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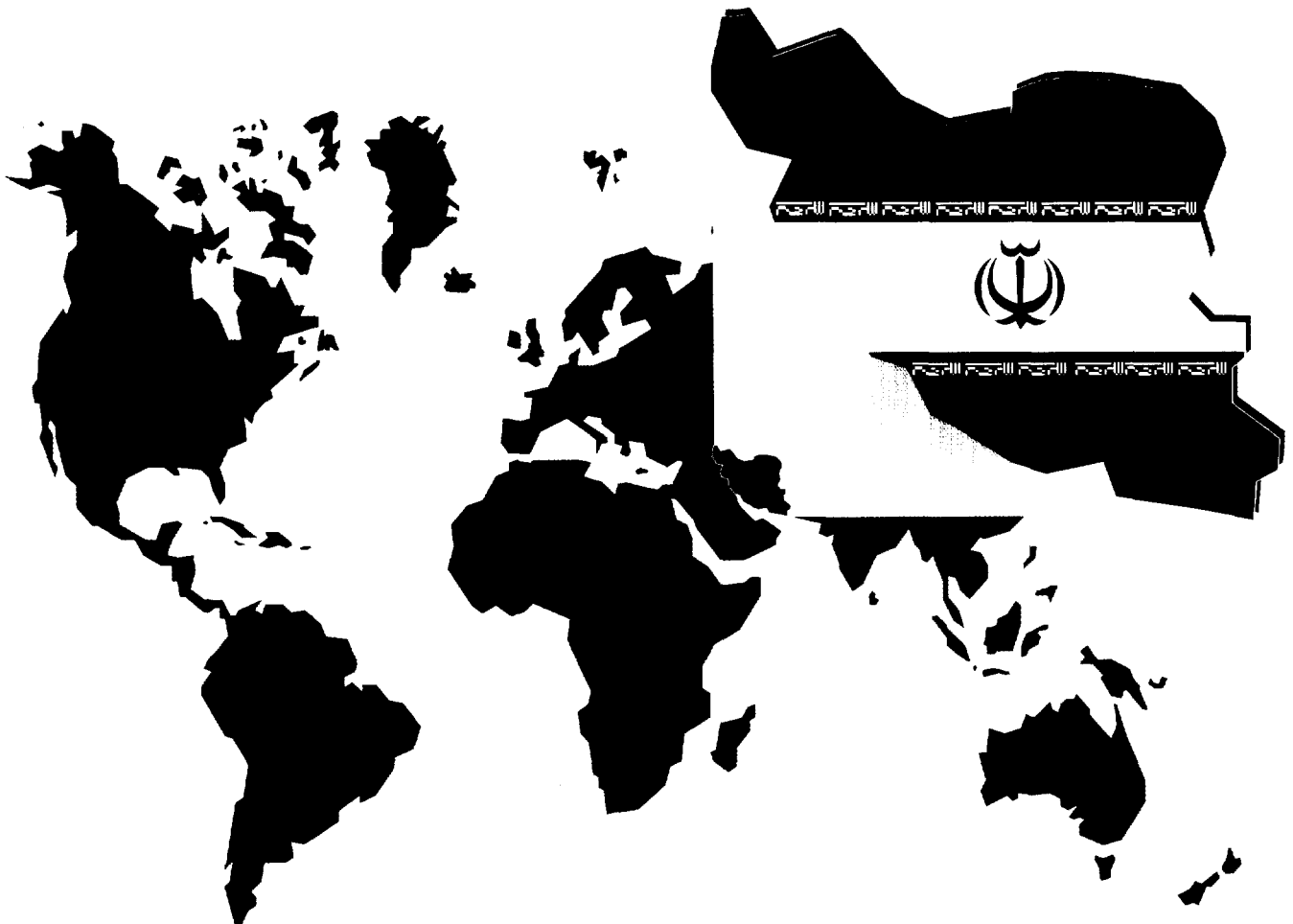
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Industrial Sector Survey on the Potential for Non-Oil Manufactured Exports

Islamic Republic of Iran



**Industrial Sector Survey
on the Potential for
Non-Oil Manufactured Exports
Islamic Republic of Iran**

REPORT

**Field Operations and Administration Division
Asia and Pacific Bureau**



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION



UNITED NATIONS DEVELOPMENT PROGRAMME

**UNITED NATIONS INDUSTRIAL DEVELOPMENT
ORGANIZATION**



**ISLAMIC REPUBLIC OF IRAN
INDUSTRIAL SECTOR SURVEY
ON THE POTENTIAL FOR NON-OIL MANUFACTURED EXPORTS
NC/IRA/94/01D/08/37**

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EXPLANATORY NOTES

References to dollars (\$) are to United States dollars, unless otherwise stated.

In tables:

Totals may not add precisely because of rounding.

Two dots (..) indicate that data are not available or not separately reported.

A dash (-) indicates that data are not applicable.

The following abbreviations are used in this publication:

ABS	acrylonitril butadiene styrene
ArPC	Arak Petrochemical Complex
BFTA	Baltic Free Trade Area
BIPC	Bandar Imam Petrochemical Complex
CCII	Chamber of Commerce and Industries of Iran
CEFTA	Central Europe Free Trade Area
CIC	Commercial Information Centre
CIF	Cost, insurance and freight
CIS	Commonwealth of Independent States
CKD	completely-knocked-down
CMC	carboxy methyl cellulose
CMEA	Council for Mutual Economic Assistance
DAP	diammonium phosphate
DMT	dimethyl terephthalate
DNV	Det Norske Veritas
DOP	dioctyl phthalate
DVA	domestic value added
ECC	Erection & Construction Co.
ECO	Economic Cooperation Organization
EDBI	Export Development Bank of Iran
EEZ	Exclusive economic zone
EGFI	Export Guarantee Fund of Iran
EIU	Economist Intelligence Unit
EPCI	Export Promotion Centre of Iran
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FDI	foreign direct investment
FFYP	First Five-Year Socioeconomic and Cultural Development Plan
FOB	free on board
FZHC	Free Zone High Council
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
GOR	gas-oil ratio
HACCP	hazard analysis at critical control points
HCPE	High Council for the Promotion of Exports
HDPE	high density polyethylene
ICCIM	Iran Chamber of Commerce, Industries and Mines
IDB	Islamic Development Bank
IMA	Industrial Managers Association
IMF	International Monetary Fund
IPC	Isfahan Petrochemical Complex

ISC	Iran Sericulture Company
KhPC	Khorasan Petrochemical Complex
KPC	Kharg Petrochemical Complex
LAB	linear alkyl benzene
LDPE	low density polyethylene
LIBOR	London Inter-Bank Offer Rate
LLDPE	linear low density polyethylene
LPG	liquid petroleum gas
LTF	long-term trade financing
MEG	mono ethylene glycole
MFN	most favoured nation
MTBE	methyl tertiary-butyl ether
NIEs	newly industrialized economies
NIOC	National Iranian Oil Company
NPC	National Petrochemical Company
NTBs	Non-tariff barriers
OECD	Organization for Economic Cooperation and Development
OPC	Orumieh Petrochemical Co.
OPEC	Organization of Petroleum Exporting countries
PBR	polybutadiene rubber
PC	polycarbonates
PE	polyethylene
PEPCs	Provincial Exports Promotion Committees
PET	polyethylene terephthalate
PIDEC	Petrochemical Industries Design & Engineering Company
PIIC	Petrochemical Industries Investment Company
PP	polypropylene
PS	polystyrene
PVC	polyvinyl chloride
R&D	research and development
RCD	Regional Cooperation for Development
RPC	rural production cooperative or Razi Petrochemical Complex as per context
SABIC	Saudi Arabian Basic Industries Corporation
SAN	styrene acrylonitril
SBR	styrene butadiene rubber
SFYF	Second Five-Year Socioeconomic and Cultural Development Plan
SKD	semi-knocked-down
SPC	Shiraz Petrochemical Complex
SPPD	Support Services For Policy & Program Development
STPP	sodium tri-poly phosphate
TFYF	Third Five-Year Socioeconomic and Cultural Development Plan
TPC	Tabriz Petrochemical Complex
TRIMS	trade related aspects of investment measures
TRIPS	trade related aspects of intellectual property rights
TSCF	trillion standard cubic feet
TSE	Tehran Stock Exchange
UN	United Nations
UNDP	United Nations Development Program
UNIDO	United Nations Industrial Development Organization
UR	Uruguay Round of Tariff Negotiations
USSR	Union of Soviet Socialist Republics
VAT	value added tax
WTO	World Trade Organization

PREFACE

The economy of the Islamic Republic of Iran (hereafter referred to as Iran) continues to depend heavily on exports of crude oil, petroleum products and natural gas for the bulk of its foreign exchange earnings. Although the relative share of export revenues accounted for by these hydrocarbons has declined gradually since the early 1980s, when it approached 95%, it still remains extremely high, reported at \$19.3 bn or 86% of the total in the year to March 1997 with an average spot price of some \$18 per barrel. In the following Iranian year to March 1998 these export proceeds had decreased dramatically to \$15.7 bn as a result of erosion in oil prices.

This over-dependence on oil and gas exports has rendered the country's economy highly vulnerable to fluctuations in international energy prices, which have fallen to below \$10/barrel in recent months, and has imposed a severe constraint on the Government during the past two decades. A diversification of the country's export structure through the concerted development of its export-oriented manufacturing capacity could offer a viable alternative, as also stipulated in the country's Second Socioeconomic and Cultural Development Plan, by increasing the resilience of its economy against external shocks, supporting employment creation and technological innovation, and adding domestic value to its rich natural resource base, thereby enhancing its overall economic performance

The realization of this potential is constrained primarily by the lack of international competitiveness, in terms of both quality and price, of many of the goods produced by the hitherto import-substituting manufacturing sector, accustomed essentially to serving a highly protected domestic market. A shift in orientation towards more discerning and demanding export markets will inevitably require these industries to strive for a substantial improvement in their competitiveness through such measures as the adoption of efficient process technologies, adherence to internationally recognized specifications, tighter quality control and improved packaging. In addition, concerted market research efforts must be deployed to identify appropriate market niches, both in industrialized and less developed countries, with a view to facilitating the access of Iranian products to these outlets through the enactment of appropriate domestic policy incentives and requisite industrial rehabilitation strategies.

The Study at hand intends to examine the issues involved in this complex process by first assessing the capacity of Iran's industrial sector to respond to these export opportunities. In particular, the Study seeks to examine non-oil manufactured products with a strong export potential, and thereby to provide a firm basis for the formulation of policy recommendations. These recommendations cover such areas as adjustments to the prevailing macroeconomic policy framework, the institutional support structure and, last but by no means least, the sectoral restructuring needed to enhance the competitiveness of the manufacturing industries.

To meet these objectives, the Study analyzes the supply and demand conditions for the expansion of Iran's non-oil/gas exports. With regard to the former, the Study reviews the structure and historical development of selected manufacturing sectors in the context of international trade to highlight the prevailing trends and to identify the prospects and potential for exportable products. This is accompanied by an in-depth appraisal of the existing institutional support structure and policy environment relating to industrial exports, with a view to pinpointing specific institutional and policy-induced bottlenecks. With regard to the latter, the Study seeks to determine, through the sectoral analyses provided in its final chapter, the export prospects for specific products manufactured in the various industrial sub-sectors generally deemed to possess a high potential for exports, namely agro-based industries (including food processing, fish and fish products, leather goods and textiles), building materials, petrochemicals and domestic appliances.

In this context it should be noted that the choice of the above sectors was largely conditioned by the resource limitations of the project. The inclusion of fisheries-based products reflected a desire to generate synergies with another UNIDO project on the fish processing industry in Bandar Enzeli currently nearing completion. The project team was aware of the large potential for exports in such important industries as chemical and cellulose products, ferrous and non-ferrous metals and metallurgy, power generation design and machinery, etc. Similarly, the project team also recognizes that international markets offer significant opportunities to Iranian suppliers in the fields of engineering and consultancy services, software development, design and construction and other emerging fields capitalizing on indigenous technical capabilities.

The principal objective of the Study therefore is to formulate specific and concrete recommendations for the introduction of measures deemed indispensable to enable Iran's manufactures to meet the cost, technical and quality specifications prevailing in the foreign markets. In this context the Study pays particular attention to the need for export-oriented industrial enterprises to acquire market intelligence to serve as a basis for upgrading technology, product and process design, production and managerial skills, and quality control standards conforming to the requirements of export markets. These recommendations are therefore addressed to Iranian policy makers, entrepreneurs, support institutions and the domestic and international investment communities.

The Study was carried out by UNIDO headquarters staff supported by a team of national Iranian experts with the close collaboration and support of the Ministry of Industry of the Islamic Republic of Iran and the Office of Resident Representative of the UNDP in Tehran. UNIDO headquarters staff drew up the terms of reference, determined the general orientation of the work, identified, recruited and monitored the work of the national experts, orchestrated the various inputs, finalized the Study and lastly drafted appropriate policy recommendations arising from its findings. The national experts, in turn collected the empirical information, conducted the sectoral assessments and prepared draft conclusions on the policy and institutional framework as well as those pertaining to specific export constraints at a sub-sectoral level.

SUMMARY OF FINDINGS AND RECOMMENDATIONS

A. Introduction

Despite the emphasis given by both the government and the private sector to the imperative of increasing non-oil exports, the actual level of non-oil exports during the last nine years has not matched expectations. During the FFYP (1989-94), only about 60% of the target was reached, and during the first three years of the SFYP (1995-2000), the rate of achievement improved to 65%. The same discrepancy exists between the planned level of imports and the actual figures, ranging from +25.5% in 1993 to an estimated -26.8% in 1998.

There are some 21 councils, bureaus, agencies, banks, and government departments dealing with promotion of non-oil exports, but their efforts have borne only modest results. The crucial question of why the achievements of Iran's drive to expand its non-oil exports have been limited remains unanswered. This Study will attempt to pinpoint some of the factors and identify the underlying constraints causing the disappointing and disproportionate results.

Apart from the sectoral constraints addressed in a subsequent chapter of this Study, an important cause of this unsatisfactory performance is the fact that Iran's international trade relations have traditionally been geared more towards imports than to exports. This has serious implications and imposes a number of obstacles on efforts to promote non-oil exports:

- Laws and regulations related to foreign trade, including tariffs, quotas, taxes, valuations, permits and authorizations are more concerned with imports than with exports.
- The transport infrastructure, including ports, roads and railways are basically conceived for imports.
- Entrepreneurs are more knowledgeable and experienced in the import than the export trade.
- The number of enterprises engaged in exports is far fewer than those engaged in imports.
- The exporters' exposure to foreign markets is largely limited to the export of carpets and dried fruits.
- The import trade has traditionally been more lucrative and profitable than the export trade.

Other important causes were identified by a comprehensive survey of leading industrial enterprises with export experience conducted in 1997 by the Industrial Managers' Association. A questionnaire covering 40 points was answered by these companies, and interviews were subsequently conducted with many of their senior and middle-level managers. The results of this survey, which were substantiated by the findings of this Report, revealed the following principal reasons for the relative success of these units in their export drive and the obstacles faced by them:

- The firms in question were confident that Iranian exporters could indeed succeed in opening up international markets, despite all existing obstacles;
- The past experience of management in dealing with foreign markets and importers, and the knowledge of their requirements, have been an invaluable asset in export expansion;
- Most firms valued the general education level of their workers and the vocational training of their employees very highly, and more than 70% of them had ongoing training courses;
- All the enterprises covered by the investigation had allocated financial resources for research and development, and had supported their R&D departments vigorously;
- All enterprises studied had net foreign exchange earnings;
- All the firms had invested in new machinery and/or expanded their field of activity and product lines in recent years;

- All of the enterprises believed that the exchange rate plays the key role in export promotion, and that it should be flexible to help neutralize the effects of increased domestic costs of production and inflation;
- None of the enterprises studied had an in-depth knowledge of their export markets and their share and role in foreign markets;
- The US economic embargo of Iran had had a negative effect on the export activities of these firms, with some being forced to cease production as a result of insufficient market outlets;
- The producers/exporters are connected to only one or two export markets, and to a limited extent to the unstable Central Asian markets, with no real efforts to diversify and expand their markets;
- Most exporters favoured the export of foodstuffs and processed agricultural products because of Iran's natural comparative advantage in this sphere and because of the low cost of production;
- Marketing arrangements at these companies were not uniform; some had opened up branches in foreign markets, while others had granted agency rights to local importers/distributors with no after-sale service; The most successful exporters had established separate international trade departments responsible for exports;
- Most of these companies had changed their legal status to joint-stock public companies, with access to the Tehran Stock Exchange, enabling them to bypass the credit squeeze imposed by the banking system;
- Stable management with a well-defined line of authority and distribution of responsibilities were cited as an important reason for success in export activities;
- The successful firms had showed an active interest in following domestic and foreign developments in the economic and commercial fields;
- All of the units under study had paid considerable attention to issues of quality, packaging, and catering to customers' tastes;
- The exporters expected more support from Iranian representations abroad, including commercial attachés, especially in providing them with trade-related information;
- All enterprises had experienced bureaucratic delays, the imposition of arbitrary regulations, and the lack of transparency.

B. Constraints

Exporters usually tend to repatriate all the foreign exchange proceeds of their exports. The foreign exchange income is sold at the prevailing market rates of exchange, and the local currency revenues are utilized to cover production costs or to acquire exportable goods for further exporting activity. With relatively stable production costs and a stable exchange rate, exporters can determine the profitability of exporting any specific item and can decide whether or not to continue exporting these products.

In Iran, the existing system of foreign exchange controls imposes three restrictions on exporters, which have often been cited as the foremost factors in restraining the country's export promotion efforts:

- Public policy is based on the premise that the foreign exchange earnings of the exporters must be repatriated to the official banking system at rates set by the Central Bank.
- The export price of each unit of an exported item is set, in dollars, by an official board, and the exporter must sign a declaration accepting the obligation of bringing back the specified amount in foreign exchange within a certain time limit (currently eight months).
- The imposition of a fixed exchange-rate regime in April 1994 has prevented exporters from neutralizing the effect of persistent domestic inflationary pressures, which resulted in the wholesale price index for exports rising from 100 in 1990 to 383 in 1995. With the

exchange rate fixed at \$1 = IR3,000 until March 1998, Iranian exporters could not compete in international markets, and their local currency earnings from the sale of foreign exchange proceeds of exports often could not cover the costs of production, packaging, marketing, and overheads.

In addition, export-oriented domestic producers of manufactured goods must often rely on a variety of imported inputs, such as raw materials, spare parts and packaging materials, in order to be able to meet the quality and taste requirements of foreign consumers. The import of these products is subject to an extensive and complex licencing and approval procedure, however, which represents a formidable additional burden on the manufacturers. The required permits and authorizations include a certification of unavailability of locally manufactured import substitutes and an import registration certificate from the Ministry of Commerce, an import approval from the Ministry of Industries, and an authorization from the Central Bank for the issuance of the letter of credit by a bank, as well as approval permits regarding the quality, price, and source of imports.

To obtain the necessary approvals, and thence to reach the point of opening a letter of credit in favour of the exporters, takes at least a year. There are cases of delays lasting up to two years or more. These lengthy and costly procedural matters often endanger the continuity of the production cycle. In addition, the situation is exacerbated by frequent changes to the laws and regulations pertaining to external trade, which render long-term planning for market expansion and export promotion extremely difficult.

Due to the foreign exchange shortage at the Central Bank, on which all the commercial banks are dependent for their foreign currency needs, it is the Central Bank that dictates to the importer the timing and modalities of his imports. Dependence on usance financing and supplier's credits, instead of cash payments, often imposes extra costs of financing upon importers, and forces them to buy qualitatively inferior materials from non-competitive foreign suppliers, while they have to pay in advance all rial equivalents of the CIF or FOB value of their imports, plus import registration fees and import deposits, all of which severely deplete their working capital resources.

C. Recommendations

In response to the many constraints faced by exporters, a number of remedial measures and policy recommendations have been identified for improvements to the regulatory environment and for the provision of the required support service. These include:

(i) The regulatory environment

- A reduction of the prevailing export formalities to those that are strictly necessary, with the remaining rules being consolidated under a single agency;
- A careful assessment of the implications of any new rules or regulations before they are introduced, with the rules and regulations so introduced being left unchanged for at least three years in order to create confidence in foreign buyers and to allow medium-term planning; at the same time, however, such regulations should be sufficiently flexible to allow compliance without hindering export activities;
- The setting of appropriate regulations, guidelines and procedures by the government, with officials restricting themselves to their supervisory roles without seeking to micro-manage the day-to-day operations of exporters;
- The establishment of realistic targets for non-oil exports in the five-year plans drafted by the authorities, who should provide the appropriate policy, regulatory and legislative framework to enable the achievement of these goals;

- A devolution of decision-making authority regarding which goods may be exported to the markets, with temporary domestic shortages of particular items and consequent price rises being met by increased imports rather than the banning of exports;
- An enlargement of the list of authorized imports for export-oriented manufacturers;
- A streamlining of the bureaucratic procedures for authorizing imports of machinery and raw materials for industries and for the issuance of letters of credit by the banking system;
- An extension of the time limit on the return of foreign exchange from the sale of exports in order to allow exporters to utilize these proceeds more effectively to meet their import needs and sustain their production cycles;
- A liberalization of foreign exchange regulations allowing exporters to sell their foreign exchange earnings at open market rates to banks or other purchasers; this would increase export incentives while helping to reduce smuggling and the undervaluation of Iranian exports;
- The discontinuation of the practice of setting official minimum export prices for Iranian goods in order to make Iranian non-oil exports more competitive;
- The encouragement of barter trade with some poor countries, especially least developed countries that are unable to pay the full export value in foreign exchange, in order to enable Iranian exporters to penetrate these markets; this could also take the form of buyback arrangements with suppliers of raw materials in these countries;

(ii) Support services

- The provision of training courses on the promotion of non-oil exports to relevant government employees charged with enforcing laws and regulations at transport terminals, customs houses, and ministries, in order to strengthen their understanding and attitude toward exports and exporters;
- The establishment of special export departments at customs bureaus, ports, and airports to assure prompt handling of consignments and reduced red tape, with the possibility of special rewards and incentive schemes being offered to officials dealing with exports;
- The adoption of special measures to resolve the issue of credit availability for exporters, with special facilities being made available to exporters for the procurement of goods and for working capital;
- An expansion of the Iranian banking system's operations into the Central Asian region and the Caucasus to attend to the needs of exporters to these regions and their customers; Iranian exporters have incurred many losses and lost opportunities as a result of the shortage of these services;
- The provision of assistance should to exporters to enable them to participate in specialized and other international fairs by providing them with timely information, and defraying part of the costs involved in taking part in trade fairs abroad;
- The provision of assistance to producer/exporters in eliminating production bottlenecks, reduce costs and improve the quality of their products;

In addition, it must be recognized that for Iran the promotion and development of non-oil exports is not merely an issue of finding an alternative source of foreign exchange earnings. The foreign exchange needs of the country could be met in a number of ways, such as tourism, foreign direct investment, export of services, and the repatriation of capital held by Iranians abroad. Non-oil exports should be perceived as a means of achieving industrial expansion, economies of scale, technological innovation, and the creation of new jobs and employment opportunities. The

achievement of these goals, and success in penetrating and developing international markets, will ultimately depend not merely on competitive pricing, but also on the maintenance of quality standards, adherence to contracts and delivery schedules, availability of credit, and proper marketing and sales campaigns, in addition to catering to the specific requirements of the customers in these markets.

Lastly, it must also be recognized that since the establishment of the WTO and the introduction of the new international trade regime in 1995, the rules of the game have changed greatly in favour of worldwide trade liberalization, and that membership of the WTO and the acceptance of all its principles have become important stepping stones towards the promotion of non-oil exports. To embark on a course of accelerated development based on a rapid expansion of non-oil exports, Iran will therefore have to consider seriously the need to apply for membership of the WTO as quickly as possible and to be ready to remove the existing barriers to trade and trade-related payments, which have brought about market segmentation, price distortions, and a high degree of concentration of ownership and production in almost all sectors of the economy. Iran must free the forces of fair competition, not only in foreign trade, but in banking, insurance, and investment opportunities, as well as in building the appropriate infrastructure and selling services to the public. This will inevitably necessitate a reduction of the administrative restraints imposed by various government-affiliated organs on the export-oriented manufacturing sector.

