets wherever they are in Oman and other countries. Most of them do not have any special technology, but exercise their ingenuity in devising their products so as to seize and maintain niche markets. For example, a certain fish processing company has received recognition in the market for its strict quality management, while a certain dates processing company is known for its product development and excellent packaging However, some of companies without competitive edge are suffering from tough competition from imported products.

Large scale businesses with more than 150 employees are scarce in Oman. They are the enterprises seen in the sub-sectors of bakery, grain mills, cooking oil and soft drinks. All these enterprises have modern and large scale facilities. However, they are not necessarily competitive. Some are strong, while others are weak. Having large scale and sophisticated technology does not make the enterprise strong. Competitive edge where it exists seems to come from factors other than facilities and scale of production.

4.2.1.2 Fish Processing Subsector

Most fish processing enterprises in Oman have small scale personnel structures with 10-50 employees except a certain large company with 350 employees, which is engaged in a wide range of businesses, notably fresh fish, frozen fish, and high valued semi-cooked products. Most of them have been set up as export-oriented businesses equipped with simple frozen and steam processing facilities.

However, the fish catch has declined significantly in the recent years due to the trawl fishing by foreign fishing boats, that has damaged the fish processing industry in Oman.

Without assurance of a certain level of prospects for marine resources, either by prohibiting the trawling by big vessels to permit recovery of the marine resources, or by expanding the current inshore fishing to the deep-sea fishing, it will be difficult to expand business in this sector.

4.2.1.3 Grain Mill Products Subsector

The grain mill industry in Oman is operated by three enterprises, while the downstream animal feed industry includes seven enterprises, including the aforementioned two grain milling companies, and the bakery industry includes 55 enterprises. There are further downstream industries, but the information on them is not available so far.

Two of the grain mill companies have large scale of storage facilities and advanced processing facilities. Of the two, one is a governmental company with 200 employees, and another has 70 employees. The production capacity of the former exceeds domestic demand, thus they have exported 25% of their products.

One of the big secondary businesses of the grain mill is animal feed production.

The grain mill and the animal feed sectors are both capital intensive, using advanced technology and large scale facilities; thus, productivity is fully dependent on processing scale including loading and unloading capacity. Omani business in this sector is not a good position compared to similar sector in the GCC, even though current Omani demand is rather strong. In order to take advantage of this demand, it is indispensable to reduce the logistic costs at Omani port and to develop further downstream businesses in Oman so as to keep capacity utilization high.

Among the secondary processing sector, baking is the major sub-sector in terms of size. There are 55 enterprises in the sector, of which 25 enterprises are community-based small operations with less than 10 employees.

4.2.1.4 Oil and Fats Processing Subsector

There are four enterprises in the oil and fats processing industry. Among them, the largest company has 450 employees. Similar to operations in the abovementioned grain milling sector, a high operating rate and effective use of facilities are the source of the companies' competitive edge.

Another two companies in this subsector are engaged in small scale repacking and distribution.

4.2.1.5 Dairy Products Subsector

The industry was started to substitute for imports. Local producers are relatively small and face competition with products from other GCC countries that have increased as a result of trade liberalization.

4.2.1.6 Mineral Water and Ice-making Subsector

In Oman, there are 39 enterprises in the mineral water and ice making sector. Twenty of them are small in scale, having less than 10 employees. The ice-making industry has been established in relationship with the fish processing industry.

In the beverage subsector, albeit at a small scale, popular drinks that mix water with an imported flavor are widely sold.

There are 12 mineral water manufacturers, reflecting growing demand for clean water in the country due to the increase in population and the raising concern about health.

4.2.1.7 Food Repacking Subsector

Thirteen companies are engaged in repacking and re-exporting of a variety of products, including tea, coffee, powdered milk, tomato paste, salt, spice, and rice. They pack imported products, without further processing, in containers and packages with elaborate designs and materials, which are successfully meeting the specific (niche) market needs.

The ability to meet market needs with alacrity is a principal source of competitiveness, and information gathering, innovation, and capital investment are key success factors.

4.2.1.8 Vegetable and Fruit Processing Subsector

There are eight companies in the subsector. Five companies make date products by using locally produced materials, as seen in the fish processing subsector.

As for agricultural products to target niche markets, mushroom farms are successfully operated for export to high-end markets in Dubai and other GCC countries. There are cases of vegetable exports in the off-season.

4.2.2 Textile and Apparel Sector

4.2.2.1 Overview

The total output of the textile and apparel industry in 2007 was R.O. 6,180,000, down from R.O. 2,190 million in 2003, to a low of 0.3% of the 2003 value.

The majority of companies in the export-oriented apparel sector, which existed till around 2003, have lost their business due to abolition of the U.S. quota system. Only a small number of enterprises, targeting local and GCC countries' market, has survived. These are one company in the thread processing sector (they dye imported thread), one company in the textile sector, three companies in the ready-made garments sector using imported textiles, one company in the carpet manufacturing sector, and one company in the towel manufacturing sector.

4.2.2.2 Textile Subsector

The textile sector consists of only one company. Originally, the company used to produce the material for Thijs Tasha and women's garments for the domestic and GCC countries' markets. However, sales decreased sharply because of the significant inflow of inexpensive textiles from China and India. The company has made big efforts to find out niche markets, avoiding direct competition with these products, by measures including development of high-value added products of printed textiles, and fine-tuned services to the customers through small-lot production and frequent design update, etc. As a result, their sales have recovered to some extent.

4.2.2.3 Apparel Subsector

There were 37 enterprises in the apparel sector until the early 2000s. They were mainly engaged in the apparel business for the U.S. market. However, most of them went bankrupt with the end of U.S. quota system in 2005, and only three companies have stayed in business.

This export oriented sector does not have any linkage with other subsectors of the Oman textile industry and hence they have to depend on imported thread and textiles. In addition, they have to rely on expatriate labor, being a labor-intensive industry. For these reason, they do not have capacity to compete with the mass-produced and low cost imported garments in the local market. As a result, unless the conditions in the U.S. market improves, a market of sufficient scale will be hard to find.

4.2.3 Wood Processing Sector

Table 4.2-2 Yearly Shipment by Manufacturing Sector by Commodity

(Wooden Products Subsector)

SITC	Commodity	Shipment						Average Annual Growth Rate (%)		
		2002		2005		2007				
		(T.R.O.)	% of total	(T.R.O.)	% of total	(T.R.O.)	% of total	2002-2005	2002-2007	2005-2007
20xx	Wooden products	3,673	0.3	5,997	0.2	7,913	0.2	17.8	16.6	14.9
3610-32～39	Wood furniture	848	0.1	1,180	0.0	1,946	0.0	11.6	18.1	28.4
20 & 36103x	Wooden products	4,521	0.3	7,177	0.3	9,859	0.2	16.7	16.9	17.2
Manufacturing Sector Total		1,391,504	100	2,526,661	100	4,111,166	100	22.0	24.2	27.6

Source: MOCI, "Yearly Industrial Statistical Book" (Data: 2002, 2005 & 2007)

4.2.3.1 Overview

There are two categories of enterprises within the wood processing sector in Oman. The first comprises the enterprises which specialize in the processing of wood into either semi-manufactured products, raw materials, or wood used for construction (hereafter called Category A). Another category of enterprises manufacture furniture and other interior products (Category B). Information on Category A enterprises is not available at the time of writing.

In the case of Category B, there are only a few enterprises which produce ready-made furniture. Rather, most of them also manufacture tailor-made furniture, wooden doors and handrails to be installed in newly-constructed buildings, residential houses, offices and hotels. Some of these enterprises are major companies (Category B-1) targeting the demand of the domestic market as well as of GCC countries (mostly the UAE). Others are small companies (Category B-2) targeting only the local market.

4.2.3.2 Middle and Large-size Furniture Manufacturing Enterprises

Medium and large enterprises in the furniture manufacturing sector (referring provisionally to the enterprises with 30 or more employees) are targeting large-scale projects including first-class hotels, business complexes, and government buildings. Hence, they deal with the order in packages including wooden furniture, doors and other furnishings. More than 90% of their sales is on a contract base, and they do not engage in ready-made furniture business. 50% of their business is with foreign hotels and offices in GCC countries.

4.2.3.3 Micro and Small-sized Furniture Manufacturing Enterprises

As for micro and small furniture manufacturing enterprises (referring provisionally to the enterprises with a scale of 30 or less employees), their main customers are individuals in their local areas. The enterprise do not deliver the products on the spot. Rather, they manufacture the products, and transport and install them into the designated house.

Generally, these enterprises manufacture not only furniture but also wooden doors and handrails for stairs, etc. The business range of small-size enterprises overlaps with that of furniture manufacturers, woodwork processors, and even carpenters.

4.2.4 Paper Products and Printing

Table 4.2-3 Yearly Shipment by Manufacturing Sector by Commodity
(Paper Products and Printing Subsector)

SITC	Commodity	Shipment						Average Annual Growth Rate (%)		
		2002		2005		2007				
		(T.R.O.)	% of total	(T.R.O.)	% of total	(T.R.O.)	% of total	2002-2005	2002-2007	2005-2007
2101	Paper	475	0.0	0	0.0	283	0.0	-	-9.8	-
2102	Paper packaging materials	7,273	0.5	11,146	0.4	15,856	0.4	15.3	16.9	19.3
2109	Paper products	2,935	0.2	5,098	0.2	4,866	0.1	20.2	10.6	-2.3
22xx	Printing	9,184	0.7	13,460	0.5	19,878	0.5	13.6	16.7	21.5
21&22	Paper products & printing	19,867	1.4	29,704	1.2	40,883	1.0	14.3	15.5	17.3
Manufacturing Sector Total		1,391,504	100	2,526,661	100	4,111,166	100	22.0	24.2	27.6

Source: MOCI, "Yearly Industrial Statistical Book" (Data: 2002, 2005 & 2007)

4.2.4.1 Overview

The paper products and printing industry consists of the paper packaging material manufacturing subsector, paper products manufacturing subsector and printing subsector in the case of Oman.

There are 50 enterprises in the paper products and printing industry, of which 46 (or 92% of the total enterprises) have less than 100 employees. Another 27 enterprises (or 54% of the total enterprises) are small or micro size enterprises with less than 30 employees.

4.2.4.2 Paper Packaging Subsector

The beverage sector is the biggest in using paper packaging in Oman, then the food staffs sector and agriculture sector are following. The export for Dubai is now in good sales.

4.2.4.3 Printing Subsector

The printing demand may be categorized into two different types. Demand for printing of news paper and textbooks is regular, while that of advertising materials is affected by the business climate.

Large scale printing businesses use knowledge intensive management and updated machines, and possess the functions of design, editing, and publishing. Actually, large printing companies in Oman have this type of operation, while small printing businesses form a separate type of businesses.

To ensure sustainable growth in the future, the printing industry needs to diversify into information related services that do not depend on hard copy or paper, while introducing latest IT-based printing technology.

4.2.4.4 Paper Products Subsector

The paper products subsector makes consumer products such as disposable diapers and tissue paper, but many companies are facing fierce competition with imported products that are flooding the market.

Tissue paper manufacturers are characterized as repacking business. Packages do not vary greatly in type or size and competitiveness relies mainly on pricing. On the other hand, disposable diapers and sanitary napkins can be differentiated by various features, such as quality and function, but Oman companies cannot compete with global brand products on account of the difference in production cost and/or promotional power.

4.2.5 Refined Petroleum Products, Chemicals and Chemical Products Sector

Table 4.2-4 Yearly Shipment by Manufacturing Sector by Commodity
(Petro-products, Chemicals and Chemical Products Subsector)

SITC	Commodity	Shipment						Average Annual Growth Rate (%)		
		2002		2005		2007				
		(T.R.O.)	% of total	(T.R.O.)	% of total	(T.R.O.)	% of total	2002-2005	2002-2007	2005-2007
2320	Refined petroleum products	848,715	61.0	1,492,947	59.1	2,373,259	57.7	20.7	22.8	26.1
2411	Basic chemicals	15,148	1.1	13,585	0.5	17,804	0.4	-3.6	3.3	14.5
2412	Fertilizers	185	0.0	117,519	4.7	118,734	2.9	759.6	264.3	0.5
2422	Paints/ varnishes	12,449	0.9	16,045	0.6	20,294	0.5	8.8	10.3	12.5
2423	Pharmaceuticals	9,367	0.7	19,982	0.8	29,623	0.7	28.7	25.9	21.8
2424	Soaps/ detergents/ cosmetics	24,248	1.7	21,236	0.8	17,284	0.4	-4.3	-6.5	-9.8
24xx excl.2413	Other chemical products	1,857	0.1	3,384	0.1	9,994	0.2	22.1	40.0	71.9
2320 & 24 (excl.2413)	Petro-products, chemicals & chemical products	911,969	65.5	1,684,698	66.7	2,586,992	62.9	22.7	23.2	23.9
Manufacturing Sector Total		1,391,504	100	2,526,661	100	4,111,166	100	22.0	24.2	27.6

Source: MOCI, "Yearly Industrial Statistical Book" (Data: 2002, 2005 & 2007)

The chemicals and chemical products industry consists of the following subsectors: (1) basic chemicals; (2) pharmaceuticals; (3) paints and varnishes; (4) detergents, soaps, and cosmetics; and (5) other chemicals.

There are 55 companies in the chemicals and chemical products sector, accounting for 8% of 727 companies in the manufacturing sector. Companies having 30 or more employees represent 53% of the total. Thus, the industry has a relatively large number of medium-sized and large enterprises in comparison to other sectors.

Small enterprises and microenterprises having less than 10 employees are seen in subsectors relating to refined petroleum products such as refilling and sales of LPG cylinders, production of organic fertilizers, and production of soap.

Production of refined petroleum products is basically made for local consumption, and only 6.6% of production are exported. In contrast, production of chemical fertilizers is carried out for export purposes, i.e., the entire quantity produced is exported.

As for basic chemicals, the country does not make all types of products required for local consumption, i.e., 72.5% of domestic demand are satisfied by local supply sources.

As for chemical products (e.g., paints and coatings, pharmaceuticals, detergents, and soaps), 29.6% of domestic demand are satisfied by local products, whereas 38.1% of local production go to export.

The chemicals and chemical products industry consists of companies representing a variety of subsectors. There are two companies with 200 or more employees; they are a fertilizer manufacturer and a detergent manufacturer. As for the size group of 100-199 employees, companies are relatively evenly distributed, i.e., from one to three companies are found in a variety of subsectors, including basic chemicals, paints and coatings, pharmaceuticals, and detergents. Companies with 50-99 employees are dominated by manufacturers of paints and coatings. Finally, companies with 29 or less employees are mainly found in subsectors making basic chemicals, soaps and other chemical products.

As chemical products that are shipped and consumed as final products, such as pharmaceuticals, paints and coatings, detergents, soaps, and cosmetics, need to compete with international brands, it is important for the industry to improve competitiveness by improving quality and raising consumer recognition.