The export promotion strategy for industrial development, on the other hand, aims at developing an internationally competitive manufacturing industry geared to supplying both domestic and external markets. It requires the adoption of appropriate commercial exchange and marketing policies at both the macro (national) and micro (firm) levels, resulting in the creation of an open economy. This increases the access of domestic manufacturers to external capital, technology, and managerial know-how, and creates an environment in which international competition ensures an efficient allocation of resources according to the principles of comparative advantage. This results in higher rates of economic growth, and thus in higher incomes and standards of living. It also enhances the dynamism of the domestic economy, thereby ensuring the sustainability of its developmental momentum.

Technological progress is the key to sustained industrial development, and the ability to import and adapt technology is the essential component of this process for developing economies. To succeed in the use and application of imported technology, the firms concerned in the developing countries need to have the ability or technical capacity to know and recognize the relevant technology, be aware of their own needs, and be able to choose, modify, improve and apply the imported technology.

A study of 659 large industrial units in Turkey has shown that at least four factors are important in bringing about technological changes, namely variables at the firm level, the market structure, the macro-economic environment, and commercial policies. The Turkish experiment during the last 20 years has proven, however, that commercial policies supportive of an export-oriented strategy are the most crucial of these variables.¹

An export-oriented industrial development strategy requires a commercial policy based on open or free markets. This encourages competition, which in turn forces industrial units to make technological changes and improvements, and to import technology and adapt it to their requirements in order to survive. Technological progress at the firm level gives rise to new competitive advantages that enable these firms to penetrate international markets and prosper in them.

The empirical evidence further shows that an export-oriented industrial development strategy can only succeed if it is supplemented by policies supporting the achievement of such technological changes and improvements at the firm level, and if sufficient local resources are mobilized toward this end.

In short, the opening up of the economy to the forces of international competition pushes firms to import and adapt new technologies, to expand their own research and development facilities, and to introduce new products with improved standards and quality in which they then come to enjoy a newly gained comparative advantage.

1.2 The current macro-economic environment of Iran

1.2.1 The socioeconomic rationale of recent developments

The economic development process in Iran has been subject to a number of positive and negative shocks and disruptions during the past 25 years (1973-97). Periods with a favourable business environment, providing an opportunity for economic growth and development, have alternated with less favourable periods. The upshot of these swings for the recent economic history of Iran has

¹ *Technology and Exports: A Case Study of Turkey*, in *Sanat va Matbouat* (monthly publication of the Industrial Managers Association of Iran), Vol. 2, 1376.

been interrupted economic growth, the inability to attain desired development objectives, and highly volatile fluctuations in GDP around a broadly stagnant long-term trend in real terms.

During the 1960s and early 1970s the rising prices of oil in international markets prompted by growing demand and the adoption of price-setting policies by OPEC from 1973 onwards gave Iran, a major oil exporter, the chance of earning the hard currency income it needed to finance its economic development programmes. As shown in Table 1.2.1, the net result of the successful implementation of the fourth and fifth development plans (1969-77) was a sharp rise in the country's GDP, stemming from an annual growth rate of more than 10% during the period, or the doubling of Iran's GDP in approximately eight years.

Table 1.2.1. Iran: Gross domestic product, 1970-97^{1/}
(\$ million, constant 1990 prices)

Year	GDP	Index (1976=100)
1970	61,742.6	53.6
1971	69,364.0	60.2
1972	80,657.2	70.1
1973	87,568.9	76.1
1974	93,369.8	81.1
1975	98,464.0	85.5
1976	115,138.1	100.0
1977	113,866.7	98.9
1978	101,281.7	88.0
1979	93,206.6	81.0
1980	81,274.5	70.6
1981	79,275.8	68.9
1982	89,643.4	77.9
1983	101,508.0	88.2
1984	102,435.1	89.0
1985	102,673.2	89.2
1986	87,168.5	75.7
1987	88,180.6	76.6
1988	80,526.0	69.9
1989	83,196.6	72.3
1990	92,960.4	80.7
1991	103,600.1	90.0
1992	110,603.5	96.1
1993	113,344.0	98.4
1994	114,755.4	99.7
1995	117,814.6	102.3
1996	123,941.0	107.6
1997	127,535.0	110.8

Source: Bank Markazi Iran, *Annual Review*, various issues (re-calculated).

Note: 1/ Iranian years beginning 21 March.

The growth of the early 1970s was achieved at a price, however. The dramatic increase in the inflow of financial resources led to a near-quadrupling of the money supply between 1973 and 1977, and very high annual inflation rates of about 15%, compared with an average of 5% per year during the preceding five years. Along with the new wealth and inflation came problems of maldistribution of wealth and income, corruption, and the outward flow of capital - all of which caused widespread public discontent.

The stagnation of the international price of oil in 1977-78 resulted in a plunge in Iran's export earnings as shown in Table 1.2.2. This forced the government to increase its domestic borrowing (mainly from the Central Bank), thus further fueling inflationary pressures. Cutbacks in the budgets of some development programmes became inevitable, and with these came a sharp decline in GDP in 1978 to approximately 12% below the peak level recorded in 1976. The combination of rising inflation, deepening economic recession, widespread corruption, and the widening gap in

the distribution of income and wealth all reinforced the prevailing public discontent, leading to the fall of the government in early 1979.

Table 1.2.2. Iran: Selected economic indicators, 1977-97¹

	Oil Exports Oil Price (mn b/d)	Oil Revenue (\$ mn)	GDP (\$ mn)	GDP Growth (%)	Oil Price (\$/b) ^{2/}
1977	5.03	20,713	113,867	-1.1	
1978	3.66	17,867	101,282	11.0	14.50
1979	2.87	19,316	93,207	-8.0	39.00
1980	0.91	11,607	81,275	12.8	39.35
1981	0.93	12,456	79,276	-2.5	37.00
1982	2.05	20,050	89,643	13.1	30.60
1983	2.04	20,200	101,508	13.2	28.63
1984	1.65	16,762	102,435	0.9	27.00
1985	1.49	13,170	102,673	0.2	26.00
1986	1.25	6,255	87,169	15.5	13.05
1987	1.55	10,755	88,171	1.2	17.14
1988	1.65	9,673	80,526	-8.7	13.30
1989	1.99	10,607	83,197	3.3	16.04
1990	2.22	17,933	92,960	11.7	22.26
1991	2.46	14,802	103,600	11.4	18.66
1992	2.70	16,300	110,604	6.7	18.77
1993	2.18	14,333	113,344	2.5	15.77
1994	2.22	14,603	114,755	1.2	14.87
1995	2.29	15,103	117,815	2.7	16.18
1996	2.44	19,271	123,941	5.2	19.83
1997	2.34	15,464	127,535	2.9	16.00

Sources: Ali Rashidi, *Eqtesad Mardomsalar, Avaye Noor*, Tehran, 1998, p. 161, except 1997 from Bank Markazi Iran, *Annual Report* for the Iranian year 1376 (21 March 1997 - 20 March 1998), Tehran, 1999, pp. 26 & 46.

Notes: 1/ Iranian year beginning 21 March.
2/ Average selling price for Iranian crude.

The Islamic Republic of Iran was established in February 1979. The change in government and the transitional dislocations led to a rapid deterioration of the economy, which suffered a further contraction of 21% by 1980. These events also resulted in the imposition of an economic embargo by Iran's largest trading partner at the time, which seriously damaged the country's already weakened economic and trade links with the outside world. Furthermore, the events in Iran triggered the second international oil crisis. The price of oil leapt to new highs, and Iran recorded a current account surplus of some \$12 billion in 1979, with the country's foreign exchange reserves increasing by more than \$4.5 billion and reaching \$14.5 billion in that year.

The outbreak of hostilities with Iraq in October 1980, which developed into an eight-year war of attrition, represented a further external shock. While the conduct of the war necessitated the reallocation of resources away from economic objectives, thus further retarding the country's development, the prolonged war also wreaked extensive damage and destruction on Iran's infrastructure. In addition, it inevitably strengthened the government's domination over the economy, and in particular over Iran's foreign trade and payments, and the distribution of both imports and domestically produced goods.

The erosion of international oil prices between 1982 and 1986, which prompted a substantial reduction in Iran's foreign exchange earnings, forced the government to increase borrowing from the banking system. The average annual rate of increase in the country's money supply amounted to approximately 18% between 1979 and 1988, and the annual inflation rate to 19.3%.

The successive shocks inflicted on the Iranian economy between 1979 and 1988 seriously inhibited its growth prospects. With the exception of a growth spurt in 1982-83, the economy suffered an

almost continuous decline during this period. By 1988 the country's GDP had dropped by 30% from its 1976 level in constant 1990 dollars (Table 1.2.1).

1.2.2 Growth patterns in the post-war period since 1989

The First Five-Year Socioeconomic and Cultural Development Plan, March 1989 - March 1994

Iran signed a cease-fire with Iraq in 1988 with a greatly weakened economy. Bearing in mind also that the country's population had grown from 37.2 million to about 52 million during the first decade after the revolution, per capita incomes had registered a correspondingly greater decline than the contraction in GDP. Inflationary pressures, shortages of basic necessities, and the lack of employment opportunities for unskilled manual labourers and for youth in particular, caused the government to declare the promotion of economic recovery as its most pressing policy priority in 1989. The government's socioeconomic development objectives were brought together in the First Socioeconomic and Cultural Development Plan (March 1989 to March 1994), which was drawn up and approved by the Majles in 1988.

The plan recognized the undesirability of excessive state control over the economy and the extensive accretion of administrative restrictions erected since 1979. It therefore emphasized the revival of the market mechanism as its most important feature. To this end, the plan paid attention to fiscal and monetary stabilization, the gradual removal of price controls and subsidies, the establishment of realistic interest rates, the liberalization of trade and investment regulations, the restoration of incentives for the development of private entrepreneurship, and the promotion of non-oil exports through the provision of appropriate incentives.

During the plan period, a number of important economic policy reforms were introduced that may be summarized as follows:

- Measures to improve the tax administration and augment the government's tax revenue base;
- Steps to improve the efficiency of monetary policy, inter alia through the removal of credit ceilings and the raising of rates of return on bank deposits and credits;
- The reactivation of the Tehran Stock Exchange;
- The introduction of privatization programmes;
- The liberalization of price policy and the reduction of the number of items subject to price controls from 296 to a mere 22;
- The lifting of many quantitative controls on exports and imports, with a reduced tariff schedule, to promote international trade;
- The simplification of the complex system of multiple exchange rates existing in 1988.

The Iraqi invasion of Kuwait in August 1990, which strengthened international oil prices, led to a surge in Iran's daily oil exports from 1.99 million b/d to 2.224 million b/d, and to a substantial increase in the country's oil revenue, from \$10.6 billion in 1989 to \$17.9 billion in 1990. With the termination of the war and the consequent resumption of the flow of oil from Kuwait, the price of oil fell sharply, as did Iran's oil revenue. This trend continued until 1994.

The government spent a total of \$107 billion in foreign exchange and IR50,103 billion, including IR15,406 billion in fixed investments, for the implementation of the first five-year development plan. The expenditures and the measures taken by the government resulted in a substantial improvement in the country's economic performance. The annual rate of GDP growth during the 1989-93 period averaged some 6.5%, which cumulatively raised the country's GDP from \$80.5 billion in 1989 to \$113.3 billion in 1993, a rise of 40.7%.

The recovery of economic activities under the First Plan was accompanied by a variety of distortions and imbalances, however. The price deregulation, exchange rate realignments, and credit expansion combined to stimulate an increase in inflationary pressures in 1991-93. The removal of strict controls over imports led to a considerable increase in the country's foreign exchange expenditure and a drain on Iran's external balance (see table 1.2.3). The current account deficit, which amounted to a modest \$191 million in 1989, widened to more than \$9 billion in 1991 and \$6.5 billion in 1992. By this time, Iran had accumulated a stock of external debt of \$14.6 billion (equivalent to 14% of GDP), which increased further to \$18.6 billion in 1993 (16.2% of GDP). The depreciation of the US dollar, in which most of Iran's oil income is denominated, but which accounts for about 20% of the country's debt stock, compounded the burden of the external debt.

Table 1.2.3. Iran, Balance of payments, 1989-97^{1/}
(\$ billion)

	1989	1990	1991	1992	1993	1994	1995	1996	1997
Trade balance	-367	975	-6,529	-3,406	-1,207	6,817	5,586	7,402	3,776
Services	-2,324	-3,148	-4,919	-5,094	-4,508	-3,059	-2,224	-2,633	-2,489
Transfers	2,500	2,500	2,000	1,996	1,500	1,198	-4	463	288
Current-account balance	-191	327	-9,448	-6,504	-4,215	4,956	3,358	5,232	1,575
Capital account	3,261	295	6,032	4,699	5,563	-347	-774	-5,679	-4,822
Statistical discrepancy	-471	-922	1,319	1,639	-1,116	-1,882	-316	1,168	-797
Total balance	2,329	-300	-2,097	-166	232	921	2,868	2,346	-3,705

Source: Bank Markazi Iran, *Annual Report*, various issues.

Note: 1/ Iranian years beginning 21 March.

The accumulation of foreign debt and the deterioration of the balance of payments put pressure on the currency and forced the government gradually to introduce new rates for foreign exchange remittances, starting from \$1=IR1,538 in March 1993 to \$1=IR2,710 by the end of 1994. The economic anomalies that surfaced in 1992 and 1993 caused a shift in public attitude toward the reform process, particularly in the Majles, whose members were witnessing the sufferings of the poor caused by inflationary pressures and a cut in subsidies.

The Second Five-Year Socioeconomic and Cultural Development Plan, March 1995 - March 2000

Nevertheless, the government drafted the Second Socioeconomic and Cultural Development Plan on schedule in 1993 and submitted it to the Majles; the Majles approved it in August 1994, and it was scheduled to be enforced as of 21 March, 1995. The general objectives of the SFYP, like those of the FFYP, were to advance the market orientation of the economy and to improve the living standards of the population. The incentive framework of the economy was to be strengthened while retaining subsidies on food, fuel, and other essential consumer goods.

The quantitative targets of the SFYP included:

- An annual GDP growth rate of 5.1% in constant 1982 prices;
- An annual rate of growth of capital formation of 6.2%;
- An annual rate of growth of government consumption of -0.9%;
- An annual increase in government revenues of 15.2%;
- An annual increase in government expenditure of 15.1%;
- An annual increase in recurrent public expenditure of 10.9%;
- An annual increase in public development expenditure of 21.1%;
- A government deficit of IR 875 billion for 1994-98;

- An annual increase in domestic public debt of 3.8%;
- Total exports of \$100.185 billion; and
- Non-oil exports of \$27.527 billion.

Apart from these specific targets, the plan called for improved macro-economic management. To this end, reliance on monetary and fiscal policies would have to be increased, efficiency in the use of public resources promoted, competition in the factor and product markets improved, and the emergence of monopolies prevented. The structure of the government would have to be reformed and the level of social development and social justice enhanced. To continue the liberalization policies envisaged in the First Development Plan, the Second Development Plan called for an extensive deregulation in such fields as trade, payments and price policy.

In the administrative area, the SFYP provided for a reform of the existing system with the aim of achieving the following objectives:

- Administrative order and discipline;
- Coordination among subordinate bureaus and units;
- Increased efficiency and a dismantling of parallel and redundant organs and offices;
- Constant surveillance of the performance of government organizations and agencies;
- Avoidance of the centralization of public affairs in Tehran;
- Simplification of the bureaucratic processes;
- Increased concern for professional merit and qualifications in managerial recruitment.

In the fiscal policy area the SFYP sought to achieve the following objectives:

- An increase of the share of tax revenues in total government income;
- Financing of government investment projects through the issuing of bonds and investment certificates to the public;
- The development of a capital market and stock exchanges;
- The observance of strict fiscal discipline in dealing with publicly funded investment projects;
- Increased efficiency and optimization of the allocation of resources at the disposal of government agencies.

In terms of monetary policy, the SFYP set the following objectives:

- Control of the rate of growth of the money supply;
- Zero additional borrowing from the banking system by the government;
- A maximum rate of inflation of 12% by the end of the second SFYP in 1999;
- Limiting the rate of increase in the money supply to 11.5% annually.

With regard to labour policy, the SFYP set the following goals:

- Development of the labour market, with the aim of encouraging the employment of local labour and discouraging the engagement of foreign nationals;
- Encouragement of the process of job creation and conditions conducive to entrepreneurial activity;
- Reduction in the rate of unemployment from 11.7% in 1994 to 9.5% by the end of the plan period.

To reach these goals the government has taken a number of steps since the implementation of the plan began on 21 March, 1995. These are discussed in the following chapters:

The Third Five-Year Socioeconomic and Cultural Development Plan, March 2000- March 2005

Through the good offices of the authorities at the Ministry of Industries, the project team was provided with a copy of the preliminary version of draft provisions relating to non-oil exports

intended to be incorporated, subsequent to the approval process, into the Third Five-Year Socioeconomic and Cultural Development Plan due to start on 21 March 2000. Although not final and subject to reformulation, these stipulations clearly carry the central message of the need for enhanced policy, regulatory and institutional support to be granted to exporting industries.

As such the conclusions of the present Report corroborate strongly the substance and scope of the anticipated contents of the Third Plan, particularly those pertaining to the creation and operation of an enabling environment for the private sector to face up to the challenges of the international marketplace in the new millennium.

In the light of this concordance and obvious topicality, the draft version of the section of the Third Plan on the promotion of non-oil exports has been informally translated into English and annexed to this Report (Annex I).

1.2.3 Resource mobilization for economic growth

Since oil revenues provide 60–70% of government income, and since oil production and exports have remained relatively constant while the price of oil in international markets has remained weak (Table 1.2.2), the government has taken a number of steps to mobilize domestic resources. In order to raise public revenues the government has sought to improve the tax base, introduced a general sales tax in the form of a value-added tax (VAT), eliminated tax exemptions and reformed the import tax regime. In addition, it has reduced official subsidies on domestic petroleum product prices resulting in an annual increase of about 20% in the prices of four major oil products - kerosene, gas oil, fuel oil, and petrol. Finally, the government has permitted an almost continuous adjustment of the exchange rate, resulting in an effective depreciation of the rial by more than 60% over the past three years. Even though the official rate of \$1=IR1,750 has been maintained for the calculation of the oil revenue for budgetary purposes, less and less use is made of the official exchange rates. The export-import rate of \$1=IR3,000 introduced in 1996 is currently being replaced by a new rate of approximately \$1=IR6,000. The step taken in July 1997 to float the rial at the Tehran Stock Exchange is intended to devalue the currency, both in order to raise the domestic-currency revenues of the Treasury from the sale of foreign exchange and to encourage the promotion of non-oil exports.

One of the main objectives of SFYP in the realm of fiscal policy is to remove the government budget deficit. The deficit, which equaled 9% of GDP in 1988, was reduced gradually to an average annual 1.5% during 1991-92, but increased to 6% of GDP in 1993 and 5% in 1994. The government has usually financed its deficits through borrowing from the domestic banking system, thus increasing the money supply and fueling inflationary pressures.

The SFYP calls for a targeted fiscal balance in line with plan's objectives. Despite the stated goals and the increase in revenues, both from taxes (200% since 1993) and from oil/gas sales (almost 100% during 1993-97), the budget deficit, as seen in the following figures, is on the rise. The budget deficit for public enterprises, which is also financed by the banking system, has remained a heavy burden on the economy (Table 1.2.4).

The 1998-99 budget, approved in February 1997 by the Majles, calls for the borrowing of IR2,100 billion from the banking system.

Table 1.2.4. Iran: Structure of the government budget 1993-97^{1/}
(IR billion)

	1993	1994	1995	1996	1997
	1993	1994	1995	1996	1997
Income	20,250.7	29,244.5	41,575.4	57,275.6	62,569.0
Oil/gas	14,683.2	21,479.7	26,666.2	32,745.7	26,018.0
Taxes	4,061.3	5,490.8	7,313.0	12,560.2	17,345.0
Expenditure	20,886.9	28,912.4	41,330.9	57,877.6	65,727.0
Recurrent	13,654.7	19,841.1	28,448.1	37,804.0	44,997.0
Capital	7,232.2	9,071.3	12,882.8	20,073.6	20,285.0
Deficit	- 636.1	332.1	+ 244.5	- 602.0	- 3,158.0

Source: Bank Markazi Iran, *Namahaye Amari No. 9*, second quarter 1376 (July-September) and *Annual Report* for the Iranian year 1376 (21 March 1997 - 20 March 1998), Tehran, 1999, pp. 38-39.

Note: 1/ Iranian years beginning 21 March

1.2.4 Foreign policy constraints

Iran's efforts to improve economic relations with the outside world have been hampered by a number of factors. The US policy towards Iran, involving inter alia the imposition of sanctions and secondary measures aimed at preventing non-American firms from investing in the Iranian oil and gas industry, are the most significant.

Although Iran's economic relations with the EU and with Japan have continued, hesitation on the part of the countries in question to improve and expand ties has been quite evident. Iran's relations with the Arab world suffered, until recently, from the fear of a possible spread of the Islamic Revolution to the neighboring states, and from the Iran-Iraq war. The situation improved after the mid-1990s, however, as Iran began to show a keen interest in rebuilding its links with the Arab countries during the final years of President Rafsanjani's second administration. With the election of President Khatami, this programme of rapprochement has been followed more resolutely, and ties have been strengthened with Saudi Arabia, Egypt, Lebanon, Kuwait, and even with Iraq and the United Arab Emirates. Iran's links with the EU and with Japan are expected to improve, if merely for the fact that the world will soon witness a decline in the supply of oil from areas outside the Persian Gulf from 2001 onwards. This change in the pattern of oil supplies will make Iran far more important strategically, not only as a supplier of oil and gas, but as a natural transit route for Central Asia's vast mineral resources.

The decision by the French company Total in 1997 to develop the South Pars gas field in a \$2 billion deal which includes Gasprom of Russia and Petronas of Malaysia was the first attempt by a western company to challenge US sanctions. The lack of support that the rest of the world has shown for US measures, as well as American wariness of a possible trade dispute with the EU and Japan under the recently strengthened terms of the WTO, are factors that have influenced the decision of the USA not to pursue this issue for the time being.

1.2.5 Foreign trade patterns

The main feature of Iran's foreign trade in recent years has been its volatility. The large year-to-year variations in the volumes of trade are caused by shifts in the availability of foreign exchange, which stems from fluctuations in the price of oil in international markets and the amount of credit extended by the main suppliers of Iran's imports.

Iran's exports for the years 1990–96 averaged approximately \$19 billion, with no clear sign of improvement. The average annual import bill for the same period was about \$16 billion, rising from \$15.9 billion in 1990 to \$23.1 billion in 1992, and dropping again to \$13.7 billion in 1996.

The industrialized countries that are the main purchasers of Iranian crude oil are also the main suppliers of the country's imports. In 1990, 71% of Iran's exports and 68.6% of its imports, respectively, were sent to and originated in industrialized countries, mainly in Europe. The EU's share in the same year was 58% of Iran's imports from industrialized countries and 41% of its exports. By 1996, the industrialized countries' share had dropped to 55.7% and that of the EU to some 24%. The Asian countries, on the other hand, increased their share in Iran's exports from 10.3% in 1990 to 21.8% in 1996. As for imports, their share grew from 6.4% in 1990 to 17.9% in 1996.

Japan, Germany, Italy, Switzerland, and the UK are the main trading partners of Iran among the industrialized countries. Among developing countries, South Africa, Korea, India, and Thailand are the major importers of oil from Iran, while Korea, China, and the United Arab Emirates count as major exporters to Iran. The Middle East absorbed, on average, 4.9% of Iran's exports during 1990–96, while supplying 9.4% of the country's import needs in the same years.

Iran's non-oil exports rose significantly during the FFYP between 1989 and 1994, when they peaked at \$4.8 billion (Table 1.2.5). In May 1995, in order to stop foreign currency speculation, a new foreign exchange policy was introduced. The new regulation required exporters to sell all their foreign currency income to the government at a fixed rate. The immediate effect of the policy was a 33% drop in the country's income from non-oil exports in 1995. Faced with the prospect of earning a lower return on their investments, traders and producers again returned to the domestic market, where rising demand and dwindling supplies together had pushed the prices of all goods to record heights. As discussed in greater detail below, Iran's non-oil exports have not recovered from this setback, and have remained below the record level of \$4,831 million achieved in 1994.

Table 1.2.5. Iran: Foreign trade flows, 1993-97^{1/}
(\$ million)

	1993	1994	1995	1996	1997
Exports	18,080	19,434	18,360	22,391	18,374
Oil/Gas	14,333	14,603	15,103	19,271	15,464
Non-Oil	3,747	4,831	3,257	3,120	2,910
Imports (FOB)	19,287	12,617	12,774	14,989	14,598
Trade Balance	-1,207	6,817	5,586	7,402	3,776
Services (net)	-4,508	-3,059	-2,224	-2,633	-2,849
Transfers (net)	1,500	1,198	-4	463	288
Current-account balance	-4,215	4,956	3,358	5,232	1,575

Source: Bank Markazi Iran, *Namagar haye Amari*, No 9, second quarter 1376, and *Annual Report* for the Iranian year 1376 (21 March 1997 - 20 March 1998), Tehran, 1999, p. 46.

Notes: 1/ Iranian years beginning 21 March.

1.2.6 External payments and debt

At the start of the implementation of the FFYP in 1989, Iran had a very low external debt relative to its foreign exchange earnings. The plan had set a target of \$27.4 billion for the amount of external loans over the five-year period of 1989-94, which was thought to be manageable. However, by the end of the plan period, Iran had accumulated a very large sum of foreign debt (Table 1.2.6), which it could not service.

Table 1.2.6. Iran: Foreign debt, 1993-98^{1/}
(\$ million)

	Short Term	Medium- to Long-Term	Total
1993	17,616	5,542	23,158
1994	6,707	16,030	22,737
1995	4,536	17,392	21,928
1996	4,557	12,278	16,835
1997	3,289	8,828	12,117
1998 ^{2/}	3,558	8,391	11,949 ^{3/}

Source: Bank Markazi Iran, *Namagar-haye Eghtesadi*, various issues.

Notes: 1/ Iranian years beginning 21 March

2/ As of September 20th 1998

3/ This figure does not include LCs recently issued and interest owed on outstanding debts. Including these, Bank Markazi Iran gives a figure of \$22.4 bn.

The oil prices received by Iran rose 48% between 1988 and 1990 and then fell 42% between 1990 and 1993, causing a tremendous fluctuation in the country's foreign exchange income, while imports rose by an average of 26% per year in 1989 and 1990. Despite a downturn in oil prices in 1991, the volume of imports rose by 29%. These opposite moves in foreign exchange earnings and expenditures resulted in a sharp increase in the current-account deficit to almost \$10 billion in 1991 from less than \$1 billion in the previous years.

Since Iran did not have access to medium- and long-term capital, the country fed the large current account deficit in 1991 mainly with short-term credit and through the use of its reserves. Particularly heavy use was made of short-term import-financing credits (usance LCs). In addition, the National Iranian Oil Company (NIOC) signed several oil pre-lift agreements, which constituted a form of borrowing against future oil deliveries. In 1992, Iran faced extraordinary payment obligations, while the price of oil remained weak and the dollar depreciated by an estimated 15%, making the country's imports from its main suppliers even more costly in terms of the dollar.

By the end of 1992, the country had payments arrears totaling \$2.2 billion. As the price of oil dropped further, to \$12 per barrel in 1993, Iran was forced to cut back its merchandise imports by 17%. The government also took measures to strengthen the exchange rate and introduced an import payments scheme. Despite these measures the current-account deficit remained high at 6% of GDP in 1993, and the stock of arrears increased, reaching \$10 billion at the end of 1993 and \$11.2 billion by the end of March 1994. Imports were curtailed further by about 34% in 1994, thereby causing a turnaround in the current-account position from a deficit of \$4.5 billion in 1993 to a surplus of \$4.6 billion in 1994.

In 1993 and 1994 Iran also signed a number of bilateral agreements to refinance its arrears, as well as the credits of commercial banks of the suppliers' countries extended prior to 1994. A typical refinancing agreement had a maturity of 6 years (with a two-year grace period and four years of repayment), interest rates around LIBOR, down payments between 0% and 10%, and guarantees by the Central Bank. These agreements changed Iran's foreign debt structure from short-term to medium- to long-term, as can be seen in Table 1.2.6.

From 1994 onwards, Iran has made an excellent effort to make good on the repayment of its debt obligations, and as a result, the total foreign debt stock has been lowered by more than \$11 billion since 1993.

The achievements under the SFYP thus far have been remarkable. The GDP growth rate for 1995-97 is officially calculated to have averaged 4.5% per year, which represents a sharp increase from

the rate of 1.6% recorded in 1994. Inflationary pressures are on the decline. The capital formation ratio is improving, and gross fixed investment is growing at about 5% a year. The official unemployment rate of 8.75% reported for 1996 showed a 3% decline from its 1994 level.

CHAPTER 2

POLICIES FOR THE PROMOTION OF NON-OIL EXPORTS

2.1 Industrial development policies

The economy of Iran has become increasingly dependent upon the production and export of oil during the last fifty years. Oil has fueled the economy in more ways than simply providing it with a cheap source of energy at a very low cost to the consumer: in particular, it has supplied the country with 80-90% of its foreign exchange receipts and has constituted 50-60% of the government's revenue for all the years in question. As it controls neither the volume of oil exports, which are subject to OPEC quotas, nor the price of oil in international markets and the purchasing power of the dollars earned, the government has become keenly aware of the risks of this high degree of the country's economic dependence on oil. This has caused successive governments in Iran to announce the promotion and expansion of non-oil exports as a top priority and major policy objective.

2.1.1 The implementation and impact of the FFYP, 1989-94

The FFYP of the Islamic Republic thus declared the promotion of non-oil exports through the provision of appropriate incentives as a leading policy priority. Since it was recognized that the achievement of increased non-oil exports requires heavy investment, technology- inflows, and foreign technical assistance, the plan proposed the adoption of measures to stimulate the inflow of capital, mainly through the encouragement of joint venture projects with foreign partners, and the encouragement of expatriates to return capital held abroad. The plan also declared the establishment of industries producing exportable items as one of the industrial development policy objectives of the government. Industrial exports, it announced, should be increased (a) by increasing the share of final manufactured goods in exports while lowering the share of raw materials, and (b) by increasing the share of capital goods in imports while lowering the share of consumer goods and preserving the share of intermediate goods.

Table 2.1.1. Iran: Structure of industrial output under the FFYP, 1988 & 1993^{1/}

	1988		1993		Annual Growth (%)
	Total (IR bn)	Share (%)	Total (IR bn)	Share (%)	
Total production	1,414.0	100.0	2,750.0	100.0	14.2
Consumer Goods	636.3	45.0	780.0	28.4	4.2
Intermediate Goods	697.7	49.3	1,735.0	63.1	20.0
Industrial	432.5	62.0	1,285.0	74.0	24.3
Non-industrial	265.2	38.0	450.0	26.0	11.0
Capital Goods	80.0	5.7	235.0	8.5	24.0

Source: FFYP.

Note: 1/ Iranian years beginning 21 March.

The FFYP in particular emphasized that capital goods industries and intermediate goods industries should be studied so that import substitutes may be produced locally. According to the plan, industrial exports were to rise from \$70 million in 1988 to \$3,740 million in 1993. More specifically, the structure of the industrial sector was to be changed to such a degree that 63.1% of its total output was to be generated by intermediate goods industries, 28.4% by consumer goods industries, and the remaining 8.5% by capital goods industries.

During the FFYP (1989-94) a total of 4,800 new industrial units were established with an investment of about IR4,800 billion and employing 160,000 workers. The industrial policies pursued under the FFYP resulted in an average annual growth rate of 9.5% in industrial production at constant prices, compared to the 14.2% growth projected in the plan. Gross domestic investments grew by about 18% per year in constant prices, and industrial exports increased from \$122.6 million in 1989 to \$1,191 million in 1993, the last year of the plan.

The strategies pursued for the implementation of industrial policies during the FFYP were aimed at achieving the self-reliance and perhaps the self-sufficiency of the industrial sector in the procurement of its own raw materials and intermediate goods, and also at providing these inputs for the other sectors. These strategies were implemented via foreign-exchange allocation mechanisms. About 76% of all foreign exchange earmarked for the industrial sector was given to industrial units producing intermediate goods, while 14% was allocated to capital goods industries, and a mere 10% to consumer goods industries, despite the fact that the FFYP had set targets of 24.6%, 45.3%, and 30.1% for these sub-sectors, respectively (Table 2.1.2).

Table 2.1.2. Iran: Foreign exchange allocation to the industrial sector by ministry, 1989-93^{1/} (\$ million)

	Total	% Share
Ministry of Industries	8,212.3	41.9
Ministry of Heavy Industries	7,548.9	38.5
Ministry of Mines and Metals	3,098.1	15.8
Petrochemical Industries Co.	740.7	3.8
Total	19,600.0	100.0
Consumer goods industries	4,827.7	24.6
Intermediate goods Industries	8,877.3	45.3
Capital goods Industries	5,895.0	30.1
Total	19,600.0	100.0

Source: FFYP.
Note: 1/ Iranian years beginning 21 March.

The food and pharmaceutical industries, followed by textiles, non-metallic minerals, and automotive and casting industries topped the list in terms of the number of projects, but the chemical industries and non-metallic minerals received 23.6% and 22.9%, respectively, of all foreign exchange allocated to the sector (Table 2.1.3).

Table 2.1.3. Iran: Foreign exchange allocation to the industrial sector by subsector, 1989-96^{1/}

	Units		Value	
	Number	% share	\$ million	% share
Food	225	22.0	614	8.9
Textiles	182	17.8	745	10.8
Chemicals	97	9.5	1,580	22.9
Non-metallic minerals	150	14.6	1,628	23.6
Metals	70	6.8	117	1.7
Electrical goods & electronics	68	6.6	373	5.4
Automotive and casting	131	12.8	1,242	18.0
Machine making	102	10.0	600	8.7
Total	1,025	100.0	6,899	100.0

Source: Ministry of Industries, *Eight years Effort for Industry, 1989-1996*, Tehran, June 1997, p. 58.
Note: 1/ Iranian years beginning 21 March.

The stated reason for paying particular attention to the food and pharmaceutical units is their dependence on agricultural processing industries. The development of these industries would increase the demand for agricultural products in food-processing industries, reduce the level of waste and manufacture goods for exports. The low percentage share of these industries in the total amount of foreign exchange allocated reflects the low dependency of food-processing industries on imported machinery and tools. Iran's capacity to produce food-processing machinery and tools has expanded; as a result the sector has become more and more dependent on internal sources for its raw materials, industrial designs, and the actual production machinery. The industrial strategies pursued by the government have, in general, lowered the demand for imports for the industrial sector. This is particularly true for the petrochemical and basic metal industries, many of which no longer need to be imported and are in some cases even being exported, thereby improving Iran's foreign exchange earnings and enhancing the domestic sourcing of inputs by the industrial sector.

2.1.2 The implementation and impact of the SFYP, 1995-2000

The SFYP once more declared the expansion of non-oil exports to be one of its sixteen basic strategies. To achieve this objective it sought to:

- Maximize the existing potential to generate higher domestic tax revenues;
- Delineate the functions and roles of the government, cooperative, and private sectors in the field of exports;
- Modify the export-import law and adopt tariff and foreign exchange policies conducive to policy stability and export promotion;
- Protect investments in the processing of agricultural, mineral and industrial raw materials and intermediate goods in order to increase domestic value added;
- Support the export efforts of the investors by providing the required credit, services, and information;
- Support and strengthen the role of the Export Development Bank;
- Adopt credit and tax policies that are supportive of exports;
- Supervise and evaluate non-oil exports continuously;
- Earmark a proportion of domestic production for export;
- Assure the use of high-quality raw materials in the production of exportable items;
- Encourage the use of proper packaging materials and designs;
- Produce commodities suited to the standards and tastes of consumers in importing countries;
- Encourage and expand bilateral barter trade of non-oil goods;
- Encourage the formation of new export associations and cooperatives while supporting the activities of existing ones;
- Make effective use of free trade areas for exports and re-exports;
- Coordinate all the activities of the existing organizations responsible for export promotion in order to eliminate duplication and reduce bureaucracy;
- Utilize the existing productive capacities of agro-based industries for export expansion;
- Reactivate Iran's foreign trade missions and encourage Iranian embassies to become active in the field of export promotion;
- Encourage wider participation in foreign trade under the guidance and supervision of the government and promote competition in import trade;
- Support and expand the operation of the Export Guarantee Fund and adopt an export insurance system;
- Establish a High Export Council to re-evaluate the functions and operations of the country's commercial organizations and make recommendations regarding the coordination, promotion, and development of non-oil exports.

In addition to the above, the SFYP has promulgated a set of other instructions for export promotion. These include market research; employment of foreign mass media for marketing and promotion; a campaign against smuggling, which harms the country's export efforts; labeling regulations to protect the names and reputations of exporters; repayment of tariffs and import taxes for re-exported raw materials and intermediate materials; and the creation of an export promotion system.

The plan more specifically calls for the following:

- The creation of an environment conducive to the development of an export-oriented economy based upon the principle of comparative advantage;
- The maintenance of a managed floating foreign exchange regime marked by the revocation of the exchange delivery requirements, the convertibility of the rial, and a unified exchange rate;
- The reduction of quantitative restrictions on imports;
- The prevention of monopolies and the promotion of external trade;
- The provision of "reasonable" price support to producers and consumers in line with the prevailing international situation; and
- The centralization of duty collection on foreign trade.

The SFYP calls for a total investment in manufacturing industry and mining of IR1,146.5 billion (in constant 1982 prices), or 8.1% of the total investment of IR14,064 billion envisaged for all the sectors of the economy. The annual rate of growth of gross investment is targeted at 5.2%, and the annual increase in domestic value-added in the manufacturing and mining sector at 9.5%. By 1999 the manufacturing and mining sectors are intended to account for a 16.8% share in the country's GDP of IR17,635.2 billion in constant 1982 prices.

During the first three years after the SFYP (1995-98), more than 4,700 industrial enterprises were established with an investment of IR4,700 billion, creating 87,000 new jobs. Thus, in an eight-year period, 9,500 new industrial firms have begun operations, giving rise to 250,000 new jobs.

According to the General Industrial Census results of 1995, Iran had 403,135 active industrial firms. Only 11% of these had five or more employees. Industrial units of 10 or more employees, which numbered 13,348, were referred to as "large", and employed 628,000 people. They accounted for only 3.3% of the total number of units, however, while creating 42.6% of the total industrial employment of 1,477 million.

2.1.3 Policies towards foreign investment

The SFYP gave a general approval for foreign direct investment, in conjunction with local counterparts, in certain stipulated sectors. The government was instructed to introduce the appropriate laws and regulations in the Majles within three months. The plan also approved foreign investment in the country's infrastructure and in projects aimed at expanding its export capabilities. Borrowing from international financial institutions and the making of buyback arrangements were allowed. The total value of imports of raw materials, intermediate goods, machinery, and services was to be paid back by the export of the final goods produced.

A total of \$6,500 million, in the form of buyback agreements, was approved for oil and gas projects, infrastructure development projects (airports, railways, and air traffic control) and steel-making projects. Additional borrowing in the form of "usance" financing (export credits) to the value of \$3,500 million was approved for individual industrial, agricultural, and transportation projects, and for the construction of dams and power stations.

Discussions between foreign investors and their local counterparts started in 1993 under the guidance of the Ministry of Industries, and by 1997 a total of 39 projects involving a foreign investment of \$665 million had been approved by the Council of Ministers. So far 15 of these projects, involving an investment of \$59.5 million, have been implemented, while five projects worth \$291.7 million have been withdrawn. As can be seen in Table 2.1.4, however, foreign investment interest in Iran still remains relatively modest.

Table 2.1.4. Iran: Foreign direct investment, 1989-96
(\$ million)

	1993		1994		1995		1996	
	No.	Value	No.	Value	No.	Value	No.	Value
Projects approved	4	49.6	4	206.9	16	355.8	15	52.7
Projects implemented	2	4.3	2	3.1	11	52.1	15	77.6
Projects underway	..	..	1	184.6	3	67.6	..	..
Projects withdrawn	2	45.3	1	19.2	2	227.2	..	..

Source: Ministry of Industries, General Bureau of Information and Statistics, *Annual Report* for the Iranian year 1376 (21 March 1997 - 20 March 1998), Tehran, 1999, p. 101.

Note: 1/ Iranian years beginning 21 March.

2.1.4 Policy targets and performance of non-oil exports

As stated above, both the FFYP and the SFYP gave high priority to the expansion of non-oil exports, and projected an increase in the value of these exports from \$1,739.5 million in 1989 to \$3,740 million by 1993 at the end of the FFYP before rising further to \$6,165.3 million in 1999 at the end of the SFYP. The actual level of non-oil exports during the life span of the plans to date is presented in Table 2.1.5 below, which shows a significant gap between the goals as stated in the plans and the actual levels achieved. The same is true of the country's actual level of imports, which also deviates significantly from the planned levels as can be seen in Table 2.1.6.

Table 2.1.5. Iran: Planned and actual non-oil exports, 1989-99^{1/}

	Target (\$ million)	Actual (\$ million)	Deviation (%)
1988	..	1,035.8	..
1989	1,739.3	1,043.9	-40
1990	2,383.5	1,312.2	-45
1991	3,149.6	2,648.7	-16
1992	4,247.9	2,989.7	-30
1993	6,115.5	3,746.8	-39
1994	4,119.9	4,824.5	+17
1995	4,466.0	3,257.0	-27
1996	4,841.1	3,120.0	-36
1997	5,247.8	3,050.0	-42
1998	5,688.6	1,785.5 ^{2/}	..
1999	6,165.3	..	..

Source: FFYP and SFYP.

Notes: 1/ Iranian years beginning 21 March.

2/ First eight months of Iranian year 1377 (21 March - 20 November 1998).

Table 2.1.6. Iran: Planned and actual imports, 1989-97^{1/}

	Target (\$ million)	Actual (\$ million)	Deviation (%)
1988	..	10,608	..
1989	13,267.0	13,448.0	1.3
1990	19,594.0	18,330.0	-6.5
1991	20,199.0	25,552.0	26.5
1992	19,844.0	23,825.0	20.1
1993	15,820.3	19,381.0	22.5
1994	16,508.1	12,617.0	-23.6
1995	17,217.9	12,774.0	-25.8
1996	17,958.0	14,882.0	-17.1
1997	18,731.5	14,598.0	-22.1

Source: Bank Markazi Iran, *Annual Report*, various issues.

Note: 1/ Iranian years beginning 21 March.

Iran's foreign trade policies and performance have been greatly influenced by developments in international oil prices and the amount of credit made available to the country by its main suppliers. As 80-90% of the country's foreign exchange receipts in recent years were generated from oil and gas exports, any change in the price of oil in international markets had a significant impact on Iran's foreign exchange earnings, which in turn has influenced the imposition or relaxation of trade restrictions. During periods of high oil prices the availability of foreign exchange from oil and gas exports has allowed the government to relax the terms for imports and neglect the promotion of non-oil exports. On the other hand, periods of foreign exchange shortage have resulted in import restrictions and an intensification of the drive toward non-oil export promotion via the granting of incentives to exporters.

In May 1995, in order to halt foreign currency speculation, a new foreign exchange policy was instituted. The new regulations required exporters to sell all of their foreign currency income to the government at a fixed rate. The immediate effect of the policy was a 33% drop in the country's income from non-oil exports. Faced with the prospect of earning a lower return on their investments, traders and producers again returned to the domestic market, where rising demand and dwindling supplies together had generated increased inflationary pressures. Non-oil exports, as can be seen from Table 2.1.5, have remained below the record level of \$4.8 billion registered in 1994.

Iran's biggest non-oil export item, carpets, suffered most. Exporters, aided by deputies from carpet-producing regions, protested inside and outside the Majles. This resulted in a modification of the policy. First, carpet exporters were allowed to sell 30% of their export proceeds directly to importers at higher prices. In 1996, the portion of foreign exchange earnings from non-oil exports that was exempt was increased to 60%, and many new items, such as pistachios, copper, iron, and steel, which had suffered the same fate, were added to the list. In 1997, the exporters were allowed to sell their foreign exchange proceeds directly at the Tehran Stock Exchange, at rates to be decided upon by the exporter and the importer. The foreign exchange earned through exports has, however, to be utilized for the payment of authorized imports (currently comprising 28 items).

2.1.5 New policy initiatives for the promotion of manufactured exports

During the past few years the government has introduced several measures intended to provide additional incentives to exporters of manufactured goods. These may be summarized as follows:

- Since 1995 the Ministry of Industries has provided special foreign-exchange privileges for the procurement of raw materials to enterprises affiliated to the Ministry involved in the production of export grade products. Presently, the ministry provides exporters who use 50% of the foreign exchange generated from their exports to pay for imports, with additional foreign exchange equivalent to the remaining 50% of their export earnings. In this way exporters of industrial goods can import their raw material needs by an amount equivalent to the total amount of the foreign exchange generated by their exports.
- In 1997 the Majles approved a tax exemption status for 100% of income generated from the export of manufactured goods, as well as from the export of agricultural products and processed agricultural raw materials. The level of tax exemption for income generated from exports for all other commodities is 50%.
- In July 1997, the Central Bank authorized brokers at the Tehran Stock Exchange to deal in the foreign exchange proceeds of non-oil exports. Under the rules, exporters are issued an "exchange clearance certificate" in exchange for their hard currency earnings. Exporters can take this certificate to a TSE broker for sale to an importer of authorized items. The rate, which was initially to be set by the market, is in fact fixed by the Central Bank at substantially below the official export-import rate of IR3,000. In this way, the government prevents a free fall of the rial as happened in April 1995 (under the pressure of US sanctions) and also maintains supervision over hard currency flows.
- On September 16, 1997, the Permanent Committee on the Setting of Export Prices announced that all prices set for export items would remain valid as long as a new price list is not announced.
- In 1997 the Council for Public Culture named Mehr 29 (October 21) of each year as "National Exports Day". On this day a seminar under the heading "A National Drive for Exports" was held under the sponsorship of the Ministry of Commerce and various publicity programmes were implemented by all the agencies involved in the promotion of exports. On these occasions the government-owned radio and television stations focus on raising public awareness of the crucial role of exports in the economic welfare of the country.
- On March 1, 1998, the Council of Ministers gave permission to all non-oil exporters to utilize 100% of their foreign exchange proceeds, after delivery to the banking system, for the import of authorized goods, or to sell it at the Tehran Stock Exchange. The removal of the compulsory remittance of all the foreign exchange earnings by the exporters will enable them to sell it at much higher free-market rates or to use it themselves for the purchase of authorized imports, with the prospect of high profits. This decision alone, if it is sustained, can have a tremendous effect on all export-related matters including smuggling, under-pricing, and bribery and corruption at customs bureaus, and should make the export figures more reliable.
- Also on March 1, 1998, the Council of Ministers authorized the Central Bank to maintain the stability of the rial against foreign currencies and ensure that exporters should be able to sell their foreign exchange earnings at stable prices.

In a subsequent development, the Council of Ministers on March 17, 1998 approved several new administrative policies for non-oil exports during the Iranian year from 21 March 1998 to 20 March 1999:

- The grace period for the remittance of foreign exchange proceeds from exports was extended to eight months. For early delivery the exporters were promised a 1% exemption of the amount of obligation, for each month of advance payment.
- Exporters receiving an irrevocable letter of credit for their foreign sales were exempted from signing the obligatory delivery of foreign exchange contract.
- The despatch of goods for presentation at international trade fairs in quantities considered normal was exempted from the foreign exchange delivery obligation.
- Exporters were to be allowed to use part of the foreign proceeds of their exports for marketing purposes, including trips abroad to sign contracts.
- The Ministry of Commerce was mandated to prepare a list of prohibited exports for the coming year in cooperation with other involved ministries.
- The Minister of Commerce was empowered to prevent the export of non-standard goods by cancelling the export permits issued to offenders.
- The Ministry of Commerce was authorized to set limits on commodities carried by passengers abroad, which could harm the normal exports of the country.

2.1.6 The policy impact on manufactured exports

As stated earlier, non-oil exports in general, and industrial exports in particular, responded very positively to the policies adopted during the FFYP period. Even in 1994, the transitional year between the two plans, the value of non-oil exports reached the unprecedented level of \$4,824.5 million with a surge of 28.8%. In this memorable year the value of industrial exports rose by 26.7% to \$1,510 million, or 31.3% of the total value of non-oil exports. Of the remainder, agriculture accounted for approximately 24%, carpets and handicrafts for 29%, minerals and ores for 2%; and unclassified miscellaneous items for the remaining 12% or so.

A general decline of non-oil exports by almost 35% was registered between 1995 and 1997, which also affected industrial exports. As indicated in Table 2.1.7, the value of these exports dropped to \$1,065 million in 1995. Then, due to changes made in the regulations, as indicated earlier, it jumped to \$1,700 million in 1996.