4.2.6 Plastics and Plastic Products

Table 4.2-5 Yearly Shipment by Manufacturing Sector by Commodity (Plastics Subsector)

SITC	Commodity	Shipment						Average Annual Growth Rate (%)		
		2002		2005		2007				
		(T.R.O.)	% of total	(T.R.O.)	% of total	(T.R.O.)	% of total	2002-2005	2002-2007	2005-2007
2413	Plastic resins	0	0.0	13,729	0.5	75,952	1.8	-	-	135.2
2511&2519	Tires & rubber products	405	0.0	838	0.0	1,076	0.0	27.4	21.6	13.3
25201x & 25209x	Plastic products	13,337	1.0	9,503	0.4	25,371	0.6	-10.7	13.7	63.4
25202x	Plastic sacks & packages	7,582	0.5	19,310	0.8	26,787	0.7	36.6	28.7	17.8
25203x	Plastic building materials	7,257	0.5	15,498	0.6	20,177	0.5	28.8	22.7	14.1
25 (incl.2413)	Plastics	28,581	2.1	58,878	2.3	149,363	3.6	27.2	39.2	59.3
Manufacturing Sector Total		1,391,504	100	2,526,661	100	4,111,166	100	22.0	24.2	27.6

Source: MOCI, "Yearly Industrial Statistical Book" (Data: 2002, 2005 & 2007)

4.2.6.1 Overview

Plastic materials widely used in Oman include polyethylene (PE), polypropylene (PP), polyvinyl chloride (PVC), polystyrene (PS), and polyethylene terephthalate (PET). Of these, only PP and PET are produced locally from pellets that are a primary material made from feedstock. Other plastic materials are made by processing imported pellets. As for PP, however, only homo-polymer (used for sheets and films) is locally produced, whereas PP containers and PP co-polymer (PPR, for pipes) are imported.

There are 45 companies in the plastics and plastic products subsector as of 2007, accounting for 6% of the 727 companies in the manufacturing sector. Companies with less than 30 employees in the plastics processing subsector (including rubber products) amount to 19, of which only one company employs less than 10 persons.

Their operation is capital intensive, and no enterprise is micro-scale with less than 10 employees, except for one.

In the case of products in primary form, local production represents approximately 80% of local consumption. In practice, however, 89% of products made locally are exported and the

remaining 10% are used for local processing. Imported materials account for the rest.

Most of the plastic products made in Oman are final products of (1) construction materials; (2) plastic shopping bags and packaging materials; and (3) kitchen goods and household goods. Plastic parts used for automobiles and electrical equipment are not manufactured locally.

4.2.6.2 Plastics in Primary Forms

This subsector consists of one PP manufacturer and one PET manufacturer.[2] Each employs more than 100 workers.

Oman Polypropylene, a PP manufacturer, produces homo-polymer for making sheets and films by using raw propylene supplied by refineries. Most products are exported to India, the Middle East and Asia under long-term contracts, and only small portions are consumed locally to make plastic shopping bags.

The company does not make PP co-polymer used for household containers and pipes and imports all it needs.

OCTAL, another company, has been manufacturing PE within the Salalah Free Zone since 2008 and currently produces 300,000 tons per year of PET resin and sheet together (APET). Principal materials, PTA and ethylene glycol, are imported. Most products are exported under long-term contracts, while small portions are used for local production of PET bottles.

4.2.6.3 Plastic Molded Products

Main applications of plastic molded products in Oman include: (1) construction materials;
(2) plastic shopping bags and packaging materials; and (3) kitchen goods and household goods.

Companies in the subsector purchase plastic resins (pellets) or sheets and process them by injection or molding. It is a capital-intensive industry relying heavily on machinery and equipment.

(1) Construction materials

Eight companies manufacture plastic pipes. Four of them employ more than 100 workers, and the remaining four 30-100 employees.

[2] According to Yearly Industrial Statistical Book, there are four companies, but detailed information on two companies is not known.

The local manufacturers are fairly large and maintain market share by offering low prices achieved by economies of scale.

In particular, PVC pipes are subject to price competition due to the lack of a differentiating factor and thus constitute a market advantageous to manufacturers with large capacity. Large enterprises are currently enjoying cost advantage based on production capacity.

GRP pipes are used by PDO for its oil and gas pipelines, totaling 150km in length. GRE pipes are mainly used for waste water handling, for which large diameter pipes are difficult to make. They have price competitiveness against steel pipes. Demand is expected to grow further, although efforts should be made to change the industry's traditional practice to use steel pipes for oil and gas applications.

Three companies make bath tubs and other products using fiberglass. One company employs around 160 persons, and the other two companies have 30 employees each.

(2) Plastic shopping bags and packaging materials

Packaging materials, plastic shopping bags for supermarkets, other bags, and industrial bags are included.

Packaging materials are mainly used for foodstuffs, detergents, soaps, and cosmetics. They are single-layer or laminated films made of BOPP, OPA, PET, PVC, aluminum foil or LLDPE, on which a label and other information are printed. There are two companies making these products. One employs 135 persons and the other 70 persons. They use specially-designed large printing machines. They make products that can compete with those made in industrialized countries in terms of quality and competitiveness. Their products are shipped to both domestic and export markets.

As much as 15 companies seem to manufacture plastic shopping bags, other bags, and industrial bags. Their workforce ranges between 30 and 250 persons. Shopping bags are made from PE or PP, which is formed into films by an extruder, followed by printing. The market is characterized by price competition.

Industrial bags are positioned between packaging materials and shopping bags. They are made by weaving long and narrow PP fibers. The manufacturer of these bags employs more than 100 workers. Industrial bags are used for a variety of products, including chemicals, carbon black, PET chips, and construction materials. As all the products are made according to applicable international standards, their quality is guaranteed and can compete with foreign products. The critical success factor is to meet customer needs, while improving price

competitiveness by lowering costs through volume production.

This subsector also includes one manufacturer specialized in PET bottle production. In Oman, PET bottles for water and soft drinks are mostly made in-house by food manufacturers. However, as the company grows, food manufacturers are increasingly outsourcing the manufacture of bottles in order to save their own personnel, equipment, and technology.

(3) Kitchen goods and household goods

In this subsector, there are 11 companies that make a variety of goods including tableware, kitchen goods, cosmetics, household goods, office supplies, and school supplies. Most of them employ 30-70 persons each. The market is flooded with low-priced imports from China and other countries. The local companies are divided into several high-volume product manufacturers that compete with imported goods and those making niche products by focusing on a specific product and emphasizing quality.

The mass product makers typically use old injection molding machines by carrying out careful maintenance and repair. They focus on high-volume products, such as plastic buckets, for which quality is not considered to be important. While they have to keep price competitiveness against low-priced imports, they cannot survive by relying on this strategy alone. Instead, some companies try to survive as a specialized processor (costing company) that makes products for a foreign customer, who supplies raw resins, pays the processing cost.

4.2.6.4 Retreaded Tires

There are three companies engaged in recycling of tires. They mainly retread lorry tires because of the high value added.

4.2.7 Non-metal Mineral Products Sector

Table 4.2-6 Yearly Shipment by Manufacturing Sector by Commodity

(Non-metallic Mineral Products Subsector)

SITC	Commodity	Shipment						Average Annual Growth Rate (%)		
		2002		2005		2007				
		(T.R.O.)	% of total	(T.R.O.)	% of total	(T.R.O.)	% of total	2002-2005	2002-2007	2005-2007
2610	Glass & glass fiber products	14,309	1.0	23,865	0.9	32,037	0.8	18.6	17.5	15.9
2691	Ceramic kitchen & sanitary ware	452	0.0	1,325	0.1	2,321	0.1	43.1	38.7	32.4
2692, 2693, 2694 excl. 2694-40, 2695, 2699	Non-metallic mineral construction/building materials (excl. cement)	64,699	4.6	71,857	2.8	84,296	2.1	3.6	5.4	8.3
2694-40	Cement	13,454	1.0	71,974	2.8	112,925	2.7	74.9	53.0	25.3
2696	Marble	10,029	0.7	24,390	1.0	34,937	0.8	34.5	28.4	19.7
26	Non-metallic mineral products	102,943	7.4	193,411	7.7	266,516	6.5	23.4	21.0	17.4
Manufacturing Sector Total		1,391,504	100	2,526,661	100	4,111,166	100	22.0	24.2	27.6

Source: MOCI, "Yearly Industrial Statistical Book" (Data: 2002, 2005 & 2007)

4.2.7.1 Overview

This sector is roughly divided into subsectors based on nonmetal mineral resources produced locally, such as cement, crushed stone, blocks and tiles, and marble, and those relying on low-cost gas, including glass and sanitary ware.

A total of 111 enterprises, representing 60% of the total, have less than 30 employees. Slightly over 40% of the small enterprises (totaling 77) employ less than 10 persons and are mainly seen in the subsector making concrete and cement products (including concrete blocks and tiles) (59 companies) and in the subsector making “other products” such as crushed stone (11).

Major portions of exports are destined to the GCC countries, and mainly consist of construction materials and crushed stone. Demand for nonmetal mineral products is closely associated with construction activities such as infrastructure, housing, commercial development, and industrial plants, and the sector’s firm growth is fueled by the thriving development projects in Oman and the UAE.

Nevertheless, mass produced materials, which are not bulky or heavy, have to face fierce competition with imports. Seemingly, the nonmetal mineral products industry is required to pursue the following strategies.

1. Adaptation to diversified demand for construction materials (e.g., introduction of new technology and the improvement of durability and functionality)
2. Exploration of new materials by taking into account energy saving and other emerging needs

In this connection, it is important to collect information on world technology trends in the field of construction materials and to take appropriate and timely action.

A primary example of these materials available in Oman is marble. In addition to export of marble stone, some companies manufacture and market marble products having higher value added in terms of design and functionality, and which are increasingly accepted in the international market. Also, uses of marble can expand to encompass many housing-related products, for interior decoration and furniture and even as exterior finish.

4.2.7.2 Glass and Fiberglass Products

There are 14 establishments manufacturing glass and fiberglass products, of which 10 are engaged in the manufacture of fiberglass processed (GRP) products, while others make glass containers and decorative glass products. There is no manufacturer of plate glass due to the small demand.

The product line ranges from small bottles (for perfume, pharmaceuticals, and seasonings) to large beverage bottles. As demand for carbonated drinks is expected to grow in the region, the company will likely expand its business. As for decorative glass making, there is not sufficient demand to allow reliance on a single product and the company handles other construction materials while making customized production.

Commercial production of GRP products in the country started in the 1980s, covering a wide variety of applications ranging from fishing boats to furniture and household sanitary fixtures. However, demand for boats became saturated and furniture and bathtubs were increasingly made of plastics or ceramics, so that GRP's applications were concentrated in construction materials because of its advantages in terms of lightweight, durability, and reparability.

4.2.7.3 Cement

Cement production is made by two companies that are located in the southern and northern parts of the country. Actual supply and demand conditions have been fairly unstable with significant price fluctuations.

4.2.7.4 Lime, Gypsum and Plaster

In this subsector, local applications have emerged to meet domestic demand, i.e., production of hydroxide lime and calcium carbonate from extracted limestone for chemical treatment purposes (oil drilling mud and sewage treatment). As the transportation accounts for the major portion of costs of these products, there is no strong competitor and production is limited to domestic demand.

4.2.7.5 Ready-mixed Concrete

Not only strict quality control and transportation management, but also substantial investment is required, prohibiting easy entry by small enterprises. Meanwhile, ready-mixed concrete, by nature, cannot be kept in stock, so sales are limited in terms of production capacity as well as a geographical range of delivery. As a result, the plant locations are restrained.

4.2.7.6 Concrete Block and Cement Tile Production

As advanced technology or substantial investment is not required to make concrete blocks and cement tiles, many companies have entered the business. At present, there are 59 small enterprises and 32 large enterprises active.

Current production of cement and concrete products for construction purposes is targeting the domestic market. In addition, the range of supply is limited to a certain area around production facilities, as determined by transportation cost.

4.2.7.7 Crushed Stone

There are a large number of establishments, totaling 53. Crushers have expanded business to the downstream sector, such as production of concrete blocks and curbstone, using crushed stone.

4.2.7.8 Marble

Marble is essentially a domain of large enterprises with international competitiveness because marketing constitutes a key success factor. The majority of output is now supplied to the export market.

Marble is traditionally used for interior finishing. Recently, it is increasingly used as interior decorative materials although the amount of consumption for this purpose is small. As a result, a

supply chain to meet the market trend is needed.

4.2.7.9 Kitchenware, Sanitary Ware, and Ceramic Tiles

Production of sanitary ware consumes a large amount of energy, similar to glass bottle making, and is based on availability of gas supply in the Sohar district. It focuses on the middle class market where there is no competition with European products, particularly in emerging markets with high growth potential, such as India, Southeast Asia, and Africa.

Maintaining such market-oriented operation and management is essential in ensuring competitiveness, but boosting production capacity is also an important source of competitiveness. In this connection, a major challenge is to secure a stable gas supply.

4.2.8 Basic Metals and Metal Products Sector

Table 4.2-7 Yearly Shipment by Manufacturing Sector by Commodity

(Basic Metal & Metal Products Subsector)

SITC	Commodity	Shipment						Average Annual Growth Rate (%)		
		2002		2005		2007				
		(T.R.O.)	% of total	(T.R.O.)	% of total	(T.R.O.)	% of total	2002-2005	2002-2007	2005-2007
2710	Iron & steel	35,067	2.5	100,810	4.0	163,499	4.0	42.2	36.1	27.4
2720	Non-iron/steel	13,240	1.0	24,000	0.9	39,983	1.0	21.9	24.7	29.1
2731 & 2732	Cast iron/steel	607	0.0	748	0.0	970	0.0	7.2	9.8	13.9
27	Basic metals	48,914	3.5	125,558	5.0	204,452	5.0	36.9	33.1	27.6
28 excl. 2811-42&44	Metal products (excl. aluminum products)	11,919	0.9	27,753	1.1	63,350	1.5	32.5	39.7	51.1
2811-42&44	Aluminum products	8,076	0.6	1,099	0.0	2,806	0.1	-48.6	-19.1	59.8
3610	Metal furniture	20,554	1.5	26,180	1.0	44,334	1.1	8.4	16.6	30.1
28, 36101x & 36102x	Metal products	40,549	2.9	55,032	2.2	110,490	2.7	10.7	22.2	41.7
Manufacturing Sector Total		1,391,504	100	2,526,661	100	4,111,166	100	22.0	24.2	27.6

Source: MOCI, "Yearly Industrial Statistical Book" (Data: 2002, 2005 & 2007)

4.2.8.1 Overview

The basic metals subsector mainly consists of iron and steel making and aluminum smelting.

The metal products industry mainly manufactures construction materials for buildings and plants including oil drilling facilities, together with small products for housing (such as gates and

doors). All of their principal materials, steel and aluminum, is imported. The situation is similar to the machinery industry, which imports most of the metallic materials and intermediate products needed for machining, thus having little linkage to the upstream basic metals sector.

4.2.8.2 Basic Metals Subsector

As of 2007, the subsector consisted of 17 companies.

Note that the above figures were collected in 2007, when large projects did not start yet, including Sohar Aluminum (an aluminum smelter that started commercial operation in 2008), a pig iron pellet manufacturing plant (currently in the planning or construction stage), and an integrated steel plant.

(1) Iron and steel

Companies in the iron and steel industry are divided into manufacturers of iron and steel products from imported scrap and iron ore, and foundries that process imported scrap castings. The former consists of nine companies, of which three companies have less than ten employees and one operates a large rolling mill in Sohar.

Products made in Oman are largely supplied to local metal products manufacturers, while some portions are exported.

In Sohar, large iron and steel making projects are in the planning or construction stage. One of them will be operated by a large company based in Brazil and will process imported iron ores into pellets.