Table 2.1.7. Iran: Growth of non-oil and industrial exports, 1984-97^{1/}
(\$ million, %)

	Total Exports (1)	Non-Oil Exports (2)	(2) as share of (1) (3)	Industrial Exports (4)	(4) as share of (2) (5)
1984	17,087.0	361.0	2.1	27.3	7.6
1985	14,175.0	465.0	3.3	64.0	13.8
1986	7,171.0	915.5	12.8	109.9	12.0
1987	10,639.0	1,160.8	10.9	131.8	11.4
1988	7,101.9	1,035.8	14.6	232.7	22.5
1989	13,037.0	1,043.9	8.0	122.5	11.7
1990	19,305.6	1,312.5	6.8	241.5	18.4
1991	18,415.7	2,648.7	14.4	660.0	24.9
1992	19,279.8	2,987.7	15.5	970.9	32.5
1993	18,346.8	3,746.8	20.4	1,191.0	31.8
1994	19,434.4	4,824.0	24.8	1,510.0	31.3
1995	18,360.0	3,234.0	17.6	1,220.0	32.9
1996	22,391.0	3,120.0	13.9	1,492.0	54.5
1997	18,374.0	2,910.0	15.8	1,780.0	77.0

Source: Ministry of Commerce & Export Promotion Centre (EPC).

Note: 1/ Iranian years beginning 21 March.

Iran's industrial exports are largely composed of petrochemicals, ready-made clothes, utensils of copper and aluminum, plastic products, leather goods, floor coverings, chocolates, biscuits, fruit juices and concentrates, tomato pastes, furniture and wood products, electric and electronic appliances, and metals and castings. In recent years non-metallic minerals, metals and castings, and automotive products and components have been added to the export list of the country. Tables 2.1.8 and 2.1.9 provide a more detailed indication of the composition of Iran's industrial exports for 1989-97.

Table 2.1.8. Iran: Industrial exports under the supervision of the Ministry of Industries, 1989-97^{1/}
(\$ million)

	1989	1990	1991	1992	1993	1994	1995	1996	1997
Food & Pharmaceuticals	6.1	14.3	23.5	29.0	58.5	137.4	125.4	200.4	212.0
Textiles, clothing & leather	23.3	24.0	88.0	99.0	73.6	184.4	163.8	367.8	327.7
Chemicals	3.8	0.2	17.0	52.8	124.4	55.1	91.4	237.2	393.2
Non-metallic minerals	3.0	12.1	11.0	11.2	21.3	32.7	35.9	57.0	32.1
Metals & castings	41.0	0.1	169.0	143.9	166.4	133.1	62.8	70.0	83.3
Electrical goods & electronics	0.6	0.4	4.4	4.2	3.2	5.1	5.5	9.0	3.1
Automotive products	..	11.8	..	..	35.1	40.3	41.1	26.0	11.1
Others	..	1.5	..	..	..	302.3	217.4	168.0	76.2
Total above	77.8	64.4	312.9	340.1	482.5	890.4	743.3	1,135.4	1,138.7
Share (%)	63.5	26.6	47.4	35.0	40.5	72.7	57.2	66.8	..
Total Industrial Exports	122.6	241.5	660.0	970.9	1,190.0	1,225.0	1,300.0	1,700.0	..

Source: Ministry of Industries.
Note: 1/ Iranian years beginning 21 March.

In general, Iran's non-oil exports have increased by 200% between 1989 and 1997, and the country has also been able to increase the share of industrial goods in its exports substantially during the same period. In 1997, almost 55% of Iran's non-oil exports were composed of industrial goods, while this share amounted to only about 18% in 1990, as can be seen from Table 2.1.7.

Non-oil exports during the first eight months of the Iranian year 1377 (March-November 1998) amounted to some \$1,785 million, representing a decline of 13.4% relative to the figure for the corresponding period of the previous year. Industrial exports totaled \$979.6 million, compared to \$1,235 million in the first eight months of the previous year, indicating a decline of 20.7%.

The goals set for industrialization, economic growth, and technological advancement during the FFYP and the SFYP (1989-99) have thus not been reached, despite the fact that the capital formation ratio has been about 20.7% of GDP, and industrial investments have increasing by about 19.8% annually in 1988-96 (Tables 2.1.10-2.1.11). The growth of industrial domestic value added (DVA) has been only about 8.03%, and the share of industrial DVA in GDP has remained

relatively stable at about 16%, amounting to about \$18 billion at best (see Table 2.1.11). This low level of industrial activity inevitably constrains Iran's ability to expand its industrial exports.

Table 2.1.9. Iran: Composition of industrial exports, 1989-95^{1/}
(\$ million)

	1989	1990	1991	1992	1993	1994	1995	1996
Total	122.7	241.5	660.0	971.1	1,191.0	1,711.7	1,460.8	100.0
Detergents & soaps	0.4	1.6	2.8	5.8	3.4	15.0	13.4	0.9
Chemical products	32.6	15.9	40.3	17.7	29.5	237.0	387.8	26.6
Shoes	0.2	11.7	7.1	22.7	11.6	36.9	31.0	2.2
Garments, knitwear & fabrics	6.9	4.2	23.5	55.6	36.5	96.1	112.5	7.7
Cement, stones, tiles & building materials	4.5	4.7	5.2	4.5	6.2	32.8	28.4	1.9
Transport vehicles	1.9	..	14.6	79.6	20.4	24.1	23.8	1.6
Copper bar, sheet and wire	43.3	..	82.8	131.6	140.6	106.8	67.7	4.6
Copper appliances	0.4	..	225.2	205.1	167.0	137.6	..	..
Iron & steel	12.6	..	29.1	142.6	398.8	340.5	161.8	11.1
Hydrocarbons (gas)	0.0	..	0.0	47.8	45.0	74.4	..	..
Others	29.9	..	229.4	258.1	332.0	610.5	634.4	43.4
Share of Ministry of Industries	76.0	74.8	312.9	340.1	482.4	890.4	759.4	52.0

Source: Government of Iran.

Note: 1/ Iranian years beginning 21 March.

Table 2.1.10. Iran: GDP and capital formation, 1976-97^{1/}
(IR billion, constant 1990 prices)

	GDP	GDI	GDI as % of GDP
1976	47,760	15,276	32.0
1977	46,899	14,958	31.9
1978	40,554	12,031	29.7
1979	39,506	7,538	19.3
1980	32,670	6,956	21.3
1981	32,595	6,284	19.1
1982	38,188	6,670	17.5
1983	44,886	9,631	21.5
1984	46,115	9,645	20.9
1985	45,858	8,017	17.5
1986	37,650	5,789	15.4
1987	35,678	4,762	13.3
1988	32,752	4,292	13.1
1989	34,432	3,960	11.5
1990	35,755	5,662	15.8
1991	38,446	8,566	22.3
1992	38,130	8,668	22.7
1993	44,265	9,758	22.0
1994	44,524	10,296	23.1
1995	46,562	10,688	23.0
1996	48,983	12,452	25.4

Source: Ministry of Industries and Bank Markazi Iran.

Note: 1/ Iranian years beginning 21 March.

Table 2.1.11. Iran: Approved industrial investments, 1989-96¹
(IR million)

	1989	1990	1991	1992	1993	1994	1995	1996
Food & sugar	11,714	26,310	37,349	80,125	166,640	751,687	2,054,850	883,411
Textiles, clothing & leather	32,174	40,005	30,575	81,909	132,495	276,051	792,435	1,196,079
Non-metallic minerals & cellulose	15,677	100,345	96,052	120,397	317,661	1,601,294	1,403,409	830,762
Chemicals & pharmaceuticals	6,408	19,466	26,200	63,869	111,201	365,718	832,590	827,455
Metallic instruments	11,677	14,593	18,755	50,012	84,511	181,412	534,910	405,473
Electrical goods & electronics	15,538	16,756	5,253	19,717	100,593	176,578	315,818	707,181
Machine making and instrument manufacturing	...	7,594	11,457	16,517	950,530	87,328	494,609	294,716
Metallurgical, casting	....	1,657	8,425	28,817	177,510	100,428	396,974	131,155
Automotive	...	9,872	4,293	10,780	63,344	62,073	62,405	87,768
Total	93,187	236,599	238,359	472,143	2,104,485	3,602,569	7,438,000	5,364,000
Percentage growth	38.3	153.9	0.01	98.1	345.7	71.2	106.5	-27.8
SFYP (in constant 1981 IR)			262.4	330.8	180.2	189.6		
Total investments			1,942.9	2,077.3	2,133.4	2,262.7		
Share of industrial investment			13.5	15.9	8.4	8.4		

Source: Ministry of Industries.

Note: 1/ Iranian years beginning 21 March

Table 2.1.12. Iran: Selected indicators relating to industrial exports, 1989-97^{1/}

	1989	1990	1991	1992	1993	1994	1995	1996	1997
GDP ¹	9,515	10,665	11,825	12,474	13,071	13,280	13,880	14,694	15,121
Capital formation ^{2/}	1,217	1,379	1,943	2,077	2,133	2,206	2,289	2,467	2,430
Capital formation/ GDP ^{3/}	12.8	12.9	16.4	16.6	16.3	16.6	16.5	16.8	16.1
Industrial investment ^{2/}	100.6	131.9	212.0	288.0	307.5	287.0	298.0	322.8	317.5
Share in total investment ^{3/}	8.3	9.5	10.9	13.9	14.4	13.0	13.0	13.1	13.1
Industrial DVA/ GDP ^{3/}	14.9	15.0	16.0	16.0	15.2	16.0	16.0	15.7	16.6
Total exports ^{4/}	13,081	19,305	18,661	19,868	18,080	19,434	18,375	22,391	18,374
Non-oil exports ^{4/}	1,044	1,313	2,649	2,988	3,747	4,824	3,234	3,120	2,910
Industrial exports ^{4/}	122	364	1,023	1,994	1,004	1,327	1,294	1,492	1,703
Industrial exports/ non-oil exports ^{3/}	11.7	18.4	24.9	32.4	26.8	27.5	40.0	54.5	58.5

Source: Ministry of Industries, *Eight Years Industrial Efforts 1989-1996* (in Farsi), Tehran, 1997, p.15.

- Notes: 1/ Iranian years beginning 21 March.
 2/ IR mn, constant 1982 prices.
 3/ percentage.
 4/ \$ million.

Between 1989 and 1997 consumer goods accounted for almost 75% of Iran's non-oil exports, with raw materials and intermediate goods accounting for some 25% and capital goods for only about 1%. Whether the country has a real comparative advantage in even the non-oil exports listed in Tables 2.1.8-2.1.9 will be assessed in Chapter 4.

To a large extent Iran is cut off from international markets, particularly those of the industrial countries. Its share of the total imports of industrialized countries was only 0.2% (Table 2.1.14), including oil. The situation of non-oil industrial exports during the past three years in particular has been alarming. The latest figures for non-oil exports show a 25.7% decline in March-June 1998, compared with the corresponding period of the previous year, and are a great disappointment to Iran's economic policy-makers. Any non-oil export promotion and development policy must begin with a careful study of the present disappointing performance.

Table 2.1.13. Industrial Countries: Trade flows to listed regions, 1990-97
(\$ billion)**A. Exports**

	1990	1991	1992	1993	1994	1995	1996	1997
World	2,447.1	2,500.9	2,653.0	2,561.1	2,888.3	3,427.5	3,513.2	3,572.0
Industrial countries	1,868.0	1,872.3	1,963.2	1,807.0	2,045.0	2,416.3	2,458.1	2,461.7
EU	1,233.8	1,252.5	1,316.5	1,129.5	1,279.0	1,556.4	1,569.2	1,527.9
Developing countries	561.9	614.4	676.0	725.9	809.0	978.4	1,021.1	1,077.0
Europe	91.4	89.5	88.4	101.9	111.8	151.1	172.8	192.8
Middle East	76.2	88.1	97.8	92.5	89.0	96.5	104.3	111.4
Iran	9.9	14.4	15.5	9.6	6.8	6.2	6.7	7.5

B. Imports

	1990	1991	1992	1993	1994	1995	1996	1997
World	2,577.7	2,602.3	2,716.0	2,528.9	2,882.4	3,392.8	3,507.5	3,663.0
Industrial countries	1,913.5	1,922.6	2,009.7	1,799.8	2,038.6	2,398.1	2,442.2	2,517.9
EU	1,220.6	1,219.2	1,284.8	1,063.2	1,222.6	1,479.5	1,503.7	1,516.8
Developing countries	649.4	667.2	691.2	702.4	812.4	967.6	1,038.2	1,117.6
Europe	78.9	80.3	74.3	80.7	103.5	135.7	137.2	148.6
Middle East	102.7	96.1	94.1	87.2	86.0	93.1	104.0	110.4
Iran	11.5	11.7	10.5	10.0	8.9	9.3	11.2	11.0

Sources: 1990-92: IMF, *Direction of Trade Statistics*, Yearbook 1997.
1993-97: IMF, *Direction of Trade Statistics*, Quarterly, June 1998.

Table 2.1.14. Industrial Countries: Trade flows to listed regions, 1990-97
(% distribution)**A. Exports**

	1990	1991	1992	1993	1994	1995	1996	1997
Industrial countries	76.3	74.9	74.0	70.6	70.8	70.5	70.0	68.9
Europe	3.7	3.6	3.3	4.0	3.9	4.4	4.9	5.4
Middle East	3.1	3.5	3.7	3.6	3.1	2.8	3.0	3.1
Western hemisphere	3.9	4.4	4.9	5.3	5.5	5.1	5.3	6.0
Iran	0.4	0.6	0.6	0.4	0.2	0.2	0.2	0.2

B. Imports

	1990	1991	1992	1993	1994	1995	1996	1997
Industrial Countries	74.2	73.9	74.0	71.2	70.7	70.7	69.6	68.7
Europe	3.1	3.1	2.7	3.2	3.6	4.0	3.9	4.1
Middle East	4.0	3.7	3.5	3.4	3.0	2.7	3.0	3.0
Western hemisphere	4.7	4.6	4.5	4.9	5.1	5.1	5.4	5.8
Iran	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3

Sources: 1990-92: IMF, *Direction of Trade Statistics*, Yearbook 1997.
1993-97: IMF, *Direction of Trade Statistics*, Quarterly, June 1998.

2.2 New market opportunities in a changed global and regional environment

The successful conclusion of the Uruguay Round of tariff negotiations (UR) in December 1993 and the commencement of operation of the World Trade Organization (WTO) in early 1995 have invigorated the international business environment and generated new opportunities for beneficial international relations. Specifically, the UR has created a new multilateral trading system with the biggest package of market access concessions ever negotiated, including, on average, a 38% reduction in tariffs of industrial products from an average of 6.3% to 3.9%. The new agreement has set rules and procedures for every aspect of international economic exchange, including trade in services (under GATS), intellectual property protection (under TRIPS), and international investments (under TRIMS), in addition to trade in goods. The WTO has a dispute settlement system to ensure adequate redress for bilateral trade problems. The UR agreements have also, for the first time, brought trade in agricultural products, fisheries, and textiles under the same general rules as those of GATT, including the granting of "most favoured nation" (MFN) status, removal of all subsidies and non-tariff restrictions, and a commitment to an increasing liberalization of global economic ties. The WTO, in short, has created a rule-based system that has brought transparency, predictability, and security to trade policies and trading conditions.

The full impact of the UR accords remains to be seen, as it will take another five to seven years for the countries involved to implement all their commitments. In 1994, the GATT estimated that the increase in global merchandise exports by 2005 would amount to approximately \$755 billion (in 1992 dollars).² The same study predicted that the increase in the global income/welfare effect from the full market access package of the UR would be equal to \$235 billion (in 1992 dollars) by 2005. Trade in agricultural products, of major interest to Iran, was projected to increase by \$190 billion by 2005, due to an average reduction in tariffs of 37% and the gradual removal of export subsidies and domestic support measures.

Following the dissolution of the former USSR and the abandonment of the central planning system in Central and Eastern Europe, the countries of these regions have embarked on a process of economic restructuring aimed at achieving their reintegration into the global economy. The steps taken in this context by the countries with economies in transition include:

- The removal of foreign exchange restrictions for current account transactions and an increasing liberalization of financial flows.
- A reorientation of trade flows, with the concentration of trade with former partners in the CMEA being replaced by a more market-determined distribution of exports and imports.
- The formation of regional free-trade areas, including the Central Europe Free Trade Area (CEFTA) and the Baltic Free Trade Area (BFTA).
- The formation of the Commonwealth of Independent States (CIS), involving a degree of trade and payment cooperation.
- Membership of the WTO, with most of the countries in Central and Eastern Europe having joined the organization, and the rest, including Russia, having applied for membership.
- The granting of MFN status to a number of countries in the Baltic region and Central and Eastern Europe under the former GATT, and the signing of the "Europe Agreements" giving preferential market access under bilateral arrangements to the countries in question by the EU.

These measures have resulted in a comprehensive re-orientation in the trade links of the countries with economies in transition. Significantly, this shift in the geographical pattern of trade flows has been accompanied by a substantial increase in the degree of openness of these economies towards external trade and payments. Using the ratio of imports and exports to GDP as an indicator, the

² GATT, Information and Media Division, *The Uruguay Round Deal*, Geneva, April 1994.

available data indicate that many of these countries, especially in Central Europe, have economies that are as open as similar market economies.

Potentially significant opportunities are also provided by the newly revived Economic Cooperation Organization (ECO), which grew out of the Regional Cooperation for Development (RCD) organization founded in the 1960s by Iran, Turkey, and Pakistan. In line with its goal of promoting economic, cultural, and technological cooperation between its members, the Organization has agreed upon the following measures:

- The expansion of trade among the member states through freer access to each other's markets;
- Encouraging each of the member states to work toward the creation of conducive conditions for continuing economic growth to raise the quality and level of life in these countries;
- Deepening the cultural solidarity and moral and fraternal ties, to bring the people of the organization's member states closer together;
- Contributing to global economic trade and the elimination of unfair trade practices by promoting the adoption of common policies in the international community.

The Izmir Declaration signed by ECO in March 1997 also makes reference to joint efforts toward the elimination of trade barriers, consultation, and deliberation between the member states toward the implementation of joint industrial projects. In addition, it proposes the establishment of a trade and development bank and an insurance fund; the promotion of tourism, postal services, telephone communication, transport and air communication networks; technical assistance; and the creation of an ECO youth foundation. These pledges to forge increased economic ties were subsequently reinforced by the establishment of the ECO Chamber of Commerce and Industries, as well as the ECO Insurance Company in Karachi, the ECO Reinsurance Fund in Istanbul, and the ECO Insurance College in Tehran.

With the dissolution of the former Soviet Union, the newly independent republics of Azerbaijan, Kazakstan, the Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan, as well as Afghanistan, have also joined the ECO. The newly enlarged ECO had a joint population of 326 million in 1992, with an annual population growth rate of 2.6%. Currently, the organization's ten member states account for some 14% of the world's population and 17.5% of the overall world land area.

Although the realization of the full aims of the founding members of ECO has been inhibited by a variety of constraints, the organization has had some success in enhancing the links between its members and stimulating increased cooperation between them in the fields of transport, communications, trade, and energy. The inauguration of the railway lines linking Bandar Abbas with Mashhad and Sarakhs and Tajan represent an important step towards the establishment of an integrated ECO railway system to facilitate increased trade links between the organization's members.

The trade potential of the ECO for Iran, with its strategic location at the heart of the organization, is immeasurable. Iranian exports to the region have more than doubled since 1991, reaching \$761.6 million in 1994. Currently, the ECO states account for some 15% of the country's exports and 6% of its imports. In 1998 a spokesman of the Ministry of Roads and Transportation announced that Iran could earn as much as \$800 million annually from the transit of goods for its ECO partners. An indication of the economic potentials of the ECO member countries is given in Table 2.2.1, while Table 2.2.2 shows the increased participation of the six Central Asian republics of the former USSR in international trade.

Table 2.2.1. ECO member countries: selected economic indicators, 1995

	Area (^{'000} km ²)	Population (^{'000})	GDP (\$mn)	GDP per capita (\$)	Exports (\$mn)	Imports (\$mn)
Afghanistan	652.1	19,035	...	...	125	496
Azerbaijan	86.6	7,500	23,075	3,077	630	1,289
Iran	1,648.0	61,178	105,200	1,720	21,862	13,784
Kazakstan	717.3	16,590	16,350	986	6,230	4,261
Kyrgyz Republic	198.5	4,670	856	183	494	795
Pakistan	796.1	130,250	58,602	450	9,299	12,150
Tajikistan	143.1	5,840	2,516	431	770	668
Turkey	779.5	61,640	151,210	2,453	21,396	41,596
Turkmenistan	488.1	4,099	5,631	1,347	1,693	1,313
Uzbekistan	447.4	22,850	23,060	1,009	2,649	4,763

Sources: IBRD and IMF.

Table 2.2.2. Central Asian Republics of the Former USSR: Global Exports and Imports, 1992-95 (\$ million)**A. Exports**

	1992	1993	1993	1994	1995
Azerbaijan	7	156	216	271	258
Kazakstan	244	944	2,875	4,079	6,230
Kyrgyz Republic	315	247	281	483	494
Tajikistan	29	350	492	749	770
Turkmenistan	64	416	673	1,881	1,693
Uzbekistan	162	636	1,844	2,457	2,649

B. Imports

	1992	1993	1993	1994	1995
Azerbaijan	998	635	778	666	1,289
Kazakstan	460	1,560	3,709	4,707	4,261
Kyrgyz Republic	418	290	246	392	495
Tajikistan	73	532	547	810	668
Turkmenistan	141	497	774	1,364	1,313
Uzbekistan	300	813	1,959	2,783	4,763

Source: IMF, *Direction of Trade Statistics*, 1997.

CHAPTER 3

EFFECTIVENESS OF INSTITUTIONAL SUPPORT

3.1 The High Council for the Promotion of Non-Oil Exports (HCPE)

The SFYP (1995-99) authorized the formation of the HCPE to establish export-related policies, identify special assistance and facilities needed for export promotion, and propose ways to remove the existing constraints to exports. The Council is headed by the President or the First Vice-president. The members of the Council are the Minister of Commerce, the Minister of Industries, the Minister of Economic and Financial Affairs, the Minister of Construction Crusade, and the heads of the Central Bank, the Export Promotion Centre, the Plan and Budget Organization, the Customs Bureau, and the President of the Chamber of Commerce and Industries of Iran (CCII). The Council's decisions regarding export facilitation are to be put implemented and enforced by all relevant government agencies after having been approved by the Council of Ministers

The Ministers of Industries, Commerce, Agriculture, and Construction Crusade are required to prepare a list of exportable agricultural and industrial commodities at the start of each year. These should be goods in which the country has a comparative advantage, and their export should be supported and given priority. The list is to be presented to the Council for decision- and policy-making.

The stated responsibilities of the Council include a re-evaluation of the functions and operations of the commercial organizations involved in the export trade, the formulation of recommendations for the coordination, promotion and development of exports, and the centralization of the commercial activities of Iran's diplomatic missions abroad. In this context, the HCPE is required to hold monthly meetings to review problems and discuss issues regarding exports.

3.2 Provincial export promotion committees

The SFYP also paved the legal ground for the formation of Provincial Export Promotion Committees (PEPCs) in each of Iran's 25 *ostans* (provinces). These Committees are headed by the governor general of each province, and also include directors general from the ministries and agencies represented in the HCPE. The head of the *ostan* bank represents the Central Bank.

These Committees are required to carry out the following tasks in close cooperation with the secretariat of the High Council:

- Coordinating the non-oil export promotion activities of the executive bodies in the province;
- Reviewing issues and problems faced by provincial firms engaged in the export trade, and recommending solutions;
- Identifying constraints to exports and means of overcoming them.
- Proposing specific forms of assistance and support facilities for provincial firms involved in exports;
- Expressing views on existing laws, regulations, and provisions to improve exports;
- Drawing up a detailed list of exportable goods available in the province;
- Assessing the operations and performance of executive agencies under their jurisdiction;
- Collecting statistics on exports from the province;
- Highlighting existing facilities and capabilities for the export of services;
- Participating in the setting up of provincial trade fairs;

- Assisting and encouraging the holding of seminars and short-term courses on exports;
- Promoting schemes crucial to the development of provincial exports;
- Carrying out tasks assigned by the High Council for the expansion of exports from the province.

3.3 The Ministry of Industries

In order to encourage industrial exports the Ministry of Industries has established an Office of Export Promotion. This office has under its supervision the Export Promotion Department. The principal responsibilities of the department are as follows:

- To promote exports of goods produced by companies affiliated with the Ministry;
- To assess the export potential of industrial products under the control of the Ministry in accordance with the goals, programmes and guidelines of the SFYP;
- To establish policies and programmes to encourage the export of industrial goods using the means available to the Ministry;
- To give organizational support for the realization of the export target for industrial goods (amounting to a total of \$2 billion for 1997, of which \$1.15 billion are intended to emanate from firms affiliated to the Ministry).