(2) Aluminum

There is only one aluminum maker, Sohar Aluminum, which started operation in 2008. The company is currently producing liquid aluminum and aluminum ingots only and exports all products.

4.2.8.3 Metal Products Subsector

Ironworks account for the largest share. Many of them make structures relating to oil drilling operation, tanks and containers. They mainly used imported iron and steel products for production and have little linkage to the local steel industry. Manufacturers point out quality problems relating to local products.

On the other hand, three companies (each employing around 100 workers) are specialized in maintenance and repairing of machine parts and metal molds used by the oil drilling industry. They are also engaged in maintenance and repairing of dies and molds for food processing and other manufacturers. Overall, they constitute company groups that make the above structures.

In addition, there are a large number of small metalworking companies (less than 10 employees) that provide contract job shop service, although accurate data are not known. Their operations include grinding and finishing of automotive parts and the assembly of metallic doors for housing by welding.

On the other hand, there are many companies engaged in processing of aluminum products. The subsector is dominated by small manufacturers that make aluminum doors, window frames and other products upon customer's order by using locally produced or imported materials.

4.2.9 Machinery Sector

Table 4.2-8 Yearly Shipment by Manufacturing Sector by Commodity

(Machineries Subsector)

SITC	Commodity	Shipment						Average Annual Growth Rate (%)		
		2002		2005		2007				
		(T.R.O.)	% of total	(T.R.O.)	% of total	(T.R.O.)	% of total	2002-2005	2002-2007	2005-2007
291x & 292x	General purpose machinery	5,929	0.4	12,973	0.5	20,736	0.5	29.8	28.5	26.4
2930	Household apparatus	1,738	0.1	2,750	0.1	4,261	0.1	16.5	19.6	24.5
3120	Electrical machinery for power transmission	5,713	0.4	11,076	0.4	24,991	0.6	24.7	34.3	50.2
3130	Insulated wire and cable	20,803	1.5	60,577	2.4	217,445	5.3	42.8	59.9	89.5
3140	Batteries	5,516	0.4	10,236	0.4	19,809	0.5	22.9	29.1	39.1
3150	Lamps	632	0.0	372	0.0	571	0.0	-16.2	-2.0	23.9
29 & 31	Machineries	40,331	2.9	97,984	3.9	287,813	7.0	34.4	48.1	71.4
Manufacturing Sector Total		1,391,504	100	2,526,661	100	4,111,166	100	22.0	24.2	27.6

Source: MOCI, "Yearly Industrial Statistical Book" (Data: 2002, 2005 & 2007)

4.2.9.1 Overview

The machinery industry sector in Oman consists of (1) the machinery sector (ISIC Code 29), (2) the electric machinery sector (ISIC-31) and (3) the automotive components manufacturing Sector (ISIC-34).

The domestic machinery and electric machinery sectors can supply only limited categories of machinery, compared to the diversified nature of demand for machinery.

Machinery exports are dominated by coaxial cables (86.6% of machinery exports in 2007). The second largest item is automotive batteries (8.3%). These two products account for a combined share of around 95%.

The domestic demand for automotive components has been increasing, while the domestic production is negligibly small compared to the size of the demand, so the domestic requirement has been met mostly by imported parts. Further, the major parts manufactured locally are electric accumulators and oil filters, and not machine parts.

4.2.9.2 Machinery Subsector

In the machinery sector there are 13 companies. They manufacture different types of machinery respectively, except for some duplication in certain lines, which include oil excavators, pumps, grinding wheels, refrigerators, electric water heaters, air conditioning equipment or fans and spare parts, etc. Apart from a company manufacturing electric water heaters, all others have less than 100 employees. Among them, two companies are small with less than 10 employees, manufacturing fans and spare parts respectively.

There are machining workshop-type microenterprises with a few employees, details of which are not known.

Those enterprises of small and medium scale with less than 100 employees import components specially designed for their products, and raw materials for general purposes, and carry out processing of the raw materials by machining, sheet metal processing, assembling, painting and other work at their factory The technology utilized there include that developed in-house, or transferred together with the machinery from abroad. Outsourcing of a part of the process, or procurement of parts, is not practiced except for procurement of minor standardized parts.

4.2.9.3 Electric Machinery/Equipment Subsector

In the electric machinery and equipment sector (equivalent to ISIC 31), 13 companies are recognized, with major ones being eight companies manufacturing distribution panels and switchgears and two companies manufacturing electric wires and cables. Others include one manufacturing automotive batteries, one for electric lighting equipment and one for solar systems (there are reports that there are a couple of companies manufacturing electric lighting equipment other than those listed in the above).

The manufacturing of distribution panels, switchgears and electric wires and cables are all related to the infrastructure projects or plant construction projects in Oman and the GCCs. Although they suffered from the influences of the recent recession caused by the global monetary crisis, to some extent, their businesses are still in good condition.

They have to keep raw material stocks at hand, since they depend entirely on imported raw materials, and have to keep production lead times short, resulting in cost increases.

As described above, most of the companies are oriented towards high quality products in their own territory, to avoid competition with imported mass-produced and low-priced products. They use costly raw materials and have acquired machinery incorporating new technology. However, since they still lack their own capability for technology development, they need to make investment continuously, by importing renewed machinery and equipment, to maintain their competitiveness. It will be the big challenge of Oman, where the extension and deepening of industrial structure is not yet advanced.

5 Investment/Business Environment for Industrial Development

5.1 Industrialization in the GCC Countries and Investment/Business Environment in Oman

5.1.1 Industrialization in the GCC Countries

In most countries, the mining sector including crude oil represents over 50% of GDP. In the UAE and Bahrain, the share is lower, at 36% and 21%, respectively. Furthermore, dependency on the mining sector has risen by 15 or more percentage points between 1997 and 2008, in all the countries except for Oman, Bahrain, and the UEA.

The GCC countries are characterized by a unique economic and industrial structure relying on crude oil and natural gas. In terms of industrial policy, however, they are divided into two groups; Qatar and Saudi Arabia, which continue to position the oil and gas sector as the central element of economy, and the rest of countries that pursue economic development with less dependence on oil. In any case, industrial diversification is considered to be a critical factor for the future economy in each country.

Industrial diversification in the GCC countries shows the following patterns.

1. Increase in value added from the downstream energy sector, such as petrochemicals and material: Saudi Arabia and Abu Dhabi
2. Development of non-petroleum and natural gas manufacturing industries: Saudi Arabia
3. Development of knowledge-intensive and R&D-related industries: Abu Dhabi, Saudi Arabia, and Qatar

While their industrial diversification strategies aim at shifting the economic base from the oil and natural gas sector, industries that have so far secured competitiveness are those using crude oil and natural gas as raw material or energy source, such as petrochemical, aluminum smelting and steel making all of which consume substantial quantities of energy.

Secondly, the GCC countries have been actively promoting foreign investment by offering the following advantages.

1. Market opportunities (domestic demand for Saudi Arabia, and regional demand for other GCC countries by using their countries as sales and distribution centers), including geographical advantage

2. Availability of free trade zones (or favorable investment climate and business environment) that allow companies to target other markets
3. Incentives relating to utilities and land costs
4. A business hub function in regional finance and distribution (and infrastructure and resources to support it)

Thirdly, development of knowledge-intensive and R&D-related industries is being promoted by providing an activity base for foreign companies to operate freely, including a free zone, thereby to encourage agglomeration of related industries and establishment of a hub in a specific field. Ongoing plans or projects include the accommodation of the head office of the International Renewable Energy Agency (IREA), construction of a zero carbon dioxide emission city (Masdar City), and King Abdulla Science and Engineering University.

5.1.2 Business Environment in the GCC Countries

(1) Business smoothness and economic freedom

For the following evaluation items Qatar ranked below 100th place in the world.

- Construction permits
- Financing
- External trade
- Compulsory execution upon default

Obtaining a construction permit takes an average of 242 days, which is much longer than in other countries, and the cost to obtain the permit, as a percentage of per capita income, is 721.4%, more than 10 times that in Saudi Arabia (ranked 4th).

As for "external trade," obtaining export and import licenses are considered to be more cumbersome (requiring submission of 10 documents vs. four to six in other GCC countries) and time consuming.

In the field of "financing," a major factor for unsatisfactory evaluation seems to be poor dissemination of credit information.

With regard to "compulsory execution on default," a negative factor is many steps required for procedures (51 vs. 45 on average).

(2) Workforce localization policy

In the region, Kuwait, Oman and Bahrain have relatively high percentages of local people in the workforce, 27%, 20% and 20%, respectively, in comparison to less than 10% in other GCC countries.

Oman continues to maintain the requirement at relatively high levels. Also, it imposes the "vocational training allocation tax" of R.O. 100 per year per foreign worker.

(3) Investment cost

1) Wage level

Another survey in 2007[3] indicates that, when the average wage level in Saudi Arabia (for all industries) is set at 100, that in the UAE is 94, Kuwait 91, Qatar 81, Oman 77, and Bahrain 76.

2) Rent for industrial land

The average rent in the initial five years is US$0.05 per square meter per month (according to the PEIE) and is at the lowest level in the region, excepting US$0.02 for the Modon Industrial Estate in Saudi Arabia.

3) Electricity charge for industrial use

The electricity charge (per kWh) for industrial use in Muscat varies according to the seasons (with no basic charge), US$0.03 per KWh between September and April and US$0.06 between May and August, during which time electricity consumption increases. The latter rate is higher than in other GCC countries.

4) Water charge for industrial use

Oman has the second highest water charge next to the UAE. For instance, the unit rate per cubic meter in Manama, Bahrain, is US$0.79 for the initial 450$m^3$ and US$1.05 thereafter. In Oman, Rusayl Industrial Estate charges US$1.72 per m^3.

5) Corporate income tax

In Oman, progressive tax rates for foreign corporations are set lower than those in Qatar. On the other hand, foreign companies are exempted from income tax in the UAE and Bahrain.

6) Taxation on transfer of royalty

In the region, only Oman imposes 10% withdrawal tax.

[3] Gulf Business Magazine "Salary Survey 2007"

(4) Investment promotion and incentive

Between 2003 and 2008, direct investment in the GCC region as a whole expanded nearly tenfold from US$6.6 billion in 2003 to US$63.4 billion in 2008. In terms of FDI, Saudi Arabia received the largest amount, followed by the UAE, Qatar, Oman, Bahrain, and Kuwait.

1) Investment trend by industry sector

Saudi Arabia and the UAE account for major portions of investment in all the sectors, 61% and 11% of total, respectively. Oman is next but holds less than a 7% share.

2) Establishment of priority investment areas

Saudi Arabia and Bahrain designate specific sectors as priority investment areas.

Oman identifies specific areas for strategic development as part of its "Future Industrial Strategy" but does not establish any investment incentive for them.

Generally, the GCC countries offer tax incentives to encourage investment, such as exemption of corporate and personal income taxes and import duties on machinery and equipment, but they do not target a specific industry.

3) Resident status of foreign companies

Companies wholly owned by foreign capital are accepted in Saudi Arabia and Bahrain, whereas the UAE permits their establishment in free zones only. Oman accepts majority investment by foreign investors (up to 70%) but not 100% investment.

5.2 Industrial Infrastructure

As electricity and water demand grows, the government builds power plants and desalination plans (IWPP). Power supply conditions have been steadily improved, although a power outage occurs occasionally.

LPG is used as fuel for heating and drying processes. It is supplied from oil refineries and is filled into cylinders for distribution and delivery.

Major ports handling cargo are located in Sultan Qaboos, Salalah, and Sohar. Many companies use them for import of raw materials and export of products. As for port service, many complaints and requests are heard about the improvement of container handling capability at the port of Sultan Qaboos, the streamlining of export and import procedures, and the lowering of port handling fees and charges.

Regarding land transportation, traffic congestion in Muscat, the shortage of large trailers, and other problems are pointed out.

As for the air transportation, refrigeration and cold storage facilities at Seeb International Airport are limited, and some companies use nearby airports (including Dubai).

6 Review and Recommendation on Industrial Development Plan and Strategies

6.1 Prospective Areas for Industrial Development, and Implication for Development Strategy

6.1.1 General

The objective of defining the prospective areas and the priority areas for industrial development is to provide policy support to promote development in the areas as required, and encourage investment in those areas.

Based on the review of the existing industries in Oman (in Chapter 4), the prospective industrial areas for industrial development were selected as follows:

1) The industrial areas which are considered competitive on the basis of the analysis of the existing industries

In Chapter 4, the existing industrial areas were reviewed and their competitive edges were analyzed. According to the result of the analysis, the major industrial areas developed in Oman can be categorized one of the following:

1. Industrial areas which are based on the considerable size of the existing demand in the local and neighboring countries' markets
2. Industrial areas leveraging the resources which is available locally with significant advantage

These industrial areas are expected to be prospective in the future too, though there will be needs to challenge to solve the constraints for future development which are found in these areas.

The "industrial areas which are based on the considerable size of the existing demand in the local and neighboring countries' markets" can be found in two areas. One is the areas of food industries, and industries of goods of daily necessity character. However, it should be noted that the Omani products in these industrial areas are found only in the market segments of quality goods, specialty goods which are sold with close interaction with the customers, since the Omani products are hard to compete with the mass-produced imported goods due to their small size of production. Actually, in these market segments, the competition with the mass-produced imported goods is less.

Another area is the industrial areas of construction and building materials and machineries, which include materials industries of non-metallic minerals, and machinery industries related to

infrastructure construction and plant construction.

Nevertheless, infrastructure and plant construction projects in Oman are carried out on a continuous basis even after the international financial crisis. When construction projects in Dubai, currently suspended or slowed down, are revived, they will create strong demand for a number of industrial products in the prospective areas. In particular, demand expansion in the high-end and upper-middle consumer groups is noticeable, with a good prospect for further growth.

The "industrial areas leveraging the resources which is available locally with significant advantage" are the industries based on oil and natural gas. Oil and natural gas have used as the raw materials for petrochemical industries, and as the energy source of high-energy consuming industries. As a result, many oil and gas based chemical industries and basic metal industries (or metal smelting industries) have been established in Oman of global sizes.

However, the country's natural gas resources are losing surplus capacity that has previously attracted large-scale industrial projects, forming the largest constraint for future industrial development.

Therefore, the future development should be focused on the industries which leverage the industrial basis thus established, or in other words, the downstream areas of these petrochemical industries and smelting industries.

Besides the oil and natural gas, the resources of lime stone, aggregates, gypsum, and marble, etc., which are abundantly endowed in Oman, have also been used as the sources of construction and building materials, and these industries are also expected to be prospective.