The Export Promotion Department is also active in the promotion of exports of services from Iran, and sets targets in this regard. In 1997 the goal was to have \$250 million worth of letters of credit covering exports of services issued in favour of the exporters. For the same year the Department also set a target of \$125 million for the export of technical and engineering services, and \$50 million for Iranian investments abroad.

The Department maintains an active presence in the price-setting commission for export goods, and participates in domestic and international fairs for the marketing of exportable industrial products. It has also made proposals on reducing administrative procedures regarding the deposit of collateral on exported goods, on the establishment of export organizations and specialized export-oriented firms. In addition, it issues an Industrial Exports Directory, and provides information on Iran's industrial capabilities in gatherings of Iranian officials with their foreign counterparts.

The Export Promotion Department is also active in educating the public regarding the benefits of exports and in identifying the problems hindering the activities of exporters and providing solutions. Similarly, it seeks to improve the knowledge and capabilities of exporters by setting up special training courses for exporters, and conducts research aimed at identifying target markets for Iranian exports. Thus far, 55 countries have been studied. They are located, according to their importance for immediate action, in Central Asia, the Caucasus, to the south of the Persian Gulf, and in Southeast Asia.

3.4 The Ministry of Commerce

The Ministry of Commerce is the main government agency responsible for trade in Iran. Its origin dates back to early 1930s, when the first Foreign Trade Monopoly Law was passed. This restricted foreign trade to the government, which could pass on the privilege to individuals for a fee known as the Commercial Profit Fee (later renamed the Commercial Profit Tax, CPT). It was assumed that the importer benefiting from the sale of imported items should pay part of his profit to the government in return for having been granted the right to import. In subsequent years, the CPT has been used as the main instrument of commercial policy to discourage imports and to support domestic import-substituting manufacturing industries.

With regard to export promotion, the Ministry of Commerce has the duty to draft the procedural regulations for export promotion, and has a number of organizations under its direct supervision. These comprise:

3.4.1 The Export Promotion Centre of Iran (EPCI)

Established in 1984, the EPCI is headed by the Deputy Minister of Commerce for Exports. The Centre has two aims, to develop non-oil exports and to resolve the problems faced by exporters. It considers exporters' grievances and wishes, and attempts to solve their problems or respond to their requests. The EPCI is a member of the board that determines the amount of foreign exchange that each exporter has to guarantee to bring into the country for each unit of a particular product exported. In addition, the EPCI is in charge of organizing trade fairs and exhibitions with the objective of introducing Iran's export potential. The SFYP obliges all ministries, as well as all public and private entities, to coordinate their activities regarding the holding of, or participation in, any trade or industrial exhibition with EPCI, and to have its approval.

The EPCI also attempts to gather general information from all over the world on matters that may be relevant to the country's export promotion efforts, and to introduce them to Iranian entrepreneurs free of charge. In pursuit of this objective, the EPCI has been connected to the internet, and has established a very rich information bank. In the same context, the EPCI also seeks to establish contacts between Iranian and foreign businessmen. In 1996, for example, the centre held 104 international exhibitions inside Iran and abroad, of which 27 were solo fairs devoted to a single field.

Another important activity of the EPCI is to hold seminars and conferences on all aspects of international commerce. Short-term training courses, sometimes lasting up to 100 hours, are conducted on single subjects, such as commercial English or the legal aspects of international sales contracts. During 1994-96, 139 seminars and courses were held by EPCI, CCII, and the Industrial Managers Association (IMA). In addition, the centre encourages the participation of manufacturer-exporters in international trade fairs, and organizes gatherings of ambassadors in Tehran that are attended also by Iranian exporters and manufacturers to exchange views on the export potential of the country and the requirements of the respective markets. Finally, the EPCI also provides guidance to industrial units in publishing brochures and catalogues, and encourages provincial industrial offices to release directories of their exports.

3.4.2 The Iran Carpet Company

The Iran Carpet Company was initially set up before World War II to aid and supervise the development of the art and industry of carpet-making. The company has had a major role in upgrading the standards of production and raising the general level of education and knowledge of the carpet weavers about their craft. Since the early years of the commencement of its operations the company has established production centres throughout the country under the direct supervision of master carpet weavers with guaranteed lifetime employment. The products bearing the name of the company are well received by international carpet trade centres, mostly in Germany and in the United States. The company is directly or indirectly involved in preserving authentic Persian carpet designs and in introducing newer and more modern designs crafted by the masters working for the company. The company has a sales office in Tehran and a very well-established export network.

3.4.3 The Export Guarantee Fund of Iran

The Export Guarantee Fund was established to support exporters by protecting them against mishaps not covered by other insurance companies. The fund provides the exporters with a general

guarantee (insurance) for exports; guarantees bank loans, export credits, Iranian investments abroad, and exporters' foreign exchange business. In 1996 the fund issued 255 guarantees, which represented a fifteen-fold increase over the corresponding figure for 1994. The fund was originally a part of the EPCI and was directly supervised by the centre, but in 1994 the SFYP allowed the government to organize the fund as an independent government agency with its own legal status.

3.4.4 Commercial bureaus overseas

Commercial bureaus have been opened in recent years in a number of countries, such as Turkey, Germany, Kenya, Lebanon and the UK. They are charged with the task of establishing and strengthening commercial relations between Iran and the host country. In pursuit of this objective they gather information on the economy and trade of the country in which they serve, and provide information to Iranian businessman as well as local traders interested in conducting trade with Iran. The opening of a commercial bureau in South Africa and a Southeast Asian country is planned.

3.5 The Export Development Bank of Iran (EDBI)

The EDBI was established in 1991 with the mandate of promoting an "expansion of Iran's exports and trade relations with other countries". It began operating as a single unit banking entity in August 1992, but has since established 11 branches in provincial cities with export activities. The major activities of the bank are as follows:

- Providing banking services to exporters. The bank's customers have checking and savings accounts at the bank (with IR530 billion on deposit in 1996), and receive all banking services required for foreign trade, such as the issuance of letters of credit and guarantee. The value of letters of credit issued for imports and exports by the bank totaled \$260 million in 1996. The bank has established a network of correspondent banking relations involving a number of reputable banks throughout the world. The bank also issues exchange payment guarantee letters required for the export of technical services from Iran.
- Granting credit facilities to exporters. The bank has expanded its credit activities very rapidly. The total amount of credits extended in 1996 rose to IR402 billion, a 560% increase over the figure for 1995. The share of credit for the export of industrial goods formed 73% of the total (IR294 billion).
- Performing buy-back activities for the country. The bank has been given the responsibility of appraising and confirming the agreements that are presented to it. Approvals are issued for agreements found to be compatible with the prevailing rules and regulations, national laws or decrees of the Council of Ministers.
- Acting as the executing agency for credit and payment agreements signed by Iran and other countries. Iran has set up a number of joint economic commissions with friendly countries. These usually incorporate a banking and payment arrangement involving the granting of credit facilities by the Ministry of Finance via the Central Bank. The EDBI is entrusted with the task of implementing such agreements. Thus far, Turkmenistan, Libya, and Pakistan are benefiting from such facilities.
- Being the national agent of the Islamic Development Bank (IDB) in Iran and representing the IDB in the Longer Term Trade Financing Scheme (LTTF). Under the prevailing arrangements with the IDB, the EDBI utilizes the resources of the former for the promotion of trade among Muslim countries. The bank receives applications for the use of IDB credits for exports of Iranian goods to other Muslim countries or for the import of goods from these countries to Iran.
- Participation in industrial projects. The EDBI is also active in financing industrial projects with export potential. The projects undertaken thus far have involved the production and export of fatty acids and glycerin, rail wagons, baby food, textiles, ready-made clothing, tiles,

polypropylene yarns, leather and leather goods. The bank has also financed the construction of a five-star hotel in the Qeshm free-trade zone.

3.6 The Iran Chamber of Commerce, Industries and Mines (ICCIM)

The new law establishing the structure and functions of the Iran Chamber of Commerce, Industries and Mines was enacted in 1991. According to the law, the chamber is the voice of the Iranian business community, both in presenting their interests and in acting as advisor to the government on matters relating to the sector and to the economy as a whole. The act was amended in 1994 to give the institution greater drive and vitality and to facilitate the activities of business enterprises and individuals active in the economy.

According to the law, the Chamber should pave the way for the expansion of the economy and for the free exchange and expression of views by entrepreneurs in the industrial, mining, agricultural, and commercial sectors. With regard to export promotion, the Chamber is entrusted with the following specific duties:

- Ensuring coordination and cooperation among traders, entrepreneurs and owners of industrial mining and agricultural enterprises;
- Offering counsel to the government on economic issues pertaining to commerce, industry and mining;
- Establishing linkages with chambers of commerce in other countries and forming joint commissions in accordance with the principal policies of the government;
- Holding general or specialized exhibitions at home or abroad with permission from the Ministry of Commerce and participating in conferences and seminars related to commercial, industrial, mining or agricultural activities of the Chamber;
- Presenting Iranian goods to potential foreign clients and helping and encouraging relevant bodies to take part in domestic or international exhibitions and fairs;
- Encouraging domestic investment in manufacturing enterprises, especially in the production of high-quality exportable goods;
- Establishing a centre for economic and industrial data and information to complement the Chamber's activities and duties;
- Setting up exporters' and importers' unions and producers' syndicates in commercial, industrial, mining and service activities on the basis of relevant rules and regulations;
- Holding applied courses in different fields of commerce, industry, mining and the services sector in line with the needs and requirements of the country;
- Establishing joint chambers with friendly countries, subject to coordination with the Ministries of Commerce and Foreign Affairs.

3.7 The Industrial Managers' Association (IMA)

The Industrial Managers Association, with 1300 industrial units as members, is the only private institution dedicated to serving the private industrial sector of Iran. The Association was formed twenty years ago and has the promotion of Iranian industry as its goal. The IMA prepares studies on industry-related issues at a macro-level. It takes action when an issue or problem relates to a number of its members. It forwards its studies to government ministries, the Central Bank, and the relevant committees of the parliament, as well as holding meetings with ministers and prominent members of the Majles to stress its points of view. The Association organizes seminars, workshops, lectures, visits to industrial sites, and publishes a monthly magazine and a number of newsletters by its nine branches throughout the country. The IMA has signed an agreement with the Islamic Free (Azad) University for the continuation of formal studies by its affiliates leading to BS and MS degrees.

In 1996 the IMA prepared some twenty technical reports on taxes, social security, labour relations, industrial exports, financial markets, the stock exchange, etc. The most important research conducted by specialist affiliates of the IMA in 1997 was a study entitled *Strategies for Industrial Export Promotion*. This 1,000-page study reviews past industrial development policies and strategies and makes a number of recommendations for the future industrial planning of the country.³ A representative of the IMA attends the sessions of the HEPC. The IMA has set up a standing committee on industrial exports, and organized nine gatherings in 1997. Issues such as success in export markets, promotion of export culture, coordination of the activities of agencies involved in export promotion, the importance of the stability of laws and regulations for export promotion, and the role of industrial trade fairs in promoting exports were discussed. The exporters' requests that were brought to the attention of the committee were forwarded by the association to the relevant government agencies, and had an important role in the preparation and announcement of the new measures and incentives as can be seen in the preliminary proposals for the Third Socioeconomic and Cultural Development Plan presented in Annex I.

³ The current Study has also benefitted from the contents of that analysis.

CHAPTER 4

ANALYSIS OF EXPORT POTENTIAL OF SELECTED INDUSTRIAL SUBSECTORS

4.1 Food processing industries

4.1.1 Introduction

In recent years the Islamic Republic of Iran has encouraged the expansion of agro-industries to supplement the oil industry as a source of export products. This policy is based on the availability of wide range of high-quality food crops in Iran.

Iran enjoys a highly diverse climate and rich variety of flora. The 12 types of climate and 12,000 different varieties of flora enable the country to produce a wide range of temperate, subtropical and tropical crops. Equally importantly, there is often a temperature difference of 40-50 degrees centigrade at any one time between some areas, which makes it possible to produce a variety of crops throughout the year. Owing to ample sunshine (an average of 300 days, excluding the Caspian Coastal region) the agricultural products, especially garden produce, are of high quality as regards colour, texture and taste. In addition, recent attempts by the government to urge farmers to reduce their use of pesticides and chemical fertilizers are having very promising results and leading to the production of wholesome products in compliance with international standards.⁴ Table 4.1.1 shows the major crops that are produced in excess of domestic consumption.

Table 4.1.1. Iran: Production and export of selected crops, 1995/96^{1/}

Product	Production		Export	
	'000 tonnes	Rank in world	'000 tonnes	Rank in world
Apples	2,231	6	149	6
Apricots	193	2	4	..
Dates	780	1	70	1
Grapes	1,850	8	331	10
Lemons	726	5	1	9
Oranges	1,556	8	24	10
Pistachios	239	1	124	1
Pomegranates	612	..	18	..
Raisins	90	3	71	3
Saffron	126	1	32	1
Tangerines	616	3	24	10
Potatoes	3,074	..	1	10
Tomatoes	2,403	9	4	5

Sources: *Foreign Trade Yearbook of I.R.Iran (Export)*, 1375 (1996) (Farsi)
Ministry of Agriculture, *Iran's Position in the World Agriculture* (Farsi), 1376.

Note: 1/ Iranian year 1374; beginning 21 March 1995.

Table 4.1.2 shows the volume of some of Iran's potential agricultural exports traded in the world. The dissolution of the Soviet Union and the emergence of the newly-independent Central Asian States has created good opportunities for Iran to increase its export trade in agro-industrial

⁴ The amount of pesticides used has dropped from 40,845 tonnes in 1988 to 1,361 tonnes in 1996 although crop production has almost doubled. Meanwhile, the High Economic Council has recently determined that the subsidy on chemical fertilizers be removed and transferred to the micro-nutrients needed for plant growth.

products. The countries of Europe, the Persian Gulf and Southeast Asia also offer a significant market potential.

Table 4.1.2. World trade of selected agricultural products, 1991-96

Product	Year	Exports		Imports	
		Volume '000 tonnes	Value \$ million	Volume '000 tonnes	Value \$ million
Citrus fruit	1991	5,521	2,888	5,585	3,486
	1992	5,864	3,068	5,880	3,477
	1993	6,356	2,915	5,929	3,169
	1994	6,843	3,223	6,737	3,759
	1995	6,432	3,672	6,321	3,939
	1996	6,714	4,055	6,502	4,323
Apples	1991	3,860	2,452	3,951	2,810
	1992	3,887	2,460	3,943	3,060
	1993	4,278	1,990	4,210	2,181
	1994	4,544	2,415	4,190	2,668
	1995	5,025	2,965	4,719	3,201
	1996	5,207	3,277	4,901	3,444
Grapes	1991	1,654	1,598	1,673	1,975
	1992	1,771	1,609	1,764	2,016
	1993	1,918	1,634	1,777	1,874
	1994	2,026	1,854	1,956	2,128
	1995	1,868	1,923	1,824	2,245
	1996	2,120	2,051	2,092	2,490
Raisins	1991	527	668	514	702
	1992	519	675	506	709
	1993	538	653	534	688
	1994	622	713	583	723
	1995	545	983	573	732
	1996	574	732	602	782
Potatoes	1991	7,882	1,862	7,779	2,046
	1992	7,604	1,578	7,676	1,849
	1993	7,044	1,284	6,854	1,367
	1994	7,741	1,740	7,399	1,851
	1995	7,065	2,270	7,209	2,540
	1996	7,280	1,662	7,557	1,902
Tomatoes	1991	2,437	2,000	2,435	2,291
	1992	2,355	1,960	2,404	2,175
	1993	2,783	2,120	2,734	2,270
	1994	3,167	2,556	2,885	2,500
	1995	3,342	2,767	3,139	2,682
	1996	3,326	2,899	3,489	3,257

Source: FAO, *Commerce Yearbooks*, various issues.

Iran enjoys an abundance of labour and relatively low labour costs. The agro-industrial sector pays the lowest wages of all industries in Iran, as indicated in Table 4.1.3.

Table 4.1.3. Iran: Annual wages per employee by industrial subsector, 1994 (\$)

Industry	Wage rate
Agro-industries:	
Food processing (fruits and vegetables)	1,037
Tanning	1,066
Textiles	142
Others:	
Basic iron and steel	2,475
Machinery	1,963

Unpublished data for the Iranian year 1374 (beginning 21 March 1995) compiled by the Ministry of Industries indicates that the manufacturing value added generated by the food and textile industries amounted to \$2,335m and \$2,106m respectively. This corresponded to 13.2% and 11.9% of the total manufacturing value added generated in that year, making these industries the next most important sources of added value after the petroleum refining industry.

The food processing industry's dependence on imported inputs is 10.7% as compared with metal industry's 45.6%. This, besides the fact that the capital is retained within the country, helps to create high rate of employment. The same also holds true for the leather industry, and to some extent for the textile industry.

About 90% of Iran's agricultural output is produced on small-scale traditional farms. The average peasant farmer utilizes 5 hectares of land, sometimes scattered on two or three plots. This creates numerous difficulties and constraints of which the following are notable:

- Inability to apply machines and practice mechanized farming. An attempt to achieve such mechanization prior to the Islamic Revolution had little success due to the country's overwhelmingly traditional small-scale farming system.
- Inefficient pest and biological controls.
- Low productivity and high loss of water, energy and other resources.
- Uncertain flows of agricultural inputs to food processing plants.

4.1.2 Food processing plants

The food processing industry in its modern sense is relatively new in Iran. Special steps have been taken to promote the industry during the first and second Five-Year Development Plans of the Islamic Republic of Iran. From the beginning of the First Five year Plan in 1989 to 1996, \$460m in foreign currency have been allocated to the private sector to establish more than 300 food processing plants. In addition, investors in the food processing industry have also been granted low interest loans.

Notwithstanding the measures already taken, much can still be done to promote the development of an export-oriented food-processing industry. The high quality and large quantity of the crops produced in Iran and its access to cheap labour justify a expansion and modernization of an export oriented food processing industry in the country. As indicated in Table 4.1.4, which shows the quantity of produce left after domestic consumption and processing, there is considerable room for an expansion of the food processing industry.

Table 4.1.4. Iran: Surplus of selected crops after domestic consumption, 1995/96^{1/}
(’000 tonnes)

	Production	Consumption	Processing ^{2/}	Surplus
Apples	2,231	1,578	541	112
Dates	780	438	41	301
Citrus fruit	3,051	2,580	333	102
Grapes & raisins	1,845	1,116	800	71
Pistachios	238	78	160	-
Pomegranates	612	438	75	99
Potatoes	3,074	2,016	236	822
Vegetables & summer crops	6,747	4,512	1,130	1,105

Sources: Bureau of Food Industry, Ministry of Agriculture, 1997; *Iran Agro-food 96*, Fara Gostar Publishing Company, Tehran, 1996.

Notes: 1/ Iranian year 1374; beginning 21 March 1995.
2/ Semi-processed products (mostly exportable), including processing capacities under construction.

The food processing plants operating in Iran can be classified into three categories:

- Plants operating under acceptable standards and practices. They are owned and operated by able entrepreneurs, and their products comply with the national and international standards and requirements. Since most of these plants have been operating for more than 15 years, however, some are in need of renovation and refurbishment. In particular, their equipment often needs to be modernized and upgraded in order to ensure that their output meets international standards and quality requirements.
- Plants which can be helped to renovate and urged to upgrade the quality of their products to comply with international requirements and standards.
- Small scale plants and workshops, which may be of two types:
 - Workshops operating with government permits that can be renovated and assisted to enable them to operate in compliance with national standards and codes of practice to supply the local demand. In most cases they are not suited for export-oriented production because of their small size, limited output, and frequent inability to meet external quality requirements.
 - Unlicensed workshops, which need to be shut down or properly licensed to ensure that they do not pose a hazard to the safety and health of consumers.

Most of the food processing plants in Iran are at least 15 years old, using equipment that was either imported or copied from older models. This is particularly true of the country's sugar beet refineries, edible oil refineries, wheat silos and flour mills, many of which were established over 25 years ago. These plants are mostly somewhat obsolete. They use excessive fuel and energy, and have comparatively low levels of efficiency. The sugar beet factories in Iran thus have a maximum yield of 8%, while the corresponding figure for European factories exceeds 10%. Iran does have some more modern plants as well, however, which were established after the Islamic Revolution. A small number of these, operating in such areas as date packing, the production of fruit juice and concentrates, and the manufacture of potato crisps, were established as recently as the early and mid-1990s.

The development of the food processing industry is not constrained by the unavailability of technical know-how and skilled manpower. There has been an outpouring of food technologists from Iran's colleges and higher institutes in recent years. A number of these graduates have joined the food industry, while others have found jobs in government departments or the non-food sector.

To reduce costs of production, however, some food factories avoid employing highly trained and experienced staff. In particular, almost all food processing plants lack experts in the fields of

automation, packaging, instrumentation, bio-environmental matters, and food engineering, partly because of an objective shortage of these skills and partly because the owners of these plants do not recognize the need for such expertise. Moreover, in some plants food technologists confine themselves to food laboratories or engage in managerial work. The production line is consequently left more or less in the hands of technicians and foremen, who lack the skills and experience to be able to handle the job well.

Table 4.1.5 shows the total capacity of the existing processing plants for Iran's principal food products. The following points may be made in connection with this table:

- Owing to the shortage of liquidity, the age of some plants, inadequate local raw material supplies, and in some cases a lack of incentive for the owner to enter competitive international markets, many plants utilize only 50-60% of their nominal capacities.
- In general, state-owned plants and those run by foundations and quasi-governmental organizations enjoy government support and subsidies, which are denied to private entrepreneurs. This creates economic imbalances which discourage private processors from fully utilizing their productive capacity.
- Many plants limit themselves to the processing of one product, which means that they operate for three months at the most even though this constraint can be easily overcome. A fruit juice concentrate plant can add a few pieces of equipment to produce reconstituted juice as well as pectin, essential oils, essences and animal feed, for example, while a date packer can easily be equipped to produce liquid sugar, marmalade, syrup and animal feed.⁵
- A number of plants are located a long distance from agricultural areas. This raises the cost of transport, creates uncertainties concerning the supply of raw crops, and above all increases post-harvest losses.

Table 4.1.5. Iran: Production capacities of food processing industries
(⁰000 tonnes)

	In operation	Under construction
Apples:		
Concentrate	34.0	6.0
Compote	40.0	-
Dried slices	1.2	-
Juice	60.0	-
Dates:		
Packaged	14.0	21.0
Sugar	-	3.0
Grapes:		
Concentrate	18.0	3.0
Juice	20.0	-
Raisins	120.0	-
Oranges:		
Concentrate	6.0	5.0
Juice	31.0	-
Pomegranates:		
Concentrate	15.0	15.0
Juice	6.0	15.7
Potatoes:		
Chips	40.0	12.0
Industrial chips	7.0	-
Tomato paste & ketchup	160.0	48.8
Cold storage	800.0	200.0

Source: *Iran Agro-food 96*, Fara Gostar Publishing Company, Tehran, 1996.

⁵ A factory producing grape fruit juice concentrate in the southwest of Iran was thinking of closing down because of the unprofitability of its operations. The manager was advised to process oranges and lemons, which he could easily obtain from adjacent areas, and to produce by-products such as essences, essential oils, and pectin, in addition to grapefruit concentrate and juice. He only needed to add a cold-store to his establishment (which should in any case have been built together with his concentrate and juice producing from the outset).

4.1.3 Expected growth patterns of food processing industries

The government, aware of the severity of post-harvest losses,⁶ is taking appreciable measures to prevent them by promoting the development of the food processing industry. The following are worth mentioning in particular:

- Investors in the food processing industry are granted long loans at easy terms and low interest rates (8-9%, as compared to 20-25% commonly in use).
- Agro-industries⁷ are exempted from paying customs duties on imported inputs, and are also exempted from income tax for the first five years of their operations.
- Land used for agro-industries may be leased for 15 years at very low rents.
- Agro-industries are granted discounted rates for water, fuel and power.
- In recent years several higher institutes for the teaching of food science and technology have been established, and existing colleges and universities have also included these subjects in their curricula.

Other steps the government is taking to help the food industry are food standardization and supervision. In the case of the former, the Institute of Standards and Industrial Research of Iran (ISIRI), which is responsible for formulating and enforcing national standards, has established a wide range of agricultural and agro-industrial standards, as shown in Table 4.1.6. In addition, food processors and cold storage owners are encouraged to obtain ISO certificates, although only a few have attempted to do so to date.