2) The industrial areas, which are still minor areas but prospective for the future development with some potential advantage according to the current development experience

This potential may be found in the following three areas:

a) <u>ICT related area</u>:

Oman has so far successful in attracting global enterprises in ICT area to Oman, expecting to develop Oman as the hub for ICT industries. Here, the focus is placed on dissemination of use of ICT among the enterprises in the manufacturing industries, in view of upgrading of the manufacturing industries themselves. However, at the same time, it intends to create the synergistic effects to ICT industry, promoting ICT culture in the Omani economy, nurturing the ICT manpower, and contributing to development of ICT industry.

b) Industrial areas of energy alternatives to oil and natural gas

Not only because of the fact that Oman cannot depend on oil and natural gas alone as the future energy sources, but also because of the fact that Oman has environmental potential to use solar and wind power for power generation, the manufacturing sector is necessary to be involved in the development of the energy alternatives in a proactive manner. On the other hand, considering the fact that the oil and natural gas resource is the most decisive competitive edge for industrial development in Oman, development of the alternative energy sources will enable Oman to use the oil and energy resource to other valuable purposes, such as development of middle-level energy consuming industries.

c) Industrial areas leveraging the Country's geographical advantages

The country's geographical advantage is utilized only in a limited extent so far. Investment focusing on the geographical advantage is also focusing on the advantage of cheap and abundant supply of oil or gas, generally. In this connection, the limited utilization of the geographical advantage may be attributable to the unforeseeable future supply and balance of natural gas. However, as seen in the case of investment of automotive parts manufacturer in Salalah FZ, which is focusing on the proximity to Europe, with Salalah port as the calling port of the world major container line, the geographical advantage will still have the high potential to attract investments.

3) Industrial areas need for development in view of overcoming the weakness and strengthening the advantageous position of the industries in Oman

This areas of industries are not advantageous in Oman, instead lacking critically at present. However, at the same time, these areas have potentials for development considering the industrial concentration observed currently in Oman. Further, development is advised to be started as early as possible regardless of feared difficulties to be faced.

These are the industrial areas of:

a) Metal working and machining works
b) Plant engineering
c) Packaging materials

6.1.2 Industrial Areas to Meet the Increasing Demand in the Domestic Markets and GCC's Markets

The industries based on the domestic and GCC demand will continue to be the basis of industrial development in this country.

Many companies in these areas maintain viability by targeting niche markets so as to avoid competition with imports that are mass produced and aggressively priced. While these markets are supported by firm domestic demand, with good prospects for future growth, their size is fairly small in the beginning and is further fragmented as a result of adoption of niche strategy. As competing products will likely offer improve quality, producers in these markets need to seek new opportunities other than domestic and neighboring markets.

6.1.2.1 Construction Related Industries

The representative industries under this category are:

- Machinery industries, including manufacturing of cables for power transmission and distribution
- Industries manufacturing construction and building materials
- Finishing work of interiors of houses, offices, hotels, etc.

Advantages and Constraints for Development

Power transmission and distribution equipment and cables can compete with imported products because of the weight advantage. Manufacturers also maintain differentiation by meeting specific specifications required by environmental conditions in Oman and other relevant countries. The products are mainly used for construction projects, which demand product delivery according to the actual progress of work. This requires manufacturers to work with short lead times. Meanwhile, as they import most of raw materials, they have to maintain sufficient inventory levels, which leads to an additional cost.

Another major segment is construction materials that use nonmetal mineral products.

As for individual manufacturers, those introducing new technology (products) maintain competitiveness. On the other hand, local manufacturers steer clear of the market for construction materials that are light in weight and can be mass produced because of competitive pressure from low-priced imports.

Furniture and interior decoration materials for offices, houses and hotels are also an area where further demand growth can be expected. The products are divided into two market segments, i.e., a segment covering high-grade furniture and interior decoration, such work being done on a contract basis, and one covering general housing demand. In both markets, a major competitive edge is the ability to customize products. Nevertheless, the ready-made furniture market is dominated by factory products made in Indonesia and Malaysia.

Implication for Development Strategy

Advantage (heavy weight and low value per unit weight relative to imports) may be lost if lighter products are developed in the future and become available in the region. Research and development, marketing, and market exploration are required to meet the changing market needs, but Oman industries do not have resources to make such efforts. Instead, they have to import new technologies and products by means of investment. This is therefore a major challenge from the standpoint of sustainable industrial development.

6.1.2.2 Food Processing Industries and Daily Necessities Industries

Steady demand can be expected in the areas of processed food and daily necessities. The related industries in Oman have targeted the demand in the high-end and upper-middle markets. The demand for this segment of processed food and daily necessities will have significant potential considering the influence of improvement of the standard of living, and tendency of the people in Oman and GCCs to prefer high-end products.

Advantages and Constraints for Development

The processed food and beverage industry there being a product area where there is customization to suit consumers' taste and needs. The latter includes in particular secondary products of the above products, where SMEs and even local microenterprises can have strength, not to mention large corporations.

In Oman, grain is imported and stored in large quantities, so that primary and downstream products can compete equally with internationally marketed products in terms of material supply.

They have to target niche areas as experience in the past has indicated.

On the other hand, household products are dominated by mass produced imports. As for plastic products, local production of plastic materials is expected to start in the near future, but downstream production will be limited to mass produced products unless differentiating technology is obtained. Thus, it is safe to assume that downstream products, if any, will have to aim for mass export marketing.

The products, which match the specific demand of people in the Middle East, including that of expatriates working in the region, may have potential to compete against the imported mass-production products in this particular segment of the market.

This situation is similar in plastics products, paper products, high-volume printing, and textile products.

Implication for Development Strategy

To maintain a niche position in a specific area, manufacturers are required to have the abilities to understand the changing needs of customers and to offer new products and services to consumers and customers.

Thus, success in these industrial areas significantly depends on continuous product development efforts while establishment of the system and infrastructure to support such efforts will be indispensable factors for it.

6.1.2.3 Industrial Areas Created by Tourism Development

While visitors from European countries, which represent around one-fourth the total number of tourists visiting the country, are recently on the decline due to the recession, the country's tourism has grown steadily over the long term. Notably, local people account for one-fourth the total number of hotel guests, and visitors from other GCC countries (seeing an environment with greenery and water) represent around 10% of the total.

Advantages and Constraints for Development

The government has assigned priority to tourism development. In addition to generating demand for construction materials used for tourist attractions, hotels and resort facilities, tourism is expected to create demand for a variety of products from the manufacturing sector, including: (1) goods consumed at hotels and resort facilities; (2) souvenirs and specialty products targeting tourists; (3) products derived from development of transport systems and services relating to tourism; and (4) promotional publications and printing.

Implication for Development Strategy

To support such efforts, it is important to provide an environment that facilitates prototype production or improvement of packaging, together with human resource development.

6.1.3 Industrial Development Leveraging Promising Resources and Existing Industrial Basis

It is obvious that oil and gas resources will not be abundantly available to provide the energy and raw materials for another Mega Project. Rather, the value added by the output of the existing Mega Projects should be taken as the important challenges for maximizing the use of available resources. Further, use of sunlight and wind power should be another challenge for Oman an alternative sources of energy.

6.1.3.1 Industrial Areas of Existing, Planned or Under-Construction Heavy and Chemical Industries

Several Mega Projects have been placed in operation in the past few years in the areas of petrochemical industries, gas-based industries, and energy-based industries.

With the development of these projects, Oman has big potential for development of industries in the area of downstream products.

Advantages and Constraints for Development

However, most of the Mega Projects do not supply the intermediate materials which can be consumed by the existing downstream industries, and there is a need to develop the industries that supply the intermediate materials to link the Mega Projects and the existing downstream industries.

Implication for Development Strategy

Scale of production is a critical factor for downstream production. If production is limited to the domestic and neighboring markets only, the scale of production will be limited, making competition with mass produced imports difficult. Thus, a choice has to be made between mass production targeting the global market or small-scale production using special technology (such as meeting strict precision requirements) or targeting a niche market.

6.1.3.2 Development of the Industries Leveraging the Non-metallic Mineral Resources

These minerals, which have been verified to be commercially exploitable, include limestone, gypsum and aggregates. Marbles have high potential of development also.

Advantages and Constraints for Development

The first prospective application is construction materials. In addition to various applications that have already been commercialized, the following strategies can be pursued.

1. Adaptation to diversified demand for construction materials (e.g., introduction of new technology and the improvement of durability and functionality)
2. Exploration of new materials by taking into account energy saving and other emerging needs

Implication for Development Strategy

In this connection, it is important to collect information on world technology trends in the field of construction materials and to take appropriate and timely action.

6.1.4 New Industrial Areas of Strategic Focus

6.1.4.1 ICT and Related Industries

The ICT industry is in the process of becoming established in Oman. At this time, major activities are concentrated in the BPO subsector, especially call center service. This can be categorized as a new type of labor-intensive industry. Several foreign companies are operating in the software development industry, as a result of investment promotion, and they mainly target overseas markets.

Advantages and Constraints for Development

The country's ITC industrial development strategy aims to attract global ICT companies to form a regional base or hub and to use this as an advantage for further agglomeration of related industries. In fact, this is the same strategy as pursued by other GCC countries. Oman, however, should look for additional ways to use ICT for productive purposes.

In other words, the primary purpose should be the broad-based use of ICT in the country's society, economy and industry, thereby to make them dynamic and strong. Once ICT takes root in the country, the industry will enter a sustainable growth path.

Implication for Development Strategy

Oman's industrial sector is required to shift its market strategy from being domestic oriented to being export oriented. However, its general strength – focusing on niche markets – appears to be limited to the domestic and neighboring markets and cannot be used for exploration of export markets (where domestic industries are already established on strength of accessibility to the domestic markets). Here, wide use of ICT is considered to be useful for export marketing, and at the same time. In the process, the industry can evolve from being labor intensive (call centers) to being technology/knowledge intensive (software development and consulting).

To promote use of ICT and the ICT industry, the government needs to take the following measures.

1. Development of ICT infrastructure (physical) that can be easily used by industry
2. Institutional development relating to use of ICT (development of the legal system, such as the e-commerce law and the law to regulate illegal use)
3. Incentives for industry to adopt and implement ICT

6.1.4.2 Alternative Energy Development

The country's crude oil and natural gas supply capacities are nearing their limits and reduced supply can become the largest constraint on future industrial development.

From the viewpoint of securing stable energy supply, it is imperative to start commercial development of renewable energy resources.

Advantages and Constraints for Development

Generally, the country enjoys fairly high energy density of sunlight, especially in desert areas, making it suitable for solar power generation.

The results of pilot plant operation indicate that efficiency of power generation decreases by 10% in comparison to installation in non-desert areas, partly due to a high atmospheric temperature at the installation and partly due to contamination of the module surface by sand. More importantly, it is pointed out that a high production cost is a major issue.

As for wind power, data indicate wind velocities similar to those recorded in the interior of Europe where many wind farms are operated. Furthermore, the highest wind velocity is recorded in summer, which is the country's peak season for electricity demand. On the other hand, it is also reported that the wind power generation cost in Oman would be more than twice that for conventional gas-fired power generation.

Implication for Development Strategy

Iit is imperative to accelerate technological development efforts, but by taking into account local conditions peculiar to the country.

Prior to the buildup of a full-fledged commercial system, it is desirable to start pilot operation in off-grid and other areas where the power generation cost is high, so as to speed up the commercialization of adequate technology for the country.

6.1.4.3 Industrial Areas Leveraging the Country's Geographical Advantage

The country's traditional functions can be divided into the following:

1. Collection, transshipment, stockpiling, and distribution
2. Processing and manufacturing
3. Quality adjustment and repackaging

In Oman, a typical operation is to import consumer goods (especially food) in bulk, repackage them (after quality adjustment) according to the needs of specific markets and consumer groups, and ship them mostly to the domestic and GCC markets.

Advantages and Constraints for Development

Oman's geographical advantages include its strategic location as a point attracting investment from GCC and Southwest Asian countries, in addition to supply of raw materials and good market

access. In particular, investors in the GCC countries find Oman to be a good place for business operations in terms of political stability and public security. There is increasing interest in Oman among investors in Southwest Asia (particularly India), and more recently, Southeast Asia and the U.S. As pointed out earlier, the geographical advantage is further reinforced by the proximity to Europe.

On the other hand, Oman has not established a priority position in the mind of many investors interested in the business relating to the Middle East, because the country has not achieved high levels of industrial concentration. Instead, the majority of investors pay attention to Dubai that has successfully attracted and built up large-scale industrial functions.

Furthermore, the country's declining energy supply capacity is becoming a major obstacle to full exploitation of its geographical advantage. It is uncertain if investment projects attracted to the FZs will be implemented as planned.

As for countries in the east coast of Africa (a region to which Oman offers geographical advantage), Oman industries do not see them as a prospective trade partner because of high risk.

Implication for development strategy

The prospective industrial areas using the country's geographical advantage, excluding energy consuming industries, are as follows.

1. Those performing the traditional quality adjustment and repackaging functions
2. Those performing the collection, transshipment, stockpiling and distribution functions, combined with the processing and manufacturing function

Each of the industry types is categorized into export-oriented industries operating in an FZ and those mainly serving the domestic and neighboring markets, with some exports to outside the region.

FZ-based, export-oriented companies do not have a major problem relating to the FZ and its business environment. The local employment requirement (10% of the workforce must be Oman people) is not considered as a major restraint to investment decisions. Rather, energy supply is viewed as a constraint, suggesting the need for policy measures to secure alternative or imported energy supply sources.

On the other hand, the enhancement of support functions and the ease in securing local employee requirements (or improvement of supply capability of competent human resources) are important for companies operating outside the FZ and mainly serving the domestic and neighboring countries.

Another important consideration is to avoid creating an obstacle to companies outside the FZ by overemphasizing the FZ-based development strategy. Such obstacle includes:

1. When development of a container port results in deterioration of general cargo handling capacity, delay in procedures, and the rise in warehousing and handling costs.
2. When priority supply of energy and water to the FZ creates a supply shortage for companies outside the FZ.

Finally, streamlining and integration of procedures relating to the importation of raw materials and export of products, as well as the provision of a bonded area, are important factors for promotion of investment in these industries.

6.1.5 Priority Areas in View of Stable and Sustainable Development of Industries

The important consideration concerning industrial development in Oman is to develop the industries at stable and sustainable level by investing funds obtained from oil and gas, which are the important financial sources for the national economy and public finance, so that the industries will be able to support the economy even after the resources of oil and gas become limited in the future.

In this context, the industrial development of Oman should be sustainable through reinvestment of the outcome of industrialization to the industries. The profit at one point is not sufficient. Further, it is necessary that the profit benefits the nation and the people directly or indirectly.

One of the significant features of the industrial sector in Oman is the fact that the industrial subsectors have been established without linkage with other subsectors.

Most manufacturing industries use imported semi-processed products as the starting material, procuring or importing general-purpose materials and standardized parts, and process them into end-use products. As a result, the industrial structure is not deep. Manufacturing know-how has not been built up to the level of engineers and the managers involved. This may be one of the reasons for difficulty in developing industries based on the needs of existing industries.

As a result, no relevant industries develop, and the industries have to continue their manufacturing without change, while continuing to rely on imported semi-processed products. As for the machinery and equipment, they have to use the manufacturing lines specialized for the products, since they have no capacity to develop lines by themselves. Further, their

manufacturing capacity is not large enough to make them competitive in terms of the scale of economy, because of the limited size of the local markets.

In order to overcome this weakness of Oman industry, activities to support development of other industrial areas are essential.

6.1.5.1 Machining Work Subsector

Currently, there is no machining workshop in Oman having advanced technology and skills. Most medium-size enterprises, which use molds and dies, have to rely on maintenance service abroad, but would prefer to see the emergence of machining workshops having advanced technology and skills in the country.

On the other hand, the major enterprises in Oman lack the capacity to develop and improve their production processes by themselves.

Development of the metal working subsector, which has the function of supporting industry, will be quite useful in support for R&D in various industrial subsectors.

Advantages and Constraints for Development

There is no company capable of performing machining work, but there is need for such service. Also, additional needs are expected from the growth of companies engaged in collection, transshipment, stockpiling and distribution (to leverage the country's geographical advantage), business expansion of existing companies into assembly operation, and the move toward local procurement of parts.

Nevertheless, if an enterprise specialized in machining is established newly in Oman, the demand for machining will not be significant at the outset, because of the fact that most of the existing firms perform processing themselves.

Implication for Development Strategy

In view of importance of this support function not only for current industrial development, but also as future strategy, and also in view of the importance of encouraging R&D by the enterprises, the support function should be established and operated partly under government auspices. This is, justified on the basis of its importance for the establishment of industries, need to satisfy requirements of machine working industries, importance of die maintenance and improvement, etc. The establishment of such an enterprise or institution will be useful also for supporting the R&D and improvement of machinery and equipment, and contribute to development of core Omani personnel in charge of machining fields.

Further, existence of an car assembly factory in Oman would definitely trigger the development of these subsectors.

6.1.5.2 Plant Engineering Subsector

In Oman, a variety of large-scale plants have been constructed since 2000, including oil refineries, chemical plants (e.g., methanol, fertilizer), petrochemical plants (aromatics, PP and PTA), aluminum smelters, and power plants such as IWPP.

To ensure sustainable development of heavy and chemical industries in the country, the plant engineering function plays a critical role.

Advantages and Constraints for Development

For engineering firms in Oman, the current demand for construction of industrial plants and facilities provides a good opportunity to learn process-based basic and scale-up technologies. Also, such experience and expertise can be applied to light industries, such as food processing.

To earn such an opportunity, they need to gain experience and improve practical skills by forming joint ventures with overseas engineering firms. However, many foreign firms are interested in Saudi Arabia and other countries where business opportunities are abundant, while they are not enthusiastically looking for partnership with Oman companies.

Implication for Development Strategy

In Oman, Petroleum Development Oman (PDO) has experience in plant engineering service and has its own engineering department. It is therefore recommended to obtain cooperation of PDO for accumulation of experience and expertise.

Also, almost all engineers and technicians who are responsible for field construction activities are foreigners. To ensure the development of the knowledge-intensive industry such as plant engineering, long-term strategy for training of local engineers and technicians is indispensable.

6.1.5.3 Packaging Materials (Particularly Plastics Materials) Manufacturing Subsector

At present, Oman has no companies are specialized in repackaging operations.

Advantages and Constraints for Development

As consumers in the GCC countries generally prefer high-end products, there is potential demand for development of diverse packaging materials. Also, if companies engaged in repackaging operations grow and obtain export-competitiveness, demand will surely expand beyond the domestic market.

However, if companies serve the domestic market only, they will unlikely be able to have their own R&D department.

Implication for Development Strategy

This industry requires not only manufacturing technology, but also an R&D function to meet the needs of customers, and printing technology. In this context, this industry may be regarded as a knowledge-based industry.

To promote full-fledged development in this field, the establishment of a public organization having R&D and consulting functions may be recommendable.

6.1.6 Prospective Areas of Industrial Development in Oman, and Its Strategy for Development (Conclusion)

The following should be taken into consideration in devising strategy for development of these industrial areas,:

1) As for the target areas of new industry development, the industries which rely solely on oil and gas resources will not be feasible any more. Rather, the focus should be shifted to the following categories of industries.
   - Industries featuring low energy consumption or generation of alternative energy
   - In the case of high energy consuming industries, the industries having an optimum balance between the economic effect of development and energy consumption

2) As the domestic and neighboring markets are limited in size, development of mass producing industries will likely be difficult for years to come. Instead, it is important to further enhance the traditional strategy of exploring niche markets with creativity. In particular, such strategic direction can be justified by high growth potential of the high-end and upper middle segments within the country and the region.

3) However, this does not necessarily mean that industries should remain domestic-oriented. On the contrary, if they do so, they will lose competitiveness in the longer term. They should pursue growth by exporting, by diverting the creativity for market development to the export markets as well. Such creativity should be driven by R&D, together with efforts for market development and creation.

4) At the same time, it is imperative to accelerate efforts to develop local human resources that can serve as middle managers in the fields of technology and marketing, or industrialist

entrepreneurs, thereby to accumulate experience and know-how that are conducive to the improvement of factory management, identification of business seeds, development of new products, and development of the downstream businesses.

5) On the other hand, more focus should be placed on creation of employment and business opportunities *for Omani nationals* in the industrial development process, and provide the basis for the above-mentioned human resource development.

6.2 Recommendations on the Industrial Development Plan and the Strategy

The Plan is one stage of the entire process consisting of planning, implementation, assessment, and renewal (modification), and this process is being consistently maintained in Oman for the five-year plan period. Also, a long-term vision straddling multiple five-year plan periods is developed and is subject to periodical assessment.

On the other hand, the Strategy is the set of policies required to achieve the Plan's objective. The Strategy here consists of eleven policies.

6.2.1 Recommendation on the Plan-Strategy system, and its Implementation

(1) The Strategy as the Policy and Mechanism to Implement the Development Plan

In practice, the Plan and the Strategy are not always structured in such way to ensure that each plan is followed by a corresponding "strategy."

The Plan contains a stream of policy goals, which are stated in the Long-term Plan. The part of the Plan describing industrial sector development is detailed regarding the annual activity plan of the Directorate General of the Industry. On the other hand, the Strategy is monitored separately from the above context. These systems are recommended to be unified. In other words, the Strategy *should not be one of the policies and mechanisms* to accomplish the Plan, but it *should be the policies and mechanisms themselves*. In this connection, each goal of the Plan should have a corresponding strategy to achieve the goal.

(2) Need for Institutionalization of the Strategy

Both the Plan and the Strategy properly identify the issues relating to industrial development, with width and depth. Yet, many challenges have been inherited from the previous plans. However, in actuality, most of the challenges inherited from the previous plan, must have yielded some accomplishment in the previous plan period, and the goal in the current period must be

changed to reflect that. In order to follow up on the accomplishment properly, and reflect it in the next Plan, the implementation system of the Strategy has to be institutionalized, and updated as required.

A primary example is seen in that there is no permanent organization to implement the Strategy, despite the fact that the Strategy occupies an essential part of the mechanism to accomplish the Plan. Also, no activity cost is budgeted.

(3) Deployment of the Strategy to Actual Programs

While the Strategy identifies issues and specifies actions to be taken, it does not address specific programs. Many strategies still remain at the stage of fact-finding study and consultation among the relevant Government agencies and organizations. Also important is to specify the time table for implementation.

6.2.2 Recommendation on the Primary Challenges

The primary challenge for industrialization, as shown in the Plan and the Strategy, is already shown in the long-term objective, namely "to move away from overdependence on limited oil resources and achieve economic growth in the course of industrial diversification." The Strategy represents the Sultanate aptitude for taking up the challenge in the field of industrial development

Development of human resources and knowledge is recognized in the Strategy as the foundation for success in the challenge at the current of development stage.

(1) Transformation from an Oil-dependent Economy, and Industrial Diversification

The following should be the essential point of the policy for industrial diversification:

1. To use existing infrastructure in the most efficient way
2. To maximize the economic effect of use of oil and gas resources
3. To take steady steps toward the maximum use of alternative energy

While many investment projects achieve a good return, the rate of reinvestment in the country as a whole is not very high due to importation of producer goods and payments to foreign workers, etc. To ensure the efficient use of capital, therefore, the following policies need to be pursued.

1. Promotion of business startup and production by Omani people
2. Formation and development of inter-industrial linkages

(2) Creation of Opportunities for Business Startups and Employment *for Omani People*

While many businesses have been created in the country, together with employment opportunities, they have not necessarily created opportunities for Omani people. However, the situation cannot be improved only by offering jobs for local people. Vocational training cannot be a complete solution. Similarly, restriction on employment of foreign workers can have an adverse effect on companies in terms of competitiveness.

While the Strategy proposes a variety of instruments to implement employment-related policies, actual programs and their implementation are largely left to the Ministry of Education and the Ministry of Manpower. Human resource development can be accomplished effectively in the actual working environment that provides practical learning experience, rather than a pure educational or training environment. It is therefore desirable to implement a program that provides such training opportunities. In particular, the MOCI needs to give priority to such a program to facilitate practical training for Omani workers, as a formal institution outside ordinary education and training.

6.2.3 Individual Policies

(1) Establishment of Strategic Priority Areas for Industrial Development, and Promotion of Investment Providing Incentives

Government designates a priority area because it is generally responsible for development of industrial infrastructure and energy supply and is therefore expected to send a clear message on its preference relating to resource allocation plans, including support programs, from the viewpoint of ensuring effective support for the private sector's activities. As a result, a priority area is selected from the areas that have already received public support by focusing on those that are expected to serve as a change agent or a vanguard for transformation or expansion.

It is important to define the areas of priority, categorizing the objectives in setting the prioritiesy so that the government agency in charge of implementation can make the strategy into the detailed policy measures and programs. The proposed prospective and priority areas can be classified into the following groups according to the policy objectives.

1) Industrial areas for which investment and business development should be encouraged

1. ICT related sector
2. Downstream sector for heavy and chemical industries
3. Sectors using nonmetal mineral resources (as new areas)
4. Sectors engaged in transshipment, assembly, quality adjustment, and repackaging (as new areas)

2) Industrial areas for which the government should carry out development support projects

1. Machining industry
2. Plant engineering industry
3. Packaging materials industry

3) Industrial areas for which research and development should be encouraged

- Alternative energy related manufacturing

4) Industrial areas for which transformation (fundamental reforms) should be encouraged under support programs

1. Construction industry
2. Food industry
3. Household goods industry
4. Tourism
5. Sectors using nonmetal mineral resources (as existing areas)
6. Sectors engaged in transshipment, assembly, quality adjustment, and repackaging (as existing areas)

Specific policies and programs are described in 6.3. Also, policies and programs relating to SMEs are discussed in 7.2 – 7.3.

(2) Adoption of Comprehensive and Effective Policies for Development Of Science- and Knowledge-Based Industries

The Strategy basically covers policies relating to promotion of the IT industry, IT education, and dissemination of IT to governments. From the industrial development viewpoint, however, dissemination of IT to industry should be emphasized, together with promotion of IT-related SMEs. See 6.3.5 for details.

Knowledge-based industry is not limited to the ones using IT. As companies in Oman are generally required to explore and meet niche demand in order to maintain competitiveness, while avoiding competition with mass-produced, low-priced products, they need to improve expertise in the areas of product development, packaging, design, and marketing. Government policies and programs to support the acquisition of such expertise are considered to be one type of promotion of knowledge-based industry. See 6.3.2 for details.

(3) Reforming of the Government Mechanism to Provide Soft Loans

This is concerned with SMEs. As SME finance requires special credit supply techniques, the Strategy tries to address the need for improvement of the ability of financial institutions to provide soft loans for ODB and SMEs. It should be noted, however, that the poor rate of

repayment of government loans in Oman is attributable to problems other than credit management techniques. An institutional reform appears to be required to change such attitude. See 7.3 for details.

(4) Support for Reorganization of Companies Facing Difficulty

The implementation mechanism is well developed, including an organization, and is capable of providing comprehensive support. By accumulating company information obtained from this mechanism, a company credit information system can be developed, including information on 150 companies that has been collected under the PRICE Study.

(5) Improvement of Services and Industrial Incentives to the Levels Equal to those Offered iIn Neighboring (Competing) Countries

There are several issues that require improvement, so that the improvement in the first stage should be started prior to the overall improvement.

The items are classified into improvement of the business environment. rationalization of government involvement and burden, and industrial promotion.

(6) Reinvigoration of R&D Activities

To accomplish the goals, “conversion to the knowledge based industry” and “challenge for sustainable development,” development of testing and inspection functions and R&D activities required for product development and development of packaging technology are essential, together with related technical assistance. This is correctly identified in the Strategy. For “promotion of investment and business startup in strategic fields,” some areas require verification of feasibility of alternative energy sources for which commercial operation has not started, and joint R&D projects with industries such as verification of usability of energy saving building and construction materials in the Middle East. Details are discussed in 6.3.3.

From the standpoint of support for research and development in relation to industrial development, further improvement is desirable in the following areas.

1. Advice on the basis of analysis conducted by testing laboratories and analytical assistance in the product development process
2. Development of an information database based on R&D results and provision of “seeds” information
3. Intermediary function to promote joint research by companies and research organizations (including universities)

In addition, the Strategy should include the upgrading of capability in the fields of product development, development of packaging technology. See 6.3.3 for details.

(7) Implementation of Export Strategy for Non-oil Products Made in Oman

So far, OCIPED has been supporting export promotion for selected fields and products, rather than provide general market study and information service. This focused approach has been proven to be highly effective for small scale industries in Oman. In the future, similar efforts are expected to be taken for the prospective areas, so as to back up export promotion efforts in relation to the prospective products by collecting and feeding relevant market information.

(8) Development and Application of a Legal Framework in the Fields of Commercial Trade and Competition

In promoting conversion to knowledge-ased industry and dissemination of IT to industries, legislation relating to protection of intellectual property is considered to be particularly important.

(9) Harmonization Between Economic Development and Environmental Regulation

In this aspect, it is important to ensure that individual companies understand environmental regulation and make necessary preparations, by providing information and ensuring transparency of the regulation process.

(10) Government's Leadership in Training of Omani Entrepreneurs

(11) Human Resource Development Targeting Omani People to Increase their Rate of Business Participation

These policies are not limited to education and training and consist of elements that embrace broader fields. They should therefore be addressed through active participation of industries. For this, the MOCI's leadership is essential.

6.2.4 Recommendation on Capacity Enhancement of the Implementation Body of the Strategy

(1) Establishment of Industrial Councils

Efforts should be made to promote accumulation of knowledge of and experience in industrial development within the MOCI and the industrial sector, with a view to strengthen the implementation system. At present, foreign consultants are employed for most aspects of policy implementation. While knowledge and experience are thereby gained by the consultants, they are not effectively transferred to the MOCI or industry. For the MOCI, a better arrangement is to organize industrial councils according to the major category of development

policies under active participation of related industries. In the process, elaborate discussion can be made on implementation of policy objectives, while using outside consultants for data collection and supply as well as compilation of council proceedings. This framework led by the MOCI and industry would be much more effective in promoting accumulation of knowledge and experience by the two parties. Also, considering the fact that there are excellent Omani industrialists and managers, their experience should be respected and mobilized.

(2) Capacity Building of Directorate General of Industry

The Directorate General of Industry, which is responsible for leading implementation of the Strategy, should enhance its capability to understand the current state of industries, including problems facing them.. They also need to have knowledge of industrial policy as well as knowledge of and experience in policymaking. Specifically, expertise in the following areas is essential.