The Department of Food and Drug Supervision of the Ministry of Public Health, Therapeutics and Medical Education is responsible for supervising and controlling sanitary and hygienic measures and practices in the preparation and sale of food products. All imports of foodstuffs and food-related items have to be licenced by this department, which also issues Certificates of Origin for food exports upon request. The export of pistachios to the EU, in particular, needs to be certified by this department.

Table 4.1.6. Number of national and agricultural standards in selected countries

Country	National standards			Agricultural standards	
	No.	% mandatory	% discretionary	No.	% of total
Germany	21,000	0.0	100.0	800	3.8
India	15,003	0.0	100.0	1,618	10.8
Indonesia	2,093	3.0	97.0	89	4.2
Iran	3,465	6.5	93.7	1,295	37.4
Iraq	1,175	0.0	100.0	146	12.4
Malaysia	1,604	0.0	100.0	229	14.2
Turkey	8,524	88.5	11.5	861	10.1
USA	9,573	0.0	100.0	19	19.0

Source: Institute of Standards and Industrial Research of Iran, Tehran.

⁶ According to data presented at a workshop organized jointly by the FAO and the Ministry of Agriculture in Tehran in 1994, postharvest crop losses were estimated at 16.25 million tonnes out of a total production of 43.7 million tonnes in 1994, and were valued at Rials 8,125 billion.

⁷ The legal definition of agro-industries refers to agricultural production units possessing the land on which cultivation and processing of crops are carried out. Elsewhere in this report, however, the term agro-industries is used more loosely to refer to production and processing of agricultural products not necessarily carried out on the same land.

4.1.4 Prospects for exports of processed foods

Table 4.1.7 shows the volume of selected agricultural produce and processed foodstuffs exported in 1992-96. It can be seen that the unit price of Iranian exports is lower than the world average for almost all items for which comparative data are available. This may be attributed to the following:

- Iran's fruit exports include both low industrial grades and high-grade products. This lowers the export price as well as depriving the country of added value. The export of industrial-grade fruits also reduces their supply in the domestic market, thereby increasing the purchase price for local food processors. This in turn raises the cost of production and threatens the competitiveness of locally produced processed fruits in the world market. A ban on the export of industrial-grade fruit may therefore be worth considering, although this would only be possible if an effective grading system is put in place.
- The majority of Iran's food exports are shipped in bulk, which transfers the added value to the importer, who repacks and sells these products at a premium. Dates exported at, say, a maximum price of \$500 per tonne are repacked in countries like France or the UK and exported at more than \$3,000 per tonne. The government could encourage local exporters to export in retail-size containers by providing financial assistance and support for the acquisition of appropriate packaging machines and by relaxing the existing restrictions on the import of suitable containers. In addition, the numerous concrete recommendations on the packaging and standardization of food made at the 8th National Food Congress on Packaging in 1996 and the 9th National Food Congress on Standardization in 1997, both of which were held in Tehran, should be followed up and implemented.
- Many producers who engage in export activities may not be able to overcome the competitive challenges of the world market. Efforts should be made to identify the causes for this lack of success and to adopt the appropriate remedial measures.

Table 4.1.7. Iran: Exports of food and food products, 1992-97

Product	Year ^{1/}	Quantity (tonnes)	Value (\$ million)	US\$/tonne	
				Iran	World
Almonds	1992	2,732	4.7	..	..
	1993	6,585	9.3	..	..
	1994	4,256	5.4	1,269	..
	1995	3,377	5.6	1,658	..
	1996	5,951	11.4	..	..
	1997	3,290	6.9	..	..
Apples	1992	120,294	12.4	..	..
	1993	215,770	22.7	..	..
	1994	190,223	18.7	98,531	..
	1995	149,124	14.6	98,590	..
	1996	123,713	2.1	..	..
	1997	118,206	11.8	..	..
Dates	1992	90,617	43.9	..	..
	1993	109,119	54.5	..	..
	1994	134,508	60.7	451	731
	1995	69,927	30.7	439	985
	1996	61,558	20.3	..	..
	1997	59,290	14.7	..	..
Dried fruit (slices) ^{2/}	1992	3,843	3.8	..	..
	1993	4,327	4.1	..	..
	1994	3,308	10.0	3,022	..
	1995	7,359	6.5	883	..
	1996	12,104	9.1	..	..
	1997	12,725	9.4	..	..

Product	Year ¹⁾	Quantity (tonnes)	Value (\$ million)	US\$/tonne	
				Iran	World
Fruit juice	1992	3,602	3.2	..	..
	1993	2,991	1.5	..	..
	1994	9,249	6.3	668	..
	1995	28,416	23.0	809	..
	1996	77,825	39.0	..	..
	1997	25,395	20.7	..	..
Grapes	1992		0.06	..	..
	1993	458	0.06	..	..
	1994	560	0.04	102	915
	1995	390	0.04	121	1,030
	1996	331	0.08	..	..
	1997	242 233	0.02	..	..
Oranges	1992	9,511	1.98	..	..
	1993	13,518	2.84	..	..
	1994	25,123	4.90	195	471
	1995	23,786	4.60	193	571
	1996	25,496	3.47	..	..
	1997	16,822	2.02	..	..
Pistacchios	1992	104,205	373.3	..	..
	1993	117,864	435.4	..	..
	1994	107,885	375.4	3,480	..
	1995	123,676	417.5	3,376	..
	1996	139,423	469.4	..	..
	1997	57,932	197.3	..	..
Pomegranates	1992	9,917	1.07	..	..
	1993	15,935	1.70	..	..
	1994	18,555	1.82	98	..
	1995	13,666	1.34	98	..
	1996	12,600	..	..	..
	1997	14,400	..	..	..
Potatoes	1992	8,672	0.63	..	..
	1993	29,331	2.30	..	..
	1994	103,420	8.97	87	224
	1995	1,360	0.13	96	321
	1996	9,936	1.13	..	..
	1997	83,119	8.5	..	..
Raisins	1992	53,797	36.8	..	..
	1993	63,572	42.7	..	..
	1994	78,219	50.1	623	1,146
	1995	71,261	44.4	542	1,255
	1996	89,103	48.3	..	..
	1997	59,702	2.5	..	..
Saffron	1992	46.2	16.2	..	..
	1993	65.9	23.8	..	..
	1994	65.1	22.1	339,478	..
	1995	31.5	11.5	365,079	..
	1996	45.7	17.4	..	..
	1997	36.1	14.1	..	..
Tomato paste & ketchup	1992	1,782	1.2	..	..
	1993	16,715	9.7	..	..
	1994	29,284	16.2	551	..
	1995	11,265	6.1	542	..
	1996	36,193	17.7	..	..
	1997	64,278	32.3	..	..

Product	Year ^{1/}	Quantity (tonnes)	Value (\$ million)	US\$/tonne	
				Iran	World
Tomatoes (fresh)	1992	887	0.1	..	..
	1993	3,604	0.4	..	..
	1994	7,612	0.8	105	807
	1995	4,016	3.8	946	828
	1996	5,704	5.2	..	..
	1997	67,698	32.4	..	..
Walnuts	1992	484	0.7	..	..
	1993	2,319	5.1	..	..
	1994	2,472	7.0	2,056	..
	1995	3,132	6.4	2,035	..
	1996	2,992	6.1	..	..
	1997	1,315	2.7	..	..

Source: Foreign Trade Yearbook of the Islamic Republic of Iran (Export), various years.

Notes: 1/ Iranian years starting March 21.

2/ Apricots, peaches and figs.

4.1.5 Conclusions and recommendations

Iran's population is projected to reach 100 million by the Iranian year 1400 (2022). During the same period, the production of food crops is expected to rise to 220 million tonnes, of which some 100 million will be available for export. To develop the necessary export markets, significant measures will have to be taken to improve the quality of Iran's processed foods. Packaging techniques will have to be improved and high quality packaging materials will have to be used. In addition, close compliance will have to be observed with international standards for raw and processed products, and the Codex Alimentarius in particular.

The achievement of these objectives may necessitate the phasing out of the prevailing traditional farming systems. The Ministry of Agriculture has already been urging peasants to consolidate their small scattered plots and to come together into so-called Rural Production Cooperatives (RPCs). Each RPC covers 2,000-2,500 hectares of land and comprises 200-250 farmers. So far 500 RPCs have been formed. It is estimated that by 2022 almost all of Iran's farms will consist of RPCs or large commercial farms linked to the food processing industry.

The export of agriculture-based products is complicated by the fact that the responsibility for agro-industries has been parceled out among several government organizations with varying and sometimes contradictory objectives. The situation is particularly serious in the case of the food industry, where several organizations, including the Ministries of Industries, Agriculture, Jihad-e-Sazandegi and Commerce are all authorized in one way or another to engage in planning and decision-making activities, which causes considerable interference and overlaps. This gives rise to extremely tedious bureaucratic procedures, especially in the case of exporters, who must often pass through various channels and satisfy the rules of several organizations before they can obtain a final export permit. Sometimes there is lack of coordination between the organizations, which aggravates the matter. The possibility of establishing a single coordinating body to deal with agro-industrial affairs may thus be considered as a means of overcoming, or at least minimizing, these inconsistencies.

The lack of applied research also acts as a significant constraint for the development of the agro-based industries. Only a few plants have their own integrated R&D sections, and there is no central institution to help resolve problems that the food processing industries may face with regard to the quality of their products. The Canned Food Producers' Cooperative is starting such a centre, which should be supported and encouraged. The sophisticated research centres at the Ministries

of Agriculture and Jihad-e-Sazandegi should also be made to work in close cooperation with, and actually serve, the private sector rather than do research on their own.

The agro-based industries face a serious shortage of qualified technicians and skilled labourers. There is a noticeable gap between graduate technologists and labourers. The situation is exacerbated by the fact that there are no institutions or schools for training technicians and workers, who often lack sufficiently thorough understanding of the work they do.

As responsibility for the agro-based industries in general, and the food industry in particular, is distributed among several organizations, all of whom deal independently with the industry, and since many work shops and individuals in these industries are unlicensed, statistical and other data are not particularly accurate or reliable. In addition, the collection of accurate export statistics is rendered impossible by the comparatively high incidence of smuggling.

Other general problems faced by the agro-based industries include inadequate and inefficient transport networks, a lack of proper packaging know-how and a shortage of appropriate packaging materials.

Based on the weaknesses identified above, the following specific recommendations are offered for the development of an internationally competitive agro-based export industry:

- Consolidation of small farms into Rural Production Cooperatives, and promotion of large commercial agro-industrial complexes.
 - Coordination between the organizations dealing with food industry. Although experience has shown that the integration of all matters related to the food industry into one supervisory body is difficult, the formation of a National High Food Council with the participation of the related organizations offers the possibility of a solution of this kind. Such a council could function as a forum for the exchange of views and the coordination of the various individual agencies involved. Its decisions must be firm and conclusive, and it must have the authority to ensure their implementation. The officials appointed to serve on the proposed National High Food Council might include:
 - First Vice-President of the Islamic Republic of Iran, Chairman
 - Director of Plan and Budget Organization, member
 - Minister of Agriculture, member
 - Minister of Industries, member
 - Minister of Jihad-e-Sazandegi, member
 - Minister of Commerce, member
 - Chairman of the Chamber of Commerce, Industries and Mines, member
 - Director of the Food Science and Technology Association, member
 - Chairman of the Canned Food Producers' Cooperative, member
 - The food processing industry should be established near the appropriate crop production areas. This would reduce the cost of transport, decrease losses, increase employment in rural areas and curb rural-urban migration.
 - Only qualified and licensed bodies should be allowed to engage in exports. Smuggling must be prevented, and exports by border residents must be supervised and monitored. A good solution would be the formation of Export Associations.
 - The transport network, especially by air and land, has to be improved and expanded to overcome the constraints imposed by the fact that Iran's transport infrastructure is geared more towards imports than exports.
-

- Official policies and regulations governing international trade should be more stable and durable.
- Export-oriented producers should be encouraged to obtain ISO 9000 and ISO 14000 certification.
- A reasonable exchange rate should be determined, which should be periodically revised as necessary. The present official rate (\$1.00=Rls.3000) is not profitable for the producers and/or exporters, as indicated in the following example of apple juice concentrate:

	<u>Rials</u>
Purchase price of 9 kg apples (for 1kg concentrate)	2,700
Enzyme	500
Containers & overheads	750
Total	3,950 = \$1.30
Average world price	\$0.70/kg

- Banks should be more flexible and cooperative than they are in granting credits and loans for manufacturing plants, many of which are restricted by insufficient liquidity.
- Commercial centres at Iranian embassies should be strengthened and disseminate more information about the potential of the country's agro-industrial exports. They should be in continuous contact with relevant organizations in Iran and in host countries to collect and disseminate market information about their respective host countries and provide potential purchasers of Iranian products in the host countries with information about Iranian exports.
- Pilot/demonstration plants should be established to disseminate knowledge of proper practices of processing and handling agro-based products to Iranian entrepreneurs, technologists and technicians. These plants should serve the following purposes:
 - Demonstrating the A-Z chain of plant-level activities and processes, including ordering, receipt, storage, processing, control, packaging, despatch, etc.
 - Carrying out applied research for trouble-shooting and product quality improvement, developing new techniques, and acquiring new technologies.
 - Carrying out in-service training for technicians and college students in need of vocational training.

The establishment of such plants may be undertaken in conjunction with relevant UN organizations (UNIDO, UNDP), who can provide information on international best practices.
- Tight price controls should be abolished. If the government deems it necessary to establish administered prices, they should be set at reasonable levels to minimize the financial pressures imposed on producers.
- The procedures for opening letters of credit should be speeded up to not more than seven days and simplified. At present exporters are required to deposit 70-110% of the price of the commodity in order to open letters of credit. This raises their total costs by up to 5%. The Ministry of Industries believes that the deposit should be 20-25%, and that the rest should be paid upon arrival of the merchandise or at least at the time of the exchange of loading documents.
- Foundations and quasi-government organizations actively involved in the food industry, such as the Fifteenth of Khordad, Janbazan, Mostazafan and Shahid foundations, should coordinate their activities with the relevant government departments.

4.1.6 Annex: Medicinal herbs and plants

As indicated above, Iran's highly diverse climate allows the country to produce a wide range of plants. The country consequently represents a substantial reservoir of medicinal, edible and aromatic herbs. These grow mostly in a natural wild state in the country's grasslands or as weeds among cultivated plants, although some are also grown in traditional ways. Some 100 projects are currently underway at the Institute of Forests and Pastures to discover and study Iran's wild herbs.

Some of the known herbs are grown or collected in sufficient quantity to be exported after satisfying domestic demand. They are usually dried or processed into gums, distillates, and essences. Liquorice, tragacanth and galbanum (*Ferula gumosa*) are among the most important naturally grown herbs that have a high value and are exported, as indicated in Table 4.1.8. The most notable plants whose distillate is used commercially include roses (*Rosa damascena*) and mints. Export data of rose water and other distillates are presented in Table 4.1.9. For the remainder of the present Study, liquorice and rose distillates will be discussed as the prime examples of such products with a high export potential.

Table 4.1.8. Iran: Exports of medicinal herbs, 1993-97^{1/}

	1993		1994		1995		1996		1997	
	Tonnes	\$ mn	Tonnes	\$ mn	Tonnes	\$ mn	Tonnes	\$ mn	Tonnes	\$ mn
Gum tragacanth	258.3	3.3	276.0	3.8	276.7	0.5	204.8	0.2	2,617.0 ^{2/}	1.7
Galbanum	172.3	4.1	62.2	0.8	53.1	0.2	51.0	0.1	..	..
Liquorice (conc.)	2,012.2	4.0	1,867.0	3.7	1,480.0	3.1	1,417.1	2.3	1,461.0	3.2
Liquorice (roots)	..	..	..	..	..	..	..	..	3,504.0	1.2

Source: *Foreign Trade Yearbook of the Islamic Republic of Iran*, various issues.

Notes: 1/ Iranian years beginning 21 March.

2/ All gums.

Table 4.1.9. Iran: Exports of rose water and other distillates, 1993-97^{1/}

Year	Tonnes	\$ million
1993	2,932	2.9
1994	2,842	1.2
1995	2,171	2.1
1996	2,139	2.2
1997	1,559	1.6

Source: Ministry of Industries, *Industrial Statistics*, various issues.

Notes: 1/ Iranian years beginning 21 March.

2/ First ten months only (March-December 1997).

Liquorice (*Glycyrrhiza glabra*) grows in a natural wild state, mainly in Fars Province. It can be grown in all cold low mountainous regions, however, although such cultivation is not undertaken at present. Iran's total annual production currently amounts to about 10,000-15,000 tonnes of dry roots (Equivalent to some 30,000 tonnes of wet roots). The processing factories are located mainly in Fars Province and have a total nominal capacity of 6,000 tonnes of powder and concentrate, although they usually operate less their nominal installed capacities. Permits have been issued for the establishment of additional plants with a combined capacity of more than 9,000 tonnes. This implies that a total of 60,000 tonnes of dry roots (or 120,000 tonnes of wet roots) could be processed at the existing and proposed plants. As there are no plans for cultivating

liquorice in Iran at present, it will be impossible for these plants to operate at full capacity for the foreseeable future.

Roses are grown mostly in Kashan, in the province of Isfahan Province, in Fars Province. The variety used for the production of rose water is known by its local name of Gul-e-Mohammadi. All roses of this variety produced in Iran are converted into rose water, resulting in the production of about 8,500 tonnes of rose water in the major factories located mainly in Isfahan, Khorassan and Fars. In addition, about 3,000 tonnes are produced annually in traditional distilleries in Kashan. Data published by the Ministry of Industries indicate that permits have been issued for the establishment of factories with an additional capacity of some 16,500 tonnes. The total production of distillates other than rose water currently amounts to slightly less than 8,000 tonnes per year, although permits have been issued for the establishment of further plants with a total capacity of 63,000 tonnes. However, the existing factories for both rose water and other distillates already operate below their nominal capacities for the following reasons:

- Inadequate supplies of the Gul-e-Mohammadi rose;
- Changes in the effective essence content of the flowers due to changes in climatic conditions, leading to variations in the volume of rose water obtained;
- Disparities between the capacities of various pieces of equipment within individual factories, which limit their overall capacities to the lowest-capacity equipment;
- Lack of proper technical expertise in the assembly of the factories;
- Inefficient management and planning, and inexperienced operators and maintenance staff.

Against this background, the following recommendations may be proposed:

i. With regard to liquorice and other herbs

- The picking of herbs from nature must stop as it disturbs the eco-system; instead, the cultivation of these herbs should be promoted;
- The export of raw products should be banned and smuggling should be checked; as indicated in Table 4.1.8, liquorice roots could be sold at only \$348/tonne, whereas powdered liquorice and liquorice concentrates commanded a price of \$2,195/tonne in 1997;
- The processing plants operate at only 69% of nominal capacity, mainly because they are old and in need of repair and renovation; the government should take measures to facilitate this process, inter alia by permitting them to import the parts they need;
- The average world price of liquorice concentrates is more than \$3,000/tonne, whereas the domestic price in Iran hardly exceeds \$2,000/tonne. The quality of Iranian liquorice, which is high in glycyrrhizin content, is good. Improved processing, packaging and marketing could enable Iran to gain good customers at high prices for its herbal products, and it help to compete against such rivals as China and Turkey, which currently dominate the world market for these products;
- There are at present no plants in Iran for the processing of gum tragacanth and galbanum, which are exported unprocessed. Steps should be taken to promote their cultivation and the establishment of factories to process them.

ii. With regard to rose water and other distillates:

- Roses, including the Gul-e-Mohammadi, and other aromatic herbs are cultivated traditionally, leading to high losses and preventing the collection of reliable statistics on their production quantity; these problems could be ameliorated through the integration of the scattered traditional plots of land into Rural Production Cooperatives;
- Herb production and technology should be included in the curricula of the agricultural schools at associate degree levels; universities should also include herb production and technology majors in their curricula at B.Sc. and M.Sc. levels;

- More attention should be paid to improving the packaging of rose water and other distillates;
- Although the machinery and equipment required for distillation factories can in most cases be manufactured locally, its quality is often unsatisfactory; more control, technical guidance and supervision is needed for to achieve the necessary improvement in quality;
- Standards should be set by the relevant bodies for all distillates and essences; at present such standards have only been set at national level for rose water and catkin distillates.

4.2 Fish processing industries

4.2.1 Introduction

Global fish production has shown an increasing trend over a number of years, reaching an estimated figure of 112 million tonnes in 1995. Demand has also grown rapidly in recent years, and is projected to increase further in response to population and income growth and changes in tastes. Demand growth is expected to be particularly rapid in the high-income countries of North America, Europe and Northeast Asia, and will fuel an increased demand for imports of fish and fish products in these countries.

The international trade of fish and fish products will also be stimulated by the various agreements concluded at the establishment of world trade organization (WTO), the expanded membership of this organization and the ongoing discussions aimed at further liberalizing international trade. One of the driving forces of this overall growth in global trade will be a steady rise in the export of fishery products from developing to developed countries in response to an ever increasing demand for fish as a relatively healthy source of nutrition. This trend has already been a characteristic feature of the past few years, and is expected to persist largely unchanged into the foreseeable future.

These trends augur well for Iran, which has substantial fish resources comprising:

- The northern capture fisheries, including the commercial marine fisheries of the Caspian Sea in the provinces of Gilan, Mazandaran and Golestan.
- The southern capture fisheries, including the commercial marine fisheries of the Persian Gulf and the Sea of Oman in the provinces of Khuzestan, Bushehr, Hormuzgan, and Sistan-Baluchistan.
- The aquaculture and inland fisheries, which are practiced intensively, semi-intensively and extensively throughout the country, especially in the provinces around the Caspian Sea and on the natural and man-made bodies of water and other wetlands, such as the Hamoun lakes in Sistan-Baluchistan.

Beyond these activities the Iranian fishery industry also includes a diversity of related activities and services covering the entire spectrum from production to consumption, and including fishing, aquaculture, fish processing, distribution and marketing.

These resources and activities notwithstanding, the Iranian fisheries industry remains relatively underdeveloped. Official national accounts data reveal that the value-added by this industry amounted to only about 1,000 billion Rials in 1996. This was equivalent to a mere 0.3% of GDP.

The commercial fishing industry in Iran had its origins in the formation of the joint Irano-Soviet Fishing Company in 1927, which took control of fishing activities along the southern coast of the Caspian Sea for 25 years. With the termination of its contract, that company was nationalized and renamed the Iranian Shilat Company. Until March 1980 two separate fishery companies, the

Northern Shilat and the Southern Shilat, operated independently in the Caspian Sea and the Persian Gulf, respectively. They were later merged to form the Unified Iranian Shilat Company, also known in English as the Iranian Fisheries Company, under the Ministry of Agriculture. More recently the company has been affiliated to the Ministry of Jihad-e-Sazandegi, and is assigned the responsibility of managing all activities related to fishing and aquaculture. The company's headquarters are located in Tehran, although representative offices have been established in all of the country's provinces.

The company's activities cover the following areas:

- i. The territorial waters of Iran, including
 - The Caspian Sea (exclusive and shared parts);
 - Inland waters (lakes, rivers, wetlands, and reservoirs);
 - Coastal waters, territorial marine waters, and Iran's exclusive economic zone (EEZ) in the Persian Gulf and Sea of Oman.
- ii. Waters beyond Iranian territory, including
 - The open seas;
 - The territorial waters and EEZs of other countries who have granted fishing rights to Iran.

In order to raise the efficiency and sustainability of the fisheries industry, significant structural and organizational changes have been introduced since the mid-1980s. In 1985 the Iranian Fisheries Company demonopolized the hitherto strictly government-run distribution of fish in the domestic market, with the exception of sturgeons, shrimp and tuna. This enabled the participation of the private sector in the domestic marketing of most fish, although the export trade still remained a government monopoly. The industry was liberalized further in 1991, when all government monopolies were removed except the one on caviar, and private firms were able to get a foothold in the export of fish and related products.

As shown in Table 4.2.1, The Iranian Fisheries Company is organized into four departments as well as a number of general offices and affiliated companies.

Table 4.2.1. Iran: Organization of the Iranian Fisheries Company

Departments	Offices	Affiliated organizations
Planning and Administration	Surveillance and protection	Fisheries research and Training Institute
Fishing and Fisheries Industries	Finance	Industrial Fishing Company
Development of Fishing Ports	Legal Affairs	Trading Corporation
Aquaculture	Public and International Relations	Kilka Industry Company

Source: Iranian Fisheries Company.