1. Updating of knowledge of industry (establishment of specialties in terms of industrial areas and contact with related organizations and companies; the Year Book constitutes a major step toward the goal)
2. Establishment of a relevant knowledge base (understanding of related laws, industrial standards, intellectual property, and industrial statistics)
3. Understanding of industrial policy
4. Accumulation of information in a usable form
5. Accumulation of experience on policy formulation (compilation of white paper and monitoring)
6. Understanding of management of individual companies

6.3 Recommended Policy Measures and Programs Based on the Strategies for Industrial Development

Tthe position of the Government is to support voluntary efforts of the private sector in the industrialization process, and therefore, its basic industrial development policy should focus on the development and upgrading of the business environment, including infrastructure (see 6.3.1). In addition, the government should implement more aggressive policies and programs to encourage or facilitate private initiatives conducive to industrial development (see 6.3.2 through 6.3.4). Generally, these policies and programs do not target a specific industry or field but aim to back up activities by the private sector. Thus, they can be viewed as soft infrastructure. Then, for the industrial areas that are considered to be critical in future industrial development but which development cannot be effectively promoted by the above policies and programs (“priority areas”), additional policies and programs focusing on them need to be provided (see 6.3.5).

On the other hand, for SMEs that are disadvantaged in comparison to large companies because of small size and other factors and that cannot rely on the market mechanism alone to maintain competitive position, special policy consideration is required as part of industrial policy, including government support in line with the above mentioned development strategy (see 7.2).

Furthermore, small enterprises (including microenterprises) and entrepreneurs should require special treatment from an additional viewpoint (relating to social policy), and special support programs should be called for accordingly (see 7.3).

Table 6.3-1 General Framework of Industrial Development Policies and Programs by Target Industry Type

Target:	Large enterprises (including smaller established companies)	Medium-size enterprises	Small enterprises / microenterprises	Small entrepreneurs
Policies and programs covering industrial development in general (6.3.1～6.3.4)	✓	✓	✓	✓
Policies and programs targeting priority industries (6.3.5)	✓	✓	✓	✓
Policies and programs targeting SMEs (7.2)		✓	✓	✓
Policies and programs targeting small enterprises / microenterprises and small entrepreneurs (7.3)			✓	✓

6.3.1 Industry-friendly Business Environment

(1) Objective and Outline

Tthe existing infrastructure cannot keep up with the rapid pace of industrial development, and expectations for further infrastructure development and service upgrading hae been voiced by many companies.

It is recommended to take action on items that can be immediately dealt with, while taking alternative measures for difficult ones.

(2) Contents

1) Ports and harbors

- Streamlining of unloading operation at Muscat Port
- The lowering of handling charges and fees at Salalah Port
- Expansion of general cargo handling capacity at Salalah Port

2) Electricity charge

- Adoption of a reduced summer charge

3) Small enterprises and microenterprises

- Ease of restriction on employment of foreign workers
- Mitigation of negative impacts of rising land rent in Muscat

(3) Factors Necessary to Be Considered in Planning the Measures

It is essential to understand the nature and real cause of the issues before preparing the measures to solve the above issues, instead of simply preparing countermeasures. Some issues may be solved if the direct countermeasures are prepared, while others require set of measures to come to the real solution.

In the latter case, it is advised to propose the measures to be taken in the near future, while assuming the final solution will be worked out over the longer-term.

6.3.2 Shift to Knowledge-Based Industry

(1) Objective and Outline

Because of the small scale of local and neighboring markets, Oman cannot enjoy a competitive advantage in terms of economies of scale, except for the areas where it has a good cost advantage in terms of raw material and utilities.

Meanwhile, manufacturing industry is facing intensifying competition worldwide as hardware production has reached very high levels in terms of technology, volume, and cost. Instead, software (or additional value) incorporated into (represented by) hardware is increasingly becoming a differentiating factor for sustainability and prosperity.

Upgrading the ability to explore or create a new market is critical for Omani companies if they are to expand into the international market, and time has come to make conscious efforts in that direction.

Shift to knowledge-based industry is the key for promoting such efforts.

Tthere is a competitive threat for Omani companies so long as they serve the local markets, for the quality of mass market products will likely be improved as seen in developing countries that went through the industrialization process. It is therefore imperative to explore export markets by leveraging their strength that has been fostered through the domestic experience.

This policy aims to deliver broad programs that help companies to obtain capabilities required for exploring export opportunities.

(2) Project Description

1) Dissemination of success stories (case studies)

The program is designed to introduce cases studies relating to knowledge-based management to individual companies for the purpose of inspiring and encouraging business development by pursuit of niche opportunities.

2) Comprehensive support for R&D and product development activities

The program is designed to provide technical and financial support for companies doing R&D and product development. It will be financed by a special fund established for the purpose.

3) Creation of a Loan Scheme Targeting Equipment Modernization

Modernization (modification) of equipment is required to develop knowledge-based industry capable of market creation. This may entail substantial investment. Note that equipment modernization leads to the improvement of the working environment and the enhancement of employment opportunities for Omani people.

4) Other Programs

a) Creation of testing, inspection and R&D functions and provision of technical advice on the basis of actual tests and inspection

b) Dissemination of the design process

6.3.3 Promotion of Investment and Business Startups in Strategic Areas

(1) Objective and Outline

The primary purpose is to encourage investment and business startups in areas where vigorous business activities are not seen but investment is strategically desirable.

(2) Contents

Typical industrial areas, which require investment and business startup with priority, are described as follows.

1) Development of the downstream sector for heavy and chemical industries

First of all, intermediate products are already produced on a commercial basis, leaving little room for new downstream development. Final products in petrochemical and chemical (natural gas based) sectors are plastics. If a manufacturer of plastics products is to locate in Oman, it will not be able to maintain competitiveness so far as it targets the local market (including other GCC countries). Otherwise, it will face fierce price competition with mass produced imports. Again, it has to develop niche products that can be clearly differentiated from mass products.

As for the downstream sector for the aluminum smelting, intermediate products, when manufactured, can be supplied to existing manufacturers of aluminum products and then to other markets, so long as they are cost competitive. Also, the aluminum processing industry may attract new entrants. It should be noted, however, that they need competitiveness other than price if they try to serve a distant market.

The same thing can be said about the steel industry. In all the cases, therefore, Omani companies need to offer comparative advantages other than price, in consideration of the relatively small local market, while companies in the neighboring countries have a similar locational advantage.

2) Use of non-metal mineral resources

Oman is reportedly endowed with a variety of non-metal mineral resources, and those exploited on a commercial basis are lime, gypsum, marble, and crushed stone.

Efforts should be made to develop and market higher valued added products from available resources, rather than the materials itself.

3) Processing and repackaging industries leveraging the country's geographical advantage

Clearly, Oman's geographical advantage cannot match Dubai's position as a major transportation hub having a variety of functions. Thus, strategic use of Oman's locational advantage should be conceived in consideration of the presence of the dominant hubs in the same region.

A conventional method to use a country's geographical advantage is the establishment of a free zone or a free trade zone.

Availability of land continues to offer further industrial development opportunities, whereas natural gas resources are increasingly limited to narrow the choice of potential industries.

They cannot simply rely on the country's strategic location, which is one geographical advantage but does not constitute comparative advantage by itself. As discussed earlier, the country is not suitable for mass production because of the small market size. The geographical advantage should be combined with industrial efforts in relation to innovative product development and marketing strategy.

6.3.4 Challenge for Sustainable Development

(1) Objective and Outline

At present, Oman's manufacturing sector relies almost entirely on foreign technology and makes few efforts to develop or upgrade on its own.

This policy element, therefore, aims to foster industrial capabilities required for spontaneous and sustainable development. Note that such capabilities should be transferred to not only companies but also Omani engineers and technicians.

(2) Project Description

Under the policy agenda, the following two programs are recommended.

1) Establishment of a central metalworking and machining workshop, including a foundry

This program is designed to establish a metalworking and machining joint venture with the government's capital subscription and cooperation of companies that have high levels of metalworking and machining technology to be operated on minimum/ non-profit basis. The joint venture will be used as a central place for technology transfer in the relevant areas and will hire foreign engineers and technicians in the initial stage of operation. It will also receive around five Omani people each year as special trainees given government scholarships to provide field training for around seven years. These trainees who have completed the training program (subject to an annual test with extension of the program period for those who have failed it) will be certified as a "specially trained engineer/technician under the national program."

2) Plant engineer training program

Under the program, around five special trainees with government scholarships will be

accepted from among college graduates and company workers with specific experience (including engineers and technicians working for the three engineering firms). With cooperation of PDO, they will receive field training for around seven years. These trainees who have completed the training program (subject to an annual test with extension of the program period for those who have failed it) will be certified as a "specially trained engineer/technician under the national program."

(3) Key Considerations Relating to Program Implementation

It is important to ensure that the special trainees who have completed the program possess a required set of knowledge and skills by evaluating them in strict accordance with preset criteria and standards, i.e., even if no one can meet requirements.

The "specially trained engineer/technician under the national program" to be certified for these programs should be widely recognized in the country as having professional status and qualification to lead the technology trends in the country.

6.3.5 Sector Specific Recommendations for the Priority Areas of Industry

(1) Objective and Outline

This policy element aims to create an impetus for development of priority areas, particularly by combination with other programs.

(2) Project Description

1) Industrial development seminar for the downstream sector for heavy and chemical industries (existing, under construction, and being planned)

The seminar is designed to advertise business opportunities in relation to downstream development and to give guidance to potential investors. In coordination with the program to provide technology and market information (as discussed earlier), it will ensure collection of information and continuous support.

2) Promotion of IT used by companies

2)-1 IT promotion program for companies

A special campaign will be made to promote use of IT to companies, especially SMEs. It will be accompanied by a loan program to provide necessary funds for SMEs.

2)-2 Software development support program for IT-related startups

The program will be implemented concurrently with the above IT promotion program and

is designed to encourage business startups relating to development of IT software.

3) Joint verification and research project on optimum systems for solar and wind power generation

The project will be conducted jointly by industry, academic circles and government to perfect solar and wind power generation systems optimized for commercial operation in Oman (and other GCC countries) through field verification tests.

4) Central metalworking and machining workshop project
- See 6.3.4. (2)-1).

5) Special training program for plant engineers and technicians
- See 6.3.4 (2)-2).

6) Packaging technology center

The center will perform, among other things, the following functions and provide consultation, guidance and support services relating to improvement of packaging for SMEs.

1. Contract laboratory testing for packaging materials and technical advice on the basis of the results
2. Testing relating to a recommended consumption period
3. Consulting service relating to packaging materials
4. Collection of information on packaging technology and materials
5. Proprietary research
6. Packaging technology study group
7. Contract packaging

6.4 Recommendation on Regional Industrial Development Plans in Selected Areas

This section recommends the basic direction of regional industrial development plans in Sur, Al Buraymi and Nizwa, from the viewpoint of "Prospective and Priority Areas of Industrial Development and Their Development Strategies" which was presented in 6.2.

The only available regional development plan targeting specific regions or areas is "the target industries to be promoted in the respective industrial estates (IE)". The strategy was formulated in 1998. The rationale for the selection of target industries is not available. Further, the strategy is not appropriate to be reviewed, with significant change in the business circumstances.

As for Sur, the Supreme Committee for Town Planning (SCTP) has taken up a step towards contract on development of the Sur Industrial Master Plan. On the other hand, the study on regional industrial development plan of Nizwa and Al Buraymi has just started as a part of that of Oman National Special Strategy Plan.[4]

6.4.1 Regional Industrial Development for Sur

(1) Existing industries

In the region, 26 companies are engaged in food processing, accounting for 45% of the total number of manufacturing establishments. They consist of 9 bakeries, 4 marine products processors (operated by fishery companies), and 7 ice and drinking water makers. The second largest subsector is the non-metal mineral products industry (mainly construction materials) that consists of 13 companies. These two subsectors account for a combined total of 67% of the total number of establishments in the manufacturing sector. Other subsectors include wood products, printing, metalworking products, and other products that meet local demand. There is no company in the chemicals and machinery industries that serve a large market (except for LNG and urea fertilizer companies engaging in export). Micro enterprises with less than ten employees account for 54% of the total (26 of 48), far above 34% on the national average. In other words, industries based on the local demand represent a major part of the region's economic base, except for LNG and related companies operating in a recently developed Sur Industrial Estate (Sur IE).

(2) Advantages and constraints of Sur for industrial development

Following examines advantages and constraints of industrial development in the prospective and priority industrial areas discussed in 6.2, in Sur.

[4] Information from SCTP

Table 6.4-1 Advantages / Constraints of Sur for Development of the Prospective Industrial Areas

	Highly advantageous	Advantageous	With significant constraints
(1) Manufacturing industries to meet the increasing demand in Oman and neighboring countries			
1) Construction related		✓(*1)	
2) Processed food		✓(*1)	
3) Goods of daily necessity character		✓(*1)	
4) Tourism related	✓		
(2) Manufacturing industries leveraging an existing industrial base, or prospective resources			
1) Downstream areas for existing and planned heavy and chemical industries			✓
2) Areas using non-metal mineral resources			✓
(3) New strategic development areas			
1) ICT related industries		✓(*2)	
2) Energy alternatives to oil and natural gas			✓(*3)
3) Areas leveraging advantageous location of Oman		✓(*4)	
(4) Supporting sustainable industrial development			
1) Metalworking and machining work			✓(*5)
2) Plant engineering			✓(*5)
3) Packaging materials			✓(*5)

(Notes)
*1: Mainly meeting local demand, with some degree of concentration and not requiring new investment promotion.
*2: To promote use of IT among local companies.
*3: Low energy density for solar power generation due to cloudy weather
*4: Assuming construction of a small and general cargo port for export to India, etc.
*5: Local demand cannot be expected.

A certain industrial base has been established for some existing industries, such as construction materials and members (handrails, gates, fences, etc.) and food processing, where the

number of companies are expected to increase in the future with demand increase. Currently, however, there seem to be few advantage in Sur except for available raw materials, to attract larger companies in these industries, which serve a national market.

A possible area is wood doors and other building materials, which are specialty products in the area and can expect larger market opportunity due to the opening of expressways to help improve access to Muscat.

Also, the development of a food processing industry using fish (e.g., smoking and drying) can be expected in light of the fact that there are a number of fish distributors in Sur, which buy products from fishermen in a coastal area around Sur. For these industries to grow, however, market development efforts are required, including product development for tourists who visit Sur.

In the tourism related areas, consideration should be given to the development of Sur as a tourist gateway to tourism resources in the southeast coastal area and in the Sharqiya region, developing souvenir products targeting the tourists.

PEIE's plan to attract priority industries is focusing on natural gas related industries. However, as a LNG plant is already in operation, it will be difficult to attract more companies or projects that consumes natural gas in large quantities. Also, LNG and nitrogen fertilizer are entirely exported, and prohibit the development of related industries locally.

As for non-metal mineral resources, Sur has some reserves, as seen in other regions, but it is not suitable for a large project because it is remote from the major consumption area.

In the ICT industry, small enterprises engaged in software development will have opportunity, but the market is fairly small and mainly consists of small enterprises and micro enterprises only.

A major geographical advantage lies in proximity to India, including the development of business opportunity based on the interchange of human resources. However, the provision of a favorable business environment, such as FZ, and construction of a general cargo port will be required.

(3) Recommendations relating to an industrial development plan and its realization

1) Development of a gateway for tourism development and products targeting tourists

A gateway facility is recommended to be constructed within the industrial estate in order to attract tourists who use the expressway, and specialty products be developed to sell them at the facility, such as:

- Processed marine products (dried or smoked)

- Traditional medicine, cosmetics, and soaps (e.g., Antique Kohl, Myrrh Crystal, Sandalwood oil)
- Others

2) Support for startup or inducement of industries serving local demand

Establishment of an incubator facility is recommended in the industrial estate to support the startup companies that serve local demand, and the required support staff should be assigned from the National Incubator Center which was recommended in 7.3.2.1.