The fisheries industry can be regarded as constituting a single system from production to consumption, which operates in a multidimensional framework comprising a variety of environmental, natural, socio-economic, technological and legal parameters. Even though the present study is focused on an evaluation of the export prospects of the fisheries industry, these parameters must therefore be considered in their entirety. As exports represent one of the final links in the production-consumption chain, a systematic evaluation of the prospects for promoting them requires the consideration of all the preceding links and an assessment of their implications for an export promotion policy. This sub-chapter therefore presents a comprehensive analysis of the fisheries industry before proceeding with an assessment of its export performance and prospects, which in turn leads to the presentation of a number of specific conclusions and recommendations.

4.2.2 The fisheries industries

The Caspian Sea

The Caspian Sea covers an area of some 380,000 km², and is supplied mainly by the Volga, Kura, and Ural rivers, which provide 80%, 6%, and 5% of its inflow, respectively. The level of the Caspian Sea is below sea-level, but fluctuates considerably due to climate changes in the drainage basins and changes in the flow of the Volga. Although many small rivers originating in Iran drain into the Caspian Sea, they exert only a localized influence on the hydrology of the region. Originally serving as breeding and nursery grounds for a variety of anadromous species of fish, the ecology of several rivers, including the Sefid Rud, has been adversely affected by the construction of dams for irrigation purposes.

There are over 50 safe anchorages (landing centres) along the coast of the Caspian Sea, but facilities are often limited to essential services such as the provision of fuel, spare parts and gear. Anzali is the most important port, with a spacious jetty, boatyards, ice plants, workshops and several ship's chandlers. Elsewhere in the province of Gilan, ports are under construction at Astara and Kiashahr, and plans are in hand to develop fishing harbours at Talesh and Rud-Sar. In Mazandaran province the port of Babolsar, although smaller than Anzali, is presently undergoing alteration and improvement. The construction of a fishing port at Amirabad is also well in hand.

Each fishing harbour has private boatbuilding and boat-repair yards with ancillary associated enterprises. The major fishing ports also have electricity and running water, and serve as fuelling points. In addition, local engineers, carpenters and other artisans provide their services at the quayside. The Caspian Sea coast also has 13 plants for the manufacture of fish-meal and 8 canneries.

For commercial purposes, the Caspian Sea fisheries can be divided into three distinct categories:

- Sturgeon fishery;
- Bony fish fishery; and
- Kilka fishery.

Although the sturgeon fishery is given the greatest importance because of its prestigious and internationally-acclaimed nature, this should not allow the other Caspian Sea fisheries to be unreasonably overshadowed. In 1996 the fisheries for bony fish and kilka provided a catch of almost 72,500 tonnes, representing 18% of Iran's total fish production. In addition, these fisheries employ more than 10,500 full time and part time fishermen.

The fish population of the Caspian Sea and its commercially important species are presented in Table 4.2.2.

Table 4.2.2. Iran: Commercially important species of fish in the Caspian Sea

Fishery	Species	Common name
Sturgeon	<i>Huso huso</i>	beluga
	<i>Acipenser nudiiventris</i>	astra - spine
	<i>Acipenser persicus</i>	astra - Iranian
	<i>Acipenser guldenstadti</i>	astra - Russian
	<i>Acipenser stellatus pallas</i>	sevruga
	<i>Acipenser stellatus natio cyrenis</i>	sevruga
	<i>Acipenser ruthenus</i>	sterlet

(continued)

Fishery	Species	Common name
Bony fish	<i>Alosa caspia</i>	shad
	<i>Alosa saposhnikavi</i>	
	<i>Alosa trutta caspius</i> Kessler	Caspinal trout
	<i>Esox lusius linne</i>	Northern pike
	<i>Rutilus frisii kutum</i>	kutum
	<i>Rutilus rutilus caspius</i>	roach
	<i>Rutilus rutilus natio Kurensis</i>	roach
	<i>Rutilus rutilus natio Knipowitschi</i>	roach
	<i>Barbus brachycephalus capiscus</i>	barb
	<i>Chalcoburnus chalcoides</i>	
	<i>Abramis brama orientalis</i>	bream
	<i>Vimba vimba persa</i>	vimba
	<i>Cyprinus carpio</i>	common carp
	<i>Aspius aspius</i>	
	<i>Silurus glanis</i>	wels, catfish
	<i>Mugil saliens</i>	mullet
	<i>Mugil auratus</i>	mullet
<i>Stizestedion lucioperca</i>	pike - perch	
Kilka	<i>Clupeonella engrauliformis</i>	anchovy
	<i>Clupeonella grimmeri</i>	bigeye
	<i>Clupeonella cultriventris</i>	common

Source: Iranian Fisheries Company.

The Caspian Sea is home to several species of sturgeon belonging to the genera *Huso* and *Acipenser*.

- The beluga, *Huso huso*, is the largest, reaching more than 4 m in length and over 500 kg in weight. Since its reproduction takes place in a number of rivers, of which the Volga is the most important, the widespread damming of rivers for hydro-electric schemes and irrigation has seriously curtailed the migration patterns of beluga. In the early 20th century this species represented 40% of the sturgeon catch. It now accounts for less than 10 %.
- The Russian sturgeon, *Acipenser guldenstadti*, now provides 40-50% of the total annual yield of sturgeon. Whilst not as large as the beluga, it can reach 2 m in length and weigh over 65 kg.
- The Persian sturgeon, *Acipenser persicus*, is found mainly in the warmer southern waters and spawns principally in the Kura River.
- The sevruga, *Acipenser stellatus pallas* and *A. natio cyrenis*, are widely distributed throughout the Caspian Sea but the latter is more common in southern waters. The species now breeds particularly in the River Ural, and represents as much as 45% of the total sturgeon catch.
- The spine sturgeon, *Acipenser nudiventris*, is of minor importance.

Sturgeon and its roe, caviar, have been regarded as delicacies since early times. At the turn of the century, landings of some 39,000 tonnes of sturgeon were recorded; by 1915 the yield had been reduced to 29,000 tonnes. Notwithstanding a revival immediately following the First World War, non-selective fishing practices over the following years resulted in the destruction of many immature juveniles, and by the 1930s the need to introduce protective measures to conserve the resource began to be recognized. These were only partly successful, however, and stocks continued to be depleted by the introduction of hydro-electric projects, which limited access to breeding grounds, and by the expansion of gill net fisheries and the capture of immature fish, particularly in the southeastern regions.

During the 1930s some 50% of the total sturgeon catch came from the Volga and Ural Rivers, and by 1970 this figure had risen to 95%. During the past two decades, however, Iran has become a major producer and supplies more than 20% of the world market, putting considerable additional pressure on the Caspian resources (Table 4.2.3).

Table 4.2.3. Iran: Production of sturgeon in the Caspian Sea, 1982-95, selected years

Year	Iran	Kazakstan	Azerbaijan	Russian Federation	CIS	Total
1982	1455	7107	267	16804.5	24178.5	25633.5
1985	1742	5895	241.9	15062.5	211995	22941.5
1988	1720	3177	218		18597.1	
1991	1789	1767	108.6	8547.5	10423.1	10880.2
1993	1312	1109	63.2	4238.1	5587.6	6999.6
1995	1163	562	43.4	2301.8	2907.2	4070.2

Source: Iranian Fisheries Company.

The data on total production of sturgeon in the Caspian Sea illustrate the precarious position of the stock. The fall in landings from all the Caspian States, just over 80% in a decade, is most dramatic. This cannot be attributed to any decreased fishing effort which may have been occasioned, to some degree, by the constitutional changes which have occurred within the former USSR. The cause goes much deeper and would require immediate concerted study if the situation is not to deteriorate further.

The sturgeon fishery is under the strict control of the Iranian Fisheries Company, which operates 51 coastal stations in association with fishermen's cooperatives. Sturgeon inadvertently caught by cooperatives licenced to catch bony fish only must by law be reported to officials of the Iranian Fisheries Company, who become responsible for the disposal of the fish. At each station, the caviar is removed from the fish under close supervision, and prepared and despatched either to Anzali or Babolsar for final inspection and grading. The flesh is taken to one of several cold stores operated by the Iranian Fisheries Company at Anzali, Kiya Shahr, Nowshahr, Babolsar, and Bandar-e-Turkaman, where it is stored at temperatures from -25° to -22° C. The frozen sturgeon are usually separated into potential meat for export or the domestic market. As the Iranian Fisheries Company only sells frozen sturgeon meat, any fresh meat sold in the markets is assumed to have been taken illegally.

The procedures adopted by the Iranian Fisheries Company for the landing, handling, and processing of sturgeon and caviar are subject to very strict quality controls, and the facilities used for this purpose comply with international codes of practice. The fish are treated individually from capture to delivery into the processing rooms at each of the landing centres, and are subjected to morphometric measurements before being processed.

Of the more than 100 species of bony fish in the Caspian Sea, only some 30-40 find their way in any quantity into Iran's fish markets, and only nine species are regarded as having commercial significance. The fishing season is brief, namely six months from October to the beginning of April, after which the majority of fishermen return to agriculture or the construction industry. A review of the fisheries data over the period 1989-96 presented in Table 4.2.4 shows a catch composition of 63% kutum, 18% mullet, 2.5% roach, and the remaining 16.5% of rarer or unidentified species or varieties. These data also indicate an annual average catch over the period of just over 16,000 tonnes.

Most of the bony fish caught in the Caspian Sea, and in particular the kutum and mullets, are sold directly into the fresh fish markets. Small quantities may also be smoked or salted for the urban markets or to enable storage for later sale.

Table 4.2.4. Iran: Production of fish in the Caspian Sea, 1989-96
(Tonnes)

	1989	1990	1991	1992	1993	1994	1995	1996
Bream	-	-	-	20	17	29	5	3
Roach	130	100	120	120	714	1,366	1,178	878
Others	2068	3,671	2,686	1,445	2,155	2,475	650	2477
Catfish	-	1,000	1,000	1,000	670	28	5	22
Pike	5	10	100	100	16	95	10	6
Sturgeon	2,178	2,240	17,89	2,192	1312	1,700	1163	1,600
Kutum	6500	8,500	12,000	12,000	12,727	9,277	8,435	9222
Salmon	-	110	130	130	1	1	13	8
Kilka	7,902	8,814	13,817	21,527	28,730	51,000	41,000	57,000
Alosa	30	30	35	35	893	920	490	330
Mullet	2,380	1,503	2,500	2,200	5,135	2,809	5,014	2554
Total	21,193	25,978	34,177	40,769	52,370	57,963	58,300	74,100

Source: Iranian Fisheries Company.

The third category of fish caught in the Caspian Sea, kilka, comprises three species of clupeids, namely *Clupeonella engrauliformis*, *C. grimmis* and *C. cultivetis*, which are caught in a ratio of 80%, 15% and 5%, respectively. Investigations by Iranian and Russian scientists in 1996 have shown that there are two distinct concentrations of kilka at Babolsar in Mazandaran Province, and at Bandar Anzali in Gilan Province. A major fishing study conducted from Bandar Anzali over a period of 14 months indicates that the kilka fishing grounds are extensive, although there is considerable seasonal variability in concentration. Despite the apparent collapse of the Kilka fishing industry in Russia in recent years, moreover, Iranian landings during the six years ending 1996 show a sustained upsurge.

Table 4.2.5. Iran: Production of kilka, 1972-96
(Tonnes)

	1972	1975	1981	1986	1991	1996
Tonnes	619	631	1341	2450	13817	74100

Source: Iranian Fisheries Company.

The kilka catch is usually divided into two parts, with approximately 10% going to canneries and the remaining 90% being converted to fish-meal. The part intended for canning is kept on ice while still on board the fishing vessel and sent immediately by refrigerated or insulated truck to one of eight canneries in the Caspian area once the boat returns to port. The portion intended for conversion into fish-meal is loaded into woven nylon fabric bags on board the vessel, which weigh about 40 kg when full. In port the bags are brought ashore manually and trucked to one or other of the 11 processing plants presently operating in Gilan and Mazandaran, which usually have pre-signed contracts with the boats.

The Persian Gulf and Sea of Oman

The combined length of the Iranian southern coastline bordering the Persian Gulf, the Strait of Hormuz, and the Gulf of Oman is about 1,880 km. This coastline is shared by the four provinces of Khuzestan, Bushehr, Hormuzgan and Sistan-Baluchistan. Iranian fishing activities are now carried out exclusively on the Iranian side of the median line of these waters. Historically, these waters have also been fished by fishermen from Kuwait and the UAE in the Persian Gulf, and from Pakistan in the Sea of Oman.

For many years the Iranian Fisheries Company has actively constructed harbours throughout the provinces bordering the Persian Gulf and Sea of Oman. The construction programmes cover breakwaters, jetties, covered markets, and integrated sites for onshore facilities such as cold storage plants, fish-meal plants and other processing and handling facilities. The total number of fishing ports along the southern coastline now amounts to 66, which are graded into three categories. The characteristics of the principal ports in each province and of some key minor ones are outlined in Table 4.2.6.

Table 4.2.6. Iran: Fishing harbours on the southern coast by grade (as stipulated in laws passed by the Majles in 1995 and 1996)

Province/area	Grade 1	Grade 2	Grade 3
Hormuzgan	1- Bandar Abbas (Shahid bahonar) 2- Kong 3- Jask 4- Kolahi 5- Qeshm 6- Abumusa Island	1- Hasineh 2- Bostaneh 3- Javad-al-Aemeh 4- Koohestak 5- Salakh 6- Hormoz 7- Khamir 8- Ramchah 9- Basaiedou 10- Gugsar 11- Bandar lengeh	1- Bahi 2- Mogham 3- Sirik 4- Kargan 5- Ziarat 6- Kooch Mobarak 7- Garzeh 8- Suza 9- Chirooye 10- Moghvieh
Sistan-Baluchestan	1- Ramin 2- Pozm 3- Briss	1- Pasabandar 2- Tang 3- Galak	1- Tis 2- Gwater
Khuzestan	1- Arvad kenar 2- Bandar Imam 3- Hendijan	1- Khoram shahr 2- Chuibdeh 3- 12th Abadan jetty	1- Khou Samayeli
Bushehr	1- Bushehr 2- Dayer 3- Genaveh 4- Mohammad Ameri 5- Kangan 6- Ameri	1- Jalali 2- Khark 3- Daylam 4- Rostami 5- bandargah 6- Nakhi Taghi & Asaluyeh	1- Halleh 2- Shif 3- Taheri 4- haleh 5- Bordekhoon 6- Jazireh-e-Shomali & Jazireh-e-Jonoubi 7- Solhabad 8- Jofreh 9- Parak 10- ziarat 11- Chahpan

Source: Iranian Fisheries Company.

Most of the larger ports and some minor ones have ice factories, the total number of which amounts to about 120. Most of these ice factories are privately owned, or owned by local fishermen's cooperatives. Boat building facilities are widely available in each province. The coastal ports also contain the bulk of the processing plants for the fish caught in the Persian Gulf and the Sea of Oman, although some plants may also be found in the vicinity of Tehran and in some of the other large cities such as Isfahan. Fish processing in the southern part of Iran is dominated by the industries for canned tuna, frozen shrimp, and fish-meal.

The fish catch in the Persian Gulf and Sea of Oman can be divided to five categories: small pelagic, large pelagic, demersal, uncommon edible and mesopelagic. Table 4.2.7 presents the production data for 1989-96, which indicate that the demersal category accounts for an overwhelming 95% share of the catch. Table 4.2.8 enumerates the main species of each group with the related production data for 1989-96.

Table 4.2.7. Iran: Fish landings in the Persian Gulf and Sea of Oman by category, 1989-96
(^{'000 tonnes})

	1989	1990	1991	1992	1993	1994	1995	1996
Demersal	139	129	120	110	110	100	105	112
Uncommon edible	50	52	49	55	55	57	59	57
Big pelagic	29	34	35	52	60	55	77	64
Small pelagic	10	10	15	25	20	5	8	10
Mesopelagic	..	2	2	2	2	2	2	..
Total	228	227	221	244	247	219	251	243

Source: Iranian Fisheries Company.

Table 4.2.8. Iran: Fish landings in the Persian Gulf and Sea of Oman by fish species, 1996
(^{'000 tonnes})

Group	Species	Production	Group	Species	Production
Demersal	<i>Caranx sexfasciatus</i>	10,430	Demersal	<i>Otolithes ruber</i>	12,773
	<i>Scomberoides commersonianus</i>	5,907		<i>Rachycentron canadus</i>	1,556
	<i>Lethrinus miniatus</i>	1,097		<i>Tenualosa ilisha</i>	1,156
	<i>Lutjanus argentimaculatus</i>	4,797		<i>Rhinobatus granulatus</i>	511
	<i>Lutjanus malabaricus</i>	2,614		<i>Sardinella longiceps</i>	4,185
	<i>Drepane punctyaya</i>	1,431		<i>Chirocentrus nudus</i>	5,905
	<i>Parastrometers miger</i>	1,724		<i>Pampus argenteus</i>	3,699
	<i>Scarus ghobban</i>	344		<i>Arggrups spinifer</i>	1,603
	<i>Pseudorhombus SP</i>	1,243		<i>Makaira indica</i>	3,086
	<i>Argyrosomus SP</i>	4,820		<i>Platycephalus indica</i>	587
	<i>Johnius SP</i>	2,363		<i>Polynemus plebeius</i>	408
	<i>Sphyrana SP</i>	1,232		Other	30,882
	<i>Pomadasys SP</i>	7,543		Sub-Total	111,900
Big pelagic	<i>Katsuwonus pelamis</i>	2,136	Big pelagic	<i>Thunnus albacares</i>	25,085
	<i>Eythynnus affinis</i>	7,275		<i>Auxis thazard</i>	778
	<i>Scomberomorus commerson</i>	5,833		Other	16,498
	<i>S. guttatus</i>	6,095		Sub-Total	64,000
Uncommon edible	<i>Carcarhinus brevipinna</i>	24,814	Uncommon edible	<i>Rhinobatus granulatus</i>	511
	<i>Trichiurus SP</i>	5,601		<i>Aetomglaeus nichofil</i>	3,925
	<i>Pristis zisyron</i>	70		<i>Panulirus homarus</i>	120
	<i>Portunus pelagicus</i>	7,817		<i>Spepia</i>	4,177
			Sub-Total	56,700	
Small pelagic	<i>Dussumieria acuta</i>	9,260	Small pelagic	<i>Rastrelliger kanugarata</i>	740
				Sub-Total	10,000
			Total	242,600	

Source: Iranian Fisheries Company.

The national fishing fleet in the Persian Gulf comprises almost 9,300 small boats, dhows, and steel vessels. The small boats, which are powered by outboard motors and number some 6,500, fish inshore waters using gill nets, taps, hand lines, and trolls. They target demersal and medium sized pelagic species, as well as lobsters in the Sea of Oman. In all areas along the southern coastline the gill net fisheries target a broad spectrum of species, including mullets, white and black pomfret, wolf herring, rays, sardines, queenfish, crokers, tracellies, sharks, catfish, and tuna and tuna-like species. The trap fishery targets snappers, gunts, groupers, and lobster in Sistan-Baluchistan.

Hook and line fishery targets lethriniidae, Spanish mackerel, sharks, and some tuna species. The beach seine fishery is for sardines and anchovies. Small boats using trawls are also engaged in the shrimp fishery of Bushehr, although much of this activity may be illegal.

The dhow fleet, which is predominantly owned by individuals, amounts to some 2,700 vessels, and its size is controlled by a licensing scheme. These craft fish near and offshore waters, albeit only occasionally beyond 40 miles. The main fishing methods used are gill netting, trapping (with gargours), and trawling. Drift netting is also gaining in importance, with net deployment increasing by 400% or more since the mid-1990s. Other fishing methods, such as long lining for tuna, are only gradually being developed. The principal target species are pelagic fish, although the shallow depths of the Persian Gulf can also produce large catches of demersal species. As many as 800 dhows may be engaged in shrimp fishing alone, using trawls. In the province of Sistan-Baluchistan, where larger dhows are in service, landings are dominated by tuna and related species such as yellowfin, skipjack and longtail, which account for about 63% of the total catch. Tuna catches vary significantly from year to year, however, probably as a result of inter-annual variations of oceanographic patterns such as temperature and salinity.

The tuna caught by the dhow fleet are stored on board in crushed ice for as long as 6 or 7 days before processing. The fish holds are not necessarily insulated and the process in general is inefficient. Upon returning to shore the fish are carried to the quay individually, and are not necessarily loaded into insulated trucks for several hours for shipment to the freezing plants, where they are blast frozen at -35°C without being sorted by size or species. They then usually face a journey of at least several hours to one of the 18 canneries in the southern provinces or even to one of several non-specialist canneries based around Tehran, Isfahan, Mashhad, or the Caspian provinces. Data on the number and size of the tuna canning plants in Iran are given in Table 4.2.9.

Table 4.2.9. Iran: Distribution of tuna processing companies, 1995

	No. of plants	Employment ^{1/}	% of total employment
Khuzestan	7	350	18.8
Bushehr	3	180	9.6
Hormuzgan	4	240	12.9
Sistan-Baluchistan	4	240	12.9
Caspian Region	6	300	16.1
Tehran & other non - coastal areas	10	550	29.6
Total	34	1,860	100.0

Source: Iranian Fisheries Company.

Note: 1/ Full Time Equivalent of one quarter of activity spent on canned tuna production.

The present process of tuna canning leaves much to be desired. The inland plants, which process almost half the Iranian tuna catch, often oriented towards other food products, such as vegetables, and will only can fish as a secondary option. Knowledge about the fish yield in almost all canneries is usually vague, especially when different species of tuna are in the same batch. Often a batch for processing will contain an unsorted mix of skipjack, yellowfin, marlin, kawakawa, and longtail tuna. Each canning plant has a quality control laboratory for microbiological, organoleptic, chemical and weight tests, however.

The steel-hulled fishing fleet comprises three distinct categories of vessels: large industrial vessels, semi-industrial vessels and small shrimp trawlers. The large vessels, 15 in number, are based on German designs of the 1970s and 1980s, and have freezing capabilities. Most of the semi-industrial vessels are of more recent design and have a limited freezing capability. The operations of the industrial and semi-industrial vessels are subject to severe restrictions, however, in both the Persian Gulf and Sea of Oman. The small shrimp trawlers, finally, have no freezing capacity,

which inhibits their ability to diversify. They therefore operate for only a part of the year during the shrimp fishing season, and are being rapidly decommissioned because of their relatively high ages, with their number having been reduced from more than 130 in 1994 to about 80 in 1996.

Shrimp caught by industrial trawlers are frozen on board while those caught by the dhows are stored in ice in boxes on board, or placed in brine tanks. On the quay, the shrimp landed by the dhows are transferred in boxes and may remain in the open for some time while the insulated trucks are loaded. In many cases no ice is added, and therefore the cold chain is broken before the shrimp reach the freezing plant. While such handling often produces an inferior product, the quality usually remains sufficient to meet export standards. As indicated in Table 4.2.10, there were 17 shrimp processing or freezing plants in 1996, all of which were located in or near the harbour areas in the southern provinces.

Table 4.2.10. Iran: Number and size of shrimp processing plants, 1996

	No. of plants	Employment	% of total employment	Operating period
Bushehr	9	360	51	2 months
Hormozgan	8	350	49	2.5 months
Total	17	710	100	

Source: Iranian Fisheries Company

In the processing plants the shrimp are sorted, cleaned, headed or not according to contract demand, and then graded by machine. They are then packed in glazed plastic boxes, and deep frozen at between -13°C and -38°C. The processing equipment in most of the canning and freezing plants is quite modern and generally meets international standards for health and safety, although most of the buildings are of poor quality. This is also true for the freezing plants which are older than most canning plants.

Inland fisheries and aquaculture

Iran has a relatively favourable resource endowment for the development of an inland fisheries and aquaculture industry. The country is estimated to have almost 2,000 natural and artificial bodies of water with a total surface area of more than 500,000 ha, which can be used for the production of fish. As shown in Table 4.2.11, these water resources are widely distributed throughout the country.

The largest natural lake system in Iran is that of the Hamoun Lakes in the province of Sistan-Baluchistan. In addition, the country has some 20 natural or artificial lakes, with the latter having been created mainly through the construction of dams for power generation and irrigation. The most important of these lakes are listed in Table 4.2.12. Apart from these lakes, Iran also has many large lakes which are not capable supporting culture-based fisheries, either because they are hyper-saline as in the case of Lake Urumiah in the northwest, or because they are seasonal lakes which become simply wetlands in the dry season. Because of the largely hot and dry climatic conditions prevailing in Iran, however, considerable emphasis is placed on water conservation and management. As part of this national effort, many thousands of small artificial reservoirs, earthen ponds and tanks have been constructed as integral parts of the irrigation schemes established for agricultural lands.