3) Startup support for small IT companies

A facility (office) to support small companies providing service for local industries, typically software development, should be provided within the industrial estate.

4) Industrial development targeting India

A part of the industrial estate is recommended to be designated as a free zone to attract SMEs from India. It should be accompanied by construction of a general cargo port that can accommodate small ships for direct transport service to and from the west coast area of India[5].

In this conjunction, a prospective area is found in glass and ceramics industries with medium-level energy consumption. Also, repacking of food by using Oman's packaging technology seems to be viable.

6.4.2 Regional Industrial Development for Nizwa

(1) Existing Industries

In the Ad Dakhliya region centered on Nizwa, there are 63 manufacturing companies, which represent 9% of the country's total. 35 manufacturers are small enterprises and micro enterprises with ten or less employees. Manufacturers of non-metal mineral building materials account for the largest share (25 enterprises), followed by that of metal products (14 enterprises), and food and beverage (9 enterprises). Most of them are those with less than ten employees (13, 8 and 5 enterprises, respectively in the above subsectors).

(2) Advantages and constraints of Nizwa for industrial development

Following examines advantages and constraints of industrial development in the prospective and priority industrial areas discussed in 6.2, in Nizwa.

[5] A detailed feasibility study will be required.

Table 6.4-2 Advantages / Constraints of Nizwa for Development of the Prospective Industrial Areas

	Highly advantageous	Advantageous	With significant constraints
(1) Manufacturing industries to meet the increasing demand in Oman and neighboring countries			
1) Construction related	✓(*1)		
2) Processed food	✓(*1)		
3) Goods of daily necessity character		✓(*2)	
4) Tourism related	✓(*1)		
(2) Manufacturing industries leveraging an existing industrial base, or prospective resources			
1) Downstream areas for existing and planned heavy and chemical industries	✓(*4)		
2) Areas using non-metal mineral resources	✓(*1)		
(3) New strategic development areas			
1) ICT related industries		✓(*3)	
2) Energy alternatives to oil and natural gas			✓
3) Areas leveraging advantageous location of Oman			✓
(4) Supporting sustainable industrial development			
1) Metalworking and machining work			✓(*5)
2) Plant engineering	✓(*4)		
3) Packaging materials	✓(*6)		

(Notes)
(*1) Availability of raw material resources (including tourist attractions in the case of tourism industry) can offer a major advantage.
(*2) Mainly meeting local demand, with some degree of concentration and not requiring new investment promotion.
(*3) To promote use of IT among local companies.
(*4) Development leveraging the advantage as the oil drilling industry cluster.
(*5) Local demand cannot be expected.
(*6) With increasing demand from food industry.

As the oil drilling industry cluster has been formed in Nizwa, industrial development leveraging the advantage of industry cluster should be considered as one of the strategies. Namely, promote concentration of the industries relating to oil drilling in Nizwa, together with support organizations, and then support development of industries encouraging application of the specific technology and professional service know-how to other industrial areas.

Meanwhile, in the case of other established industries of building materials and members (handrails, gates, fences, etc.), and food processing subsectors, there are considerable number of enterprises already in exist, and further increase in the number of enterprises can be expected accordingly with the future increase in demand in the local markets. In addition, they also have potential to attract investment targeting for the national or regional (neighboring countries) markets, because of proximity to non-metal mineral resources or availability of agricultural produces. Such investment potential is suitable particularly for SMEs because of a relatively small size of operation, rather than international investors. However, it is important to note that intensive R&D support relating to product development and advanced packaging technology are required for the government to help SMEs to go beyond their present territory (limited local market), and explore new markets in exports.

In the field of tourism, it is recommended to develop Nizwa as a regional center for tourism, while encouraging handicrafts and other product industries targeting the tourists (such as earthenware, textile, food, and agricultural produces).

In the ICT industry, small enterprises engaged in software development will have opportunity, but the market is fairly small and mainly consists of small enterprises and micro enterprises only.

(3) Recommendations relating to an industrial development plan and its realization

1) Promotion of cluster development of the oil drilling industry cluster

Promote concentration of oil drilling and related industries (such as production and supply of related materials, assembly and repairing of equipment and components, processing and machining of parts, engineering service relating to oil drilling and pipeline transportation, transportation of heavy articles, etc.), together with the related support functions of research and development, and testing, and metalworking and machining services, and encourage deployment of the expertise and technology thus concentrated, to the related industrial areas for expanded industrial activities.

To accomplish the above objective, a space is recommended to be provided in the industrial estate to be used by the testing institutions (including the laboratories operated by private

company), together with service that can be used commonly by the testing institutions. Also, it is recommended to establish an incubator facility to encourage new business startups using the expertise and technology for the development of relevant industrial fields.

2) Creation of a tourist center as a hub for the visitors, and encourage development of products targeting tourists

A tourist center facility is recommended to be established in the industry estate to attract tourists who visit various attractions in the area, while products featuring local materials or cultures should be developed for sales at the center, such as.

- Processed food using agricultural produces harvested in the surrounding areas
- Development of products targeting tourists, including those made of traditional earthenware and textiles
- Others

3) Support for startup or inducement of industries of food processing and production of building materials from non-metal minerals serving local demand

Establishment of an incubator facility is recommended in the industrial estate to support the startup companies that serve local demand, and the required support staff should be assigned from the National Incubator Center which was recommended in 7.3.2.1.

4) Startup support for small IT companies

A facility (office) to support small companies providing service for local industries, typically software development, should be provided within the industrial estate.

6.4.3 Regional Industrial Development for Al Buraymi

(1) Existing industries

In Adh Dhahirah/Al Buraymi, there are 60 manufacturing establishments, of which 28 are engaged in production of non-metal mineral products (building materials) that are supplied to the local market including the UAE. Other establishments also serve the local demand, including food and beverage (10), chemicals, plastics products, and metalworking products.

(2) Advantage / constraint of Al Buraymi for industrial development

Following examines advantages and constraints of industrial development in the prospective and priority industrial areas discussed in 6.2, in Al Buraymi.

Table 6.4-3 Advantages / Constraints of Al Buraymi for Development of the Prospective Industrial Areas

	Highly advantageous	Advantageous	With significant constraints
(1) Manufacturing industries to meet the increasing demand in Oman and neighboring countries			
1) Construction related	✓(*1)		
2) Processed food	✓(*1)		
3) Goods of daily necessity character	✓(*1)		
4) Tourism related	✓(*1)		
(2) Manufacturing industries leveraging an existing industrial base, or prospective resources			
1) Downstream areas for existing and planned heavy and chemical industries		✓(*2)	
2) Areas using non-metal mineral resources	✓(*1)		
(3) New strategic development areas			
1) ICT related industries		✓(*3)	
2) Energy alternatives to oil and natural gas			✓
3) Areas leveraging advantageous location of Oman	✓(*1)		
(4) Supporting sustainable industrial development			
1) Metalworking and machining work		✓(*4)	
2) Plant engineering			✓
3) Packaging materials	✓(*5)		

(Notes)
*1: Mainly serving the local and the UAE markets, with existing industries; while further promoting enterprises (particularly of SMEs) that intend to explore the UAE market with efforts of product and market development, etc.
*2: Industries in a downstream sectors for heavy and chemical industries in Sohar, targeting the UAE market
*3: To promote use of IT among local companies.
*4: Manufacturing of automotive parts (including that for the UAE market)
*5: To meet the needs of the food processing industry.

Al Buraymi does not have a specific advantage in comparison to Al Ayn, Dubai, and Sharjah, but certain industries can compete in the UAE market, as well as the local market, by taking advantage of their proximity to the market. These include processed food industries (including repackaging), and household goods (mainly of plastics products). However, without significant differentiation efforts compared with the competing goods in the market, they cannot penetrate into the market. These efforts include the development of a new product and upgrading of packaging materials, etc. Since they belong to the SME sector, the government should provide more aggressive support particularly in relation to R&D and packaging technology.

Currently, the UAE's border control policy seems to limit the local advantage significantly in terms of market proximity. If this policy continues, it is important to seek for countermeasures to ease the problem including development of cooperation with companies in the UAE side.

Subsectors making building materials from non-metal mineral resources are prospective industries that can penetrate the UAE market that is fairly large. Again, the UAE's border control policy acts as impediment. However, as there is large demand for these materials in the UAE, Omani companies will solve this problem with cooperating with the UAE side.

Also, exports of automotive parts (effectively, sales of imported parts to UAE customers who visit Oman) have reached substantial levels, and this practice is expected to continue, although sales activity may be restricted due to restriction on the sales right. In addition, there is potential demand for spare parts, together with a future prospect for manufacture or assembly locally.

On the other hand, restraint on energy and water supply is a decisive factor for limiting development, making it difficult for mass energy and water consuming industries to operate in Al Buraymi.

At present, 20 or more micro enterprises are engaged in recycling of waste plastics products in the UAE, although their operation is limited to collection, cleaning and crushing of waste plastics products. While their operation may be expanded to plastics processing by using the recycled products, they will likely encounter difficulty similar to that in the case of processing of newly produced materials, unless they develop advanced R&D and other differentiation capabilities, together with alliance with UAE companies.

The recycling of metal products is also limited to collection and classification. Again, the further processing of recycled metals will face a similar restraint as expected for plastics processing.

Finally, waste paper can also be recycled from the UAE, but its commercial viability is low due to the difficulty in obtaining water used for the recycling process.

As for the ICT and related industries, there is an opportunity for small companies that develop software for local companies, but the market is fairly small and mainly consists of the customers of small enterprises and micro enterprises.

(3) Recommendations relating to an industrial development plan and its realization

1) Support for startup or inducement of industries serving local demand (including the UAE market)

Establishment of an incubator facility is recommended in the industrial estate to support the startup companies that serve local demand, and the required support staff should be assigned from the National Incubator Center which have recommended in 7.3.2.1.

2) Startup support for small IT companies

A facility (office) to support small companies providing service for local industries, typically software development, should be provided within the industrial estate.

7 Review and Recommendation on Direction, Policy and Measures of SME Promotion

7.1 Current Situation of SMEs in Oman

7.1.1 SMEs in Oman

Officially, in Oman, medium size enterprises are defined as enterprises with between 10 and 99 employees , whereas small enterprises are defined as those with less than 10 employees.

The following three categories of enterprises are identified in general in Oman in view of their features according to their size of employment. Of these categories of the enterprises, the enterprises with less than 70 employees are found to have characteristics of typical SMEs The enterprises with less 30 employees have characteristics of small enterprises, having mostly no internal management organization, and having their management depending totally on the capability of the owner/manager.

(1) Enterprises with More than 150 Employees

Enterprises with more than 150 employees represent the leading medium and large-sized enterprises in Oman.

Except for the enterprises operated by the Government, enterprises established under a national policy, and foreign-owned enterprises or their affiliates, most of the enterprises in Oman have been established with the intention of substituting for imported goods. However, with significant inflow of the mass-produced, low-priced industrial products from China and India, those who have financial capability, though most of them are part of one or another group, shifted their target to the high-end and upper-middle markets, upgrading their business and avoiding the tough competition with the imported goods.

They have been successful to a considerable extent, differentiating their products from the mass-produced products. In the domestic markets, they are targeting high-end to upper-middle markets.

(2) Enterprises with 30 to 70 Employees

Enterprises with 30 to 70 employees display the characteristics of medium size enterprises.

Many enterprises with between 30 and 70 employees have also started their businesses on the basis of import substitution. However, they often failed to make the transition regarding their target consumers to the high-end and upper- middle markets. They have faced severe

competition from low-priced mass-produced imports, and suffered from difficulty in their business operation.

Most of these firms have corporate organization units specialized in marketing and accounting, etc. However, the management depends mainly on the personal capacity of the general manager, and the company organizations execute their responsibility only to a limited extent, resulting in difficulty in accessing the market and technical information. This has caused the failure to make an appropriately timed transition. In addition, the funds available for them are far insufficient.

(3) Enterprises with Less than 20 Employees

Most of the enterprises under this category have almost no company organization, and their management depend son the personal capacity of the general manager.

There are two types of business startup. One is the startup by an Omani national.

Another case is the business startup by expatriates, who had worked in Oman as a worker, and have found an appropriate Omani person as their sponsor. This type of business startup can be commonly seen for small operations, especially in the commercial and service sectors. Basically, these small enterprises target local demand in a limited geographical area, and discover niche demand in their own ways, often by leveraging community-based services. These small enterprises in the manufacturing sector are found in such areas as products related to building materials and parts, such as blocks and cement tiles, fabricated metal doors and fences, and wooden doors and handrails of stairs, etc.

Also, some small enterprises are operated as manufacturers serving the national market, rather than the local community. They are basically smaller medium-size enterprises. While some of them pursue a unique management style and have creativity (a traditional advantage of small enterprises), others barely survive without growth prospects, as they easily lose their traditional market to mass-produced imports.

(4) Startups Under the Public Support Program

As discussed above, there are increasing cases of business startups benefiting from various support programs implemented by the Government or other public organizations, in addition to SMEs that have been incorporated by entrepreneurs at their own initiative. Such startup cases are roughly divided into the following types.

1) Handicraft production by housewives
2) Catering service or low-level computer data processing service for young people looking for jobs

7.1.2 Number of SMEs in the Manufacturing Sector, and Their Distribution among the Subsectors

The MNE estimates that there are around 112,800 SMEs in the country (Table 7.1-1).[6]

Table 7.1-1 Number of SME by Economic Activity

	SME by Number of Employees			Estimated Total of SMEs	100+	Grand Total
	1-19	20-99	Not Stated			
Agriculture	80	6	159	245	8	253
Fishing	2	3	4	9		9
Mining & Quarrying	39	22	148	209	28	237
Manufacturing	10,839	201	9,623	20,663	84	20,747
Electricity, Gas and Water	46	5	46	97	2	99
Construction	4,345	160	10,745	15,250	132	15,382
Whole Sale, Retail Trade and Car Repair	24,136	344	24,735	49,215	101	49,316
Hotels and Restaurants	2,953	82	3,809	6,844	24	6,868
Transport Storage and Communication	614	58	2,182	2,854	22	2,876
Financial Intermediaries	438	58	441	937	19	956
Real Estate and Renting Services	1,852	79	3,921	5,852	33	5,885
Social Insurance	5	1	11	17	2	19
Health and Social Work	232	68	384	684	13	697
Community and Personal Services	395	17	303	715	4	719
Domestic Services	4,120	8	4,485	8,613	2	8,615
Not Stated	30	0	81	111		111
Unknown	19	0	435	454	1	455
Total	50,145	1,112	61,512	112,769	475	113,244

Source: MNE

The number of enterprises in the manufacturing sector, by company size, are shown in Table 7.1-2 (as of 2007; note that the number of enterprises with less than 10 employees was estimated from the MOCI's registration list in 2005).

[6] In this case, companies with less than 100 employees are considered as SMEs. Also, the company list based on the census includes 61,500 enterprises having an unknown scale of the workforce. On the other hand, the number of companies having 100 or more employees is accurately estimated and they are assumed to be SMEs for summation purposes.

Table 7.1-2 Number of Enterprises in Manufacturing Sector by Subsector and by Number of Employees

Subsector	Total	Number Enterprises by Number of Employee			% of Total		
		Over 100	10-99	Less than 10	Over 100	10-99	Less than 10
Food Product & Beverages	151	28	69	54	23.5	19.1	22.0
Readymade Garments	3	3	0	0	2.5	0.0	0.0
Products of Wood Except Furniture	35	4	6	25	3.4	1.7	10.2
Paper/Paper Products	13	8	5	0	6.7	1.4	0.0
Printed Materials / Recorded Media	37	2	26	9	1.7	7.2	3.7
Refined Petro-Products & liquid gas	15	3	10	2	2.5	2.8	0.8
Chemical/Chemical Products	47	11	31	5	9.2	8.6	2.0
Rubber & Plastic Products	46	4	41	1	3.4	11.4	0.4
Other Non-Metallic Products	183	21	85	77	17.6	23.5	31.4
Basic Metals	18	6	5	7	5.0	1.4	2.9
Fabricated Metal Products	102	13	40	49	10.9	11.1	20.0
Machinery & Equipment nec.	13	1	10	2	0.8	2.8	0.8
Electrical Machinery/Apparatus	13	4	8	1	3.4	2.2	0.4
Medical, Precision/Optical Instrument	1	0	1	0	0.0	0.3	0.0
Motor Vehicle, Trailers	6	0	3	3	0.0	0.8	1.2
Furniture Manufacturing	30	7	17	6	5.9	4.7	2.4
*Other Manufacturing	12	4	4	4	3.4	1.1	1.6
Total	725	119	361	245	100.0	100.0	100.0

Note: Data in 2007, except for data on enterprises with employees less than 10, which are in 2005.
Source: MOCI

The MOCI data do not include workshop-type and private enterprises.

7.2 Direction of SME Promotion in Oman

Four directions of SME promotion are proposed by taking into account industrialization in Oman and the role expected of SMEs.

(1) Promotion of SMEs Conducive for Diversification and Deepening of Industrial Development

1) Promotion of SMEs to form support industries

SMEs can characteristically respond effectively to the needs for flexible production or customized production. Promoting SMEs by focusing on such ability is considered to be effective in industrial development by fostering support industries that form a weak part of the country's industrial structure.

2) SME promotion for the benefit of supporting research and development

It will be the existence of enterprises covering diverse areas of industries that reduces the burden of costs of the individual enterprises for R&D and activates their R&D activities.

Promotion of SMEs is conducive for creating and nurturing SMEs, which will play diverse roles in the industries.

3) SME promotion as the means to diversify tourism

For tourism, development of large resort areas and hotels plays a decisive role in significantly increasing the tourist population. On the other hand, SMEs help the tourism industry to gain competitiveness by providing additional value to visitors in a variety of ways.

4) SME promotion in relation to the ICT industry

The ICT industry is a spawning ground for small businesses, such as computer programming service and creation of computer graphics software such as animations. Also, there are plenty of business opportunities in terms of subcontracting from large corporations.

(2) SME Promotion as a Measure to Nurture Industrialist Entrepreneurs

So far, most Omani entrepreneurs tend to be involved in industries as investors, and not as industrialists. Nurturing of industrialist entrepreneurs, who can identify the needs of new businesses based on their operations, is essential, considering that the SMEs are expected to play an active role in creating new businesses based on the needs and seeds identified through their operation, which leads to diversification and deepening of industries.

There are essentially two approaches to achieve the goal. The first is to invigorate existing businesses by introducing knowledge-based management techniques to SMEs in the manufacturing and service industries. This would aim to help them to obtain sustainable competitiveness and make a forward step toward becoming export-oriented companies.

The second approach is to guide young entrepreneurs and aspiring mid-career workers (middle managers, engineers, etc.) to start new businesses and seek employment in startups according to a new direction of industrial development.

(3) SME Promotion for Creation of Job Opportunities for Omani People

It is a well-known fact that the job creation capacity of SMEs is high, while the unit costs for the job creation by SMEs per job is low, compared to that of large enterprises.

However, most SMEs in Oman take advantage of the availability of skilled workers from foreign countries and opt for labor-intensive management. Yet, they do not contribute much to job creation for the Omani people.

To encourage job creation for Omani people, SMEs are expected to offer unskilled job opportunities, while establishing a working environment favorable to unskilled workers. This entails the shifting to the more automated and capital-intensive operation, i.e., mechanization to reduce the need for manual skills of foreign workers. (Note that it is imperative to train local

workers to obtain skills required on a mechanized shop floor.)

(4) Support for Development and Deployment of New Business Models in Small-Scale Commerce and Service Sectors

Thousands of small enterprises have been involved in the services related to the daily lives of the citizens.

These services, indispensable in community life, are mostly provided or operated by foreign workers, again failing to create jobs for Oman people.

To encourage participation by local people, introduce new business models, which could promote modernization and reduce dependence on specific skills, thereby to facilitate operation by local workforce. It will be useful for job creation in rural areas.

In this conjunction, care should be taken to encourage spontaneous growth of community-based businesses by supporting the modernization process, rather than imposing or reinforcing regulations such as restrictions on employment of foreign workers.

7.3 Proposals and Recommendations on SME Promotion Policies, Programs and Systems

In the case of SME promotion in Oman, it is necessary to consider the specific feature of SME management observed in Oman, in developing the support policy and measures for SMEs.

1) In the case of Oman, even the SME hires a manager who has knowledge and experience of the industry, and therefore, the needs for support in the field of technology and management is minimal. Rather, the technical and managerial support of the government should be focused mainly on small scale individual entrepreneurs for their business startup and operation.
2) However, the SME's capability to access to the information on markets and technologies are rather limited, and the government support in this field is vital importance.
3) Generally, SMEs in Oman can get loans for operation from the banks. In addition, local investors are available including those of other GCC countries.
4) However, for the small and micro scale entrepreneurs and enterprises, most of them are expatriates, they have difficulty in providing guarantee or collateral at the request of the bank, and loan access is very hard for them, as conceivable from the rushed application for the soft loan programs by the government for SMEs, and other loan programs specific to SMEs provided by other SME agencies.

5) Business startups and job creation have shown significant progress in Oman, but the startups of businesses by Omani entrepreneurs and creation of job for Omani workers are still to progress.

7.3.1 Policies, Programs and Systems for Promotion of Small and Medium-sized Enterprises

In connection with the general direction of SME promotion, key points in promotional efforts targeting the medium-sized enterprises are summarized as follows.

1) Promotion of industrial diversification
2) Encouragement of deployment to areas that require reinforcement in the context of the industrial structure, such as the formation of supporting industries and the development of downstream industries
3) Refocusing on improvement of competitiveness (as the current size of operation and management style will make competition with imported products more and more difficult)
4) Improvement of the working environment to create employment opportunities for Oman people (many of the medium-sized enterprises cannot retain local people for a long time due to the poor working environment, so that SME promotion does not necessarily lead to job creation)

To accomplish these policy goals, the following three programs are proposed.

Program	Policy objective			
	Promotion of industrial diversification	Encouragement of deployment to areas to be reinforced	Refocusing on improvement of competitiveness	Improvement of the working environment
(1) Business matching program for promotion of industrial diversification	✓	✓		
(2) Preferential treatment of SME products in government procurement and public works	✓	✓	✓	
(3) SME factory modernization support program			✓	✓

7.3.1.1 Business Matching Program for Promotion of Industrial Diversification

To promote diversification of industries and deployment into areas to be reinforced in relation to industrial development, the program will build a set of databases that can be shared and used by government and technical support organizations engaged in SME support as well as potential

entrepreneurs who intend to start up their own business.

7.3.1.2 Preferential Treatment of SME Products in Government Procurement and Public Works

The program is designed to require preferential treatment of products and services supplied by SMEs for government procurement or public works, thereby to increase business opportunities for SME products, including opportunities for improving competitiveness.

7.3.1.3 SME Factory Modernization Program

This program is designed to promote modernization of production facilities and equipment of SMEs, including mechanization, in order to improve cost competitiveness and the working environment, thereby to improve productivity and stability of Omani employees.

7.3.2 Recommendations on Promotion Policies, Measures and Systems for Small and Microenterprises, and Business Startups

Promotion of manufacturing enterprises of this size should focus on the encouragement of new startups in priority fields for industrial development, particularly for the interest of fostering industrialist entrepreneurs.

Not very many enterprises of this size are started by Omani people, probably due to the poor working environment, so that promotion of small enterprises does not lead to job creation for local people. Thus, efforts should be made to create business opportunities for Omani people, such as the upgrading of the business environment.

To accomplish these policy goals, the following three programs are proposed.

Program	Policy objective		
	Promotion of industrial diversification	Encouragement of deployment to areas to be reinforced	Improvement of the working environment
(1) Development of industrial estates for SMEs with an incubator function to support business startups and to foster industrialist entrepreneurs	✓	✓	
(2) Entrepreneurship education program	✓		
(3) Startup promotion program for small-scale commerce and service operators			✓

7.3.2.1 Development of Industrial Estates for SMEs with an Incubator Function to Support Business Startup and to Foster Industrialist Entrepreneurs

The program aims to support small business startups by Omani entrepreneurs. An incubator function is needed to support business startups in the prospective industrial areas for development, including the downstream sector for heavy and chemical industries, together with related supporting industries.

A small industrial estate having an incubator function will be established within industrial estates and will provide support in the business planning and preparation stages as well as in the initial stage of business startup.

7.3.2.2 Entrepreneurship Education Program

This education program is designed to encourage business startups by Omani people, while creating business opportunities for them.

7.3.2.3 Startup Promotion Program for Small-scale Commerce and Service Operators

The program is designed to develop a franchise business model to operate local-oriented small businesses in a more favorable environment and to encourage its dissemination among Omani people. In the process, the program aims to ensure transfer of business know-how to Omani entrepreneurs, while increasing the number of local employees.

7.3.3 Intensification of financing program for SME

Most of SMEs have been able to access to the ordinary loans of the commercial banks in the case of Oman, while the smaller-medium enterprises[7] and small/micro enterprises have difficulty in access to finance. In this context, different types of needs may be identified for intensification of financing programs for SMEs, depending on the types of SMEs, respectively. These are:

1) Smaller-medium enterprises, who have difficulty in providing collaterals demanded by the commercial banks, and
2) Small and micro enterprises, who have difficulty in preparing the viable business plan. For this type of enterprises (or business operation), provision of loan will not be effective without improvement of their business plan. Nevertheless, continued support for development of their businesses is particularly important, in view of business startups by Omani entrepreneurs.

[7] These are the SMEs with less than 70 employees in general. However, all of them do not necessarily have difficulty in access to finance. If these enterprises are defined as those with less than 30 employees, the definition is too narrow to represent the target SMEs.

7.3.3.1 Establishment of credit guarantee system for SMEs

The program is designed to establish a credit guarantee scheme as one of key elements for facilitating SME finance.

The program is to establish a credit guarantee system, which assumes strict appraisal of loan application, and covers selected industries.

The credit guarantee organization is assumed to be established under financial contribution by commercial banks, and the government. They will also provide working capital of the guarantee organization. Using these funds, the credit guarantee organization will guarantee repayment of loans made by the commercial banks.

In addition, a re-guarantee scheme will be established to back up the organization's guarantee service by maintaining insurance with the government to cover 70% - 80% of the amount to be indemnified in the case of default.

7.3.3.2 Government Soft Loan for Small Enterprises with Conditions of In-advance and Continuous Guidance on their Management

ODB provides soft loan to small and individual entrepreneurs for business startups. However, the non-repayment rate under this program has been as high as 18.5%. The high non-repayment rate is attributable mainly to limited business experience of the entrepreneurs, and insufficient market information, resulting in fail of business in a short period after startups.

This program is to prevent the early operation stage of small enterprises from the management fail, providing them with the government soft loan and management guidance as a package.

7.3.4 Other Recommendations Related to Development of Small Enterprises

7.3.4.1 Prospective industrial areas for small enterprises

Table 7.3-1 shows the prospective industrial areas for small enterprise promotion, among the prospective industrial areas for development (for detail, see 6.2), while suggesting the possible approach of intervention to support the development.

Table 7.3-1 Prospective Industrial Areas to Promote Small Enterprises

Prospective industrial areas particularly for small enterprises: / Prospective areas for industrial development	Manufacturing industries which base on community-based demand	Manufacturing industries which base on tourism related demand	Software development for local enterprises for use of IT	Commerce and service industries which base on community-based demand
(1) Manufacturing industries to meet the increasing demand in Oman and neighboring countries				
1) Construction related	✓(*1)			
2) Processed food	✓(*2)	✓(*4)		✓(*2)
3) Goods of daily necessity character		✓(*4)		✓(*3)
4) Tourism related		✓(*4)		
(2) Manufacturing industries leveraging an existing industrial base, or prospective resources				
1) Downstream areas for existing and planned heavy and chemical industries				
2) Areas using non-metal mineral resources	✓(*1)			
(3) New strategic development areas				
1) ICT related industries			✓(*5)	
2) Energy alternatives to oil and natural gas				
3) Areas leveraging advantageous location of Oman				
(4) Supporting sustainable industrial development				
1) Metalworking and machining work				
2) Plant engineering				
3) Packaging materials				
Proposed intervention by the government for support of the small enterprises	1) Business incubators with managerial and technical support system (see 7.3.2.1) 2) Entrepreneurship education program (see 7.3.2.3)	1) Development of gate way / visitor center facilities to attract the tourists 2) Business incubators with managerial and technical support system (see 7.3.2.1)	1) System to support customer development and business matching (see 7.3.1.1) 2) Promotion of IT use for SMEs (see 6.3.5)	1) Startup promotion program for small-scale commerce and service operators (see 7.3.2.3)

(Notes)
(*1) Particularly those serving individuals to build their houses
(*2) Bakeries, confectionary factories, fast foods shop, etc.
(*3) Convenience stores, specialty stores, etc.
(*4) Product development targeting tourists.
(*5) For local enterprises.

7.3.4.2 Recommendation on support system for small businesses

Considering the support for small enterprises in the various fields, the following support system is proposed:

Area of support	Support program / system	Person / staff to be contacted directly by small enterprises	Source of resource persons	Supervising agency / institution
Managerial	Business incubator (see 7.3.2.1)	Counselor	Consulting Firms	PEIE
		Advisor (*2)	Private companies	
Technical	Test, analysis, and consultancy service	Research / consulting staff of Industrial Technology Center	Industrial Technology Center	Industrial Technology Center
	Technical mentor program	Researcher of universities	University network	
Financial	Government soft loan program with managerial advisory service (see 7.3.3.2)	Counselor, or Business Advisor	Consulting Firms and Private companies	ODB

Notes:
(*1) Consultants who have sufficient knowledge on the existing SME support programs which are provided by the government agencies and other organizations.
(*2) Professionals / experts in a specific fields of management with business experiences

7.3.4.3 Registration of Small Businesses

In conclusion, creation of a new registration system specific for small enterprises is not recommendable. Nevertheless, following are recommended:

1) Implementation of periodical sampling surveys of small enterprises to study the business conditions of the small enterprises
2) Creation of an internal group-organization of small enterprises within OCCI

7.3.4.4 Promotion of small enterprises through linkages with large or medium enterprises

The support by the large enterprises should be expected for the following:

1) Encouraging registration of their staff, who have business experiences in a specific management or technical filed, to the Business Advisor registration system
2) Provision of test and analysis service to small enterprises, using their testing facilities
3) Participation to business forum among those from the different industrial areas, for exchange of business and technical information with small enterprises