Table 4.2.11. Iran: Principal freshwater resources by province

	Earth Dams		Barrage Dams		Irrigation Reservoirs		Natural Reservoirs		Total	
	no.	ha.	no.	ha.	no.	ha.	no.	ha.	no.	ha.
E. Azerbaijan	30	1,109					2	250	32	1,359
W. Azerbaijan	21	9,188							21	9,188
Isfahan	18	5,149							18	5,149
Ilam	15								15	
Tehran	6	1,006							6	1,006
Charmahal/B.	2	1,462							2	1,462
Khorasan	15	874			7	46			22	920
Khuzestan	7	9,675	7	1,191	3	64	2	170,000	19	180,930
Zanjan	3	105							3	105
Semnan	4	15			5	27			9	42
Sistan-B.	1	5,000					1	250,000	2	255,000
Fars	3	5,000	16	1,437			3	16,010	22	224,447
Qazvin	5	43	1	4	3	5			9	2
Qom	2	10			4	9			6	19
Kurdistan	2	5,434					1	750	3	6,184
Kerman	5	635							5	635
Kermanghah	1	4	3	13	13	45			17	62
Kermanshah	3								3	
Korgan & B. Gilan	1	56,000	200	4,000	500	4,000	2	16,230	703	29,830
Lorestan			1	110			1		2	
Mazandaran					900	25,000			900	25,000
Markazi	2	1,150			11	59			13	1,209
Hamedan	4	79	4	7	1	1			9	87
Yazd	3	62							3	62
TOTAL	146	63,780	234	8,031	1,507	31,172	13	454,740	1,900	557,742

Source: Iranian Fisheries Company.

Table 4.2.12. Iran: Principal natural and artificial lakes

Lake	Province	Surface area (ha.)
Hamoun Lakes	Sistan-Baluchistan	250,000
Hor-Azim	Khuzestan	120,000
Hor-Shedegan	Khuzestan	50,000
Anzali Lagoon	Gilan	10,000
Lashtal & Bakhtegan	Fars	8,000
Aras Dam Barrage	Azerbaijan	7,500 (in Iran)
Dez Dam Barrage	Khuzestan	6,580
Chahnemehs	Sistan-Baluchistan	5,000
Shahid Kazemi Dam Barrage	Kurdistan	4,000
Zayyandeh Roud Dam Barrage	Isfahan	4,500
Droudzan Dam Barrage	Isfahan	4,500
Kafter Dam Barrage	Fars	4,500
Parishan Lake	Fars	4,500
Mehabad Dam Barrage	West Azerbaijan	2,000
Magol Lake	Gorgan & Gonbad	1,500
Esteglal Dam Barrage	Hormozgan	1,200
Norouzkhou Dam Barrage	East Azerbaijan	1,000
Zaruvan Lake	Kurdistan	750
Chonechenan Gulf	Gilan	700
Jiroft Dam Barrage	Kerman	600
Yousefkandi Dam Barrage	West Azerbaijan	500
Golpayegan Dam Barrage	Isfahan	500
Shahid Sobhani Reservoir	Khuzestan	500

Source: Iranian Fisheries Company.

Iran's aquaculture activities and inland fisheries are based on five large geographic zones with different climatic conditions and natural resources. These are:

- the Caspian Sea littoral, predominantly the provinces of Gilan, Mazandaran and Golestan;
- the Mountain Ranges, comprising the long Alborz and Zagros Ranges;
- the River Plain, predominantly the province of Khuzestan,
- the Coastal Zone, or Persian Gulf and Sea of Oman littoral, including the provinces of Bushehr, Hormuzgan, and Sistan-Baluchistan;
- the Interior or Desert Zone, including the Dasht and Lut Deserts

The Caspian Sea littoral has a temperate climate with substantial rainfall (1,250 mm/year). Many short rivers flow to the Caspian Sea through the adjoining provinces of Gilan and Mazandaran. Originally, these rivers provided spawning grounds for the migratory anadromous fish species, but several have since been dammed, including the large Sefid Rud, and the waters diverted for irrigation. The zone is consequently suitable for aquaculture and inland fisheries. Temperate water species thrive in their natural habitats, and the exotic warmwater species thrive in both natural and artificial bodies of water for 6 or 7 months of the year when water temperatures are around 20°C or more.

The Mountain Ranges comprise the expansive Alborz and Zagros Mountains. The Alborz Range stretches 600 km from east to west and separates the Caspian Littoral from the Dasht Desert, reaching its highest point at the Damavand peak with an elevation of 5,610 m. This range has several mountain lakes, the most important of which are Lake Tar and Lake Havir (both at about 2,900 m), and also gives rise to at least 200 large and small rivers flowing into the Caspian Sea. The main rivers are the Aras, Gorgon Rud, Sefid Rud, Pul Rud, Sardab, Nur, Haraz, Lar, and Atrak. The Zagros Range extends along the western edge of the country from the border with Turkey as far as the Straits of Hormuz for a length of some 1,350 km. The range has many high lakes, such as the Bakhtegan (1,558 m), Meharloo (1,460 m), Parishan (820 m), Gohar (2,400 m), Zarivar (818 m), and Dasht-e-Aran (1,990 m), and several important rivers flow from it, including the Karun, Dez, Karkh, Jarrahi, Zohre, and Daleky. With its vast number of coldwater springs, high lakes and river tributaries, the Mountain Ranges are conducive for the production of salmonids. Other water resources are more specific. For example, Lake Urumiah between West and East Azerbaijan is a hyper-saline lake which can be used for the culture of a particular variety of marine shrimp.

The River Plain area consists mainly of the province of Khuzestan and its immediate environs. The zone is considered separately as it contains one-third of Iran's inland water resources. The zone extends from the colder highlands of the Zagros Range to the flat hot and humid delta regions of the headwaters of the Persian Gulf. It contains six major rivers, of which the largest and most important is the Karoun River, about one-third of a large natural lake (the Houralazim wetlands), and the extensive wetlands surrounding the Shasegan Lagoon. Most of the rivers are dammed for irrigation purposes, and the province is very suitable for aquaculture and inland fisheries. Coldwater species thrive in the rivers and streams in the highlands, and there are still natural runs of migratory anadromous species in the lowlands. Exotic warmwater species have about 10 months to grow in both natural and artificial bodies of water. Because of its extensive flat coastline with a total length of 250 km, the province also supports marine aquaculture, particularly the production of marine shrimp. However, the growing season for shrimp (when temperatures reach or exceed 26°C) lasts only for 6 to 8 months.

The Coastal Zone is an elongated stretch of land with a length of 1,550 km bordering the Persian Gulf and Sea of Oman, and includes the provinces of Bushehr, Hormuzgan, and Sistan-Baluchistan. Aquacultural activities in this zone are restricted predominantly to the breeding of marine species, such as indigenous marine shrimp and molluscs, which can tolerate conditions of full seawater with salinity levels of 33 ppt or more. The prevailing temperatures are suitable for

two cycles of marine shrimps in large coastal ponds. The large province of Sistan-Baluchistan, which stretches well into the interior and has several large freshwater lakes (the Hamoun Lakes) at elevations of about 500 m above sea level, forms a partial exception to this general rule. Here the climate is warm and dry, and freshwater fish production can be sustained for several months of the year.

The fifth zone is the Desert Zone in the central and eastern parts of the country, which includes the Dasht and the Lut Deserts. This is the least populated area of the country and has no permanent rivers or lakes except for the Zayandeh Rud river, which flows from the Zagros mountains to a lagoon near Isfahan, and the Hamoun Lakes in the east on the border with Afghanistan. There are large resources of subterranean water, however, most of which is brackish, and areas which can flood at certain times of the year. Consequently, the Desert Zone has few permanent resources for aquaculture and inland fisheries. A small artisanal fishery for warmwater species exists in the Hamoun Lakes, and some trials are now being made on a seasonal basis to raise fish which can tolerate the saline water in the region, such as mullet, sturgeon, and rainbow trout.

Iran's freshwater fisheries are predominantly in the hands of licensed commercial fishermen, either working alone or within an organized cooperative. As indicated in Table 4.2.13, the output of the aquaculture and inland fisheries industry amounted to 65,000 tonnes in 1996. This comprised capture fisheries in both natural and artificial bodies of water, warmwater fish farming, coldwater fish farming and shrimp farming. Warmwater fish farming is geared towards the production of several cyprinid species, raised either in monoculture or polyculture in earthen ponds, while coldwater fish farming is restricted predominantly to the production of intensively-cultured rainbow trout. Marine shrimp farming began in 1992 with the production of just over 2 tonnes. This had increased to about 163 tonnes by 1996.

Table 4.2.13. Iran: Output of aquaculture and inland fisheries industries by type, 1989-96 (Tonnes)

	Capture fisheries	Warm-water fish farming	Cold-water fish farming	Cultured shrimp	Total
1989	21,670	18,221	599	-	40,490
1990	23,191	18,292	557	-	42,040
1991	24,903	19,650	578	-	45,131
1992	20,183	21,462	775	..	42,420
1993	22,255	21,030	835	..	44,120
1994	19,600	24,500	1,200	55	45,300
1995	30,500	27,000	1,332	136	59,000
1996	35,021	27,916	1,900	163	65,000

Source: Iranian Fisheries Company.

The regional distribution of aquaculture and inland fisheries is presented in Table 4.2.14. It shows that Gilan province was the most important producer of warm-water fish in 1996, while Tehran province led the way in cold-water production.

The composition of the warmwater fish species used to stock the inland lakes depends very much on the availability of fingerlings from the government hatcheries, which may be supplemented, when possible, with resources from private hatcheries. The typical composition is common carp (approximately 30%), silver carp (40-50%), bighead carp (5-10%), with the balance comprising grass carp. These fish are relatively easy to raise in hatcheries in large numbers at low cost, and to distribute to fish farmers to mature. As shown in Table 4.2.15, there were more than 2,700 registered warmwater fish farms in the country by 1996, with a combined pond water surface of almost 8,000 ha. Some carp ponds are used for farming trout in the winter months (November to April). Coldwater fish, consisting mainly of rainbow trout, are stocked in the larger reservoirs as

well as a number of rivers and watersheds, although releases of trout are not made every year because of inadequate resources, low yields, and the difficulties of stocking high-altitude lakes. In 1996 there were 80 registered cold-water fish farms in Iran, producing 1,900 tonnes of fish.

Table 4.2.14. Iran: Output of aquaculture and inland fisheries industries by province, 1996
(Tonnes)

	Capture fisheries	Warm-water fish farming	Cold-water fish farming	Total
East Azerbaijan	900	196	40	1,136
West Azerbaijan	1,750	303	84	2,137
Isfahan	700	130	6	839
Ilam	-	9	-	9
Tehran	498	731	495	1,724
Charmahal & B.	700	-	381	1,081
Khorasan	100	325	38	463
Khuzestan	12,000	6,900	-	18,900
Sistan-Baluchistan	4,240	172	-	4,412
Fars	1,347	97	491	1,935
Kordestan	800	8	5	813
Kerman	3	374	-	377
Kermanshah	110	26	14	150
Konkilouyeh & Boyer Ahmad	-	-	52	52
	2,400	2,036	-	4,436
Golestan	1,600	14,400	-	16,000
Gilan	450	119	68	637
Lorestan	7,400	1,905	196	9,501
Mazandaran	20	102	30	152
Hamedan	3	83	-	86
Yazd	35,021	27,916	1,900	64,837
Total				

Source: Iranian Fisheries Company.

Table 4.2.15. Iran: Warmwater and coldwater fish farming by province, 1996

	Warm Water			Cold Water		
	No. of farms	Output (tonnes)	Area (ha.)	No. of farms	Output (tonnes)	Area (sq. m.)
East Azerbaijan	17	196	72	9	40	3,545
West Azerbaijan	33	303	102	5	84	7,370
Isfahan	28	130	30	1	6	500
Ilam	2	9	9			
Tehran	40	731	617	10	495	46,150
Charmahal & B.				13	381	33,420
Khorasan	11	325	91	6	38	3,734
Khuzestan	85	6,900	2,012			
Sistan-Baluchistan	29	172	61			
Fars	11	97	45	8	491	35,000
Kurdistan	4	8	4		5	
Kerman	8	374	135			
Kermanshah	4	26	9	1	14	1,125
Kolgilouyeh & B	38	2,036	758			5,200
Gilan	2,178	14,400	3,837			
Lorestan	4	119	37	7	68	7,100
Mazandaran	233	1,905	494	16	196	19,800
Hamadan	6	102	45	1	30	3,000
Yazd	4	83	8			
TOTAL	2,735	27,916	7,951	80	1,900	165,944

Source: Iranian Fisheries Company.

Apart from bony fish, the Iranian fish farming and aquaculture industry has also produces a range of crustaceans and molluscs. Initial work on the development of a marine shrimp culture industry was initiated in 1991 under a project funded jointly by UNDP and the Iranian Fisheries Company. This provided for the establishment of a national shrimp culture development centre at Kolahi near Bandar Abbas, which includes a shrimp hatchery, growout ponds, a laboratory, and a manpower training programme. Since then, three further hatcheries have been built by the Iranian Fisheries Company, and licenses have been issued for seven private hatcheries. The Iranian Fisheries Company has also encouraged the adoption of marine shrimp farming, especially of such indigenous species as the green tiger shrimp (*Penaeus semisulcatus*), the banana shrimp (*P. merguensis*), the Indian shrimp (*P. indicus*), and the black tiger shrimp (*P. monodon*). More than 200,000 ha. of low-quality agricultural land have been allocated for shrimp farming in the southern provinces of Khuzestan, Bushehr, Hormuzgan, and Sistan-Baluchistan. In addition, production of the cysts of the brine shrimp, *Artemia urmiana*, has also been initiated in Lake Urumiah, a hyper-saline lake in northwestern Iran.

With regard to molluscs, two species of oyster, *Pinctada margaritifera* and *P. fucata*, are harvested at three sites in the Bandar Lengeh area of Hormuzgan province in an artisanal manner. The oysters yield both meats and pearls, and the shells are processed for use in poultry feeds. About 1-1.5 million oysters are harvested for a short period of one month each year by village divers, leading to the collection of some 5,000 pearls. The Iranian Fisheries Company has also initiated a project for the culture of pearl oysters. A small unit has been built at Mogham, capable of handling 15,000 - 20,000 oysters for implanting nuclei and growing out in cages. Spat of the edible oyster, *Saccostrea cucullata*, are also collected in the coastal waters near Bandar Lengeh. The fishery is exploited by village fishermen for only one month each year (June/July) when about 1-1.5 million oysters aged between 4 and 7 years are harvested, and then exported as meat.

Because of the importance of culture-based fisheries in Iran, particularly in and around the Caspian Sea, many large fish hatcheries have been established in the country. The Iranian Fisheries Company itself owns ten hatcheries and fingerling production facilities, and in recent years the company has also encouraged private investment in hatcheries for warmwater and coldwater fish by reducing the annual production of its own hatcheries of common carp, Chinese carp, and rainbow trout. Thirteen of the private hatcheries are located in the province of Gilan. Similarly, there are 10 private hatcheries producing almost 1.5 million fingerlings of colwater rainbow trout.

Several animal and poultry feed manufacturers in Iran also produce artificial feeds for fish, with an estimated output of more than 7,000 tonnes in 1996, 80% of which was intended for carps and the remainder for salmonids. Two manufacturers also produce artificial shrimp feed. The protein content of national feeds is 70-72%, compared with only 60-64% for imported feed. This additional protein consists mostly of fish-meal, more than 85% of which is imported from Peru and Chile, with the remainder being produced locally.

As in the case of the bony fish caught in the Caspian Sea described above, the captured freshwater fish from inland waters (carp, shad, pike, perch, salmon trout, etc.) and the majority of cultured fish in both warmwater farms (common carp, and Chinese) and coldwater farms (rainbow trout) are predominantly sold directly into the fresh fish markets. Most of the fish are purchased directly by middlemen, either on site (the fishing area or the farm), or in the urban centres where fish farmers often deliver their crops themselves. The middlemen continue to maintain the fish alive for as long as possible by shipping it in crushed ice in insulated vans, and selling it in the round (uncleaned). Small quantities are deliberately smoked or salted for the urban markets, but more frequently only fish that are not sold fresh by the end of the market day are smoked or salted and for storage and later sales.

4.2.3 Exports of fish and fish products

The export of fishery products from Iran commenced with the joint production of caviar with the former USSR during the two countries' exclusive exploitation of Caspian Sea resources, and caviar has remained the main export product of fisheries sector to the present day. As indicated in Table 4.2.16, the total revenue earned from the export of fish and fish products amounted to approximately \$14.2 million in 1978, with the Caspian Sea fisheries accounting for almost the entire figure. Considerable efforts have been made since 1979, however, and especially since the introduction of the First Socioeconomic and Cultural Development Plan, to increase the contribution of the fisheries sector to Iran's export earnings.

Table 4.2.16. Iran: Exports of fish and fish products, 1978-96, selected years
(\$ '000)

		1978	1988	1993	1996
Caspian Sea	Caviar	11,070	48,858	31,050	34,530
	Sturgeon	3,036	2,244	1,374	1,384
	Sub-total	14,106	51,102	32,424	35,914
Persian Gulf & Sea of Oman	Shrimp	121	4,007	7,000	7,464
	Lobster	-	-	192	215
	Cuttlefish	-	-	1,000	1,464
	Shark	-	-	180	-
	Ribbon fish	-	-	3,000	-
	Tunacan	-	-	1,000	-
	Other	-	-	-	2,481
	Sub-total	121	4,007	12,372	11,624
Aquaculture	Shrimp	-	-	-	1,200
	Fish	-	-	-	-
	Sub-total	-	-	-	1,200
Grand total		14,227	55,109	44,796	48,738

Source: Iranian Fisheries Company.

Until the commencement of the first development plan, the Shilat Trade Corporation, an affiliate of the Iranian Fisheries Company, was granted the exclusive right to export the fisheries products produced in Iran, including caviar, sturgeon and shrimp. By the start of the first plan the enormous potential of the fisheries sector to support the government's broader strategy of promoting non-oil exports had come to be recognized, and the sector was consequently given considerable priority. In a particularly important development, the export of fish and fish products, with the exception of caviar, was opened to the private sector.

As a result, the fisheries of the Persian Gulf and the Sea of Oman recorded a particularly noteworthy increase in exports between 1988 and 1993. This growth in the exports of the southern fisheries was more than offset by a substantial decline in exports from the Caspian Sea, however, due primarily to problems caused by the dissolution of the former Soviet Union and the resulting disintegration of the prevailing Caspian Sea fisheries regime through the entry of new suppliers and the unregulated exploitation of the Caspian Sea resources. This resulted in reduced catches by the Iranian fishery industry and corresponding falls in the volume of Iran's caviar and sturgeon exports. Export revenues from the Caspian Sea fisheries consequently fell from more than \$51 million in 1988 to less than \$32.5 million in 1993, even though the prices for caviar and sturgeon remained broadly stable during this period.

Notwithstanding the increase in exports from the southern fisheries and the exogenous causes for the decline in exports from the Caspian Sea during the first five-year plan, subsequent official

evaluations of the objectives and achievements of the plan revealed a variety of weaknesses in its implementation. In particular, it came to be recognized that many of the policies and strategies adopted towards the fisheries industries during this period had been formulated and implemented in a piecemeal manner, which had prompted an underachievement of the plan targets by a substantial margin. In addition, it was also recognized that many of the targets set for the plan had been unrealistic, failing to take into account the teething troubles likely to be incurred in developing the southern fishing industries, especially for cultured shrimp, and the changing circumstances in the Caspian Sea fisheries.

Learning the lessons of the first plan, a comprehensive set of policies and guidelines was adopted for the fishing industry in the second plan period, as summarized in Table 4.2.17. These included measures to enhance the availability of fish and fish products for export through increased yields, improved processing and appropriate transportation facilities; the development of foreign markets through research into the specific requirements of the various markets, cooperation with foreign enterprises, and the codification of standards and regulations; and the adoption of improved catching and processing technologies to increase the domestic value added of the fisheries industries. As shown in Table 4.2.16, these measures have had some effect, with a recovery in exports from the Caspian Sea fisheries and further increases in exports from the southern fisheries in the first two years of the SFYP.

Table 4.2.17. Iran: Policies for the promotion of fisheries-based exports during the second five-year plan

Essential policies to achieve desired objectives	Activities in support of proposed policies
1. Provision of legislative and financial support for private sector industries involved in the production, processing and trading of fish and fish products.	<ul style="list-style-type: none"> • Awarding tax incentives • Lifting all tariffs on imports of required tools and equipment not manufactured in Iran. • Eliminating port formalities for commercial vessels carrying fisheries products. • Exempting exporters of fish and fish products from export duties.
2. Promotion of industries producing aquatic products.	<ul style="list-style-type: none"> • Providing low-interest credits for investment in fish processing plants. • Providing a legal framework conducive to attracting foreign investment and technology in the export-oriented fisheries industries.
3. Development of foreign markets for exports of aquatic products.	<ul style="list-style-type: none"> • Implementing quality improvement schemes and adopting improved packaging methods for exports of fish and fish products. • Cooperating on research and codification of standards and regulations for production and packaging processes for fish products in line with international standards and market requirements.
4. Development of research activities to improve the quality of export products and identify the best export markets for fish and fish products.	<ul style="list-style-type: none"> • Conducting practical research to develop and expand fisheries products. • Conducting practical research to improve the quality of export products. • Conducting appropriate research on packing and maintaining fisheries products. • Conducting research to identify potential foreign markets for fisheries products and by-products. • Creating a well-planned information system on international market prices for producers and exporters.
5. Improvement of technology to raise production proficiency.	<ul style="list-style-type: none"> • Facilitating technical training on the use of appropriate equipment and machinery in fish processing industries. • Facilitating the transfer of appropriate fish processing technologies. • Providing financial and administrative support for the purchase and import of machines and equipment required by the fish processing industries that cannot be manufactured within Iran.

Source: Iranian Fisheries Company.

Looking forward, the Iranian Fisheries Company has determined general objectives for the stable development of the fishery industry towards 2020. In this set of objectives, the prime concern is for the industry to become a significant source of export earnings. As shown in Table 4.2.18, this plan calls for a total export of 221,975 tonnes of fish and fish products worth \$1,435 million by 2020. Of the total export revenues, inland fisheries and aquaculture are projected to account for 81.5%, with particularly high expectations being pinned on the shrimp farming industry. The caviar and sturgeon fisheries, which have hitherto provided the mainstays of the industry, are projected to slip to third place behind exports from the Persian Gulf and Sea of Oman, with the former accounting for 9% of total export receipts and the latter for 9.5%.

Table 4.2.18. Iran: Official projections of exports of fish and fish products, 2020

	Volume (Tonnes)	Value (\$)
Caspian Sea	1,975	130
Persian Gulf and Sea Oman	45,000	135
Aquaculture and inland fishing	175,000	1,170
Total	221,975	1,435

Source: Iranian Fisheries Company.

For the fulfilment of these objectives, the Iranian Fisheries Company has proposed a number of guidelines related both directly to export promotion and to improvements in the methods of capture, cultivation and processing. These guidelines are summarized in Table 4.2.19.

Table 4.2.19. Iran: Objectives, strategies and policies for the fisheries sector to 2020

Qualitative objectives	Strategies and Guidelines
1. Protection and renewal of aquatic resources	<ul style="list-style-type: none"> • Providing suitable environmental conditions for the natural renewal of aquatic resources. • Establishing suitable structures for protecting national aquatic resources. • Enforcing the fishing industry's adherence to prevailing catchment standards and licences.
2. Increased production of different species of aquatic creatures.	<ul style="list-style-type: none"> • Increasing fishing activities for species with small catches to date, including kilka in the north and tuna and sardines in the south. • Increasing aquaculture. • Increasing fishing activities on natural and artificial inland waters. • Increasing the production of farmed shrimp.
3. Increased value-added from fishing activities.	<ul style="list-style-type: none"> • Increasing the income of producing units. • Reducing the expenses of producing units.
4. Increased national consumption of fish products.	<ul style="list-style-type: none"> • Increasing the provision of fish products in the country. • Increasing effective demand for fish products. • Improving the hygienic conditions of production and processing activities.
5. Increasing export earnings from the fisheries sector.	<ul style="list-style-type: none"> • Increasing the export of fish and fish products. • Decreasing the demand for foreign exchange in the fisheries sector. • Establishing information systems on international markets for fish and fish products for domestic producers and exporters. • Improving the quality of products to international standards. • Providing financial and other support to efforts to promote exports of fish and fish products, e.g. tax and credit incentives, stable export policies, etc. • Encouraging the commercial representatives of Iran's foreign embassies to offer more support to the export promotion efforts of the fisheries industry. • Enhancing domestic production capacities for the equipment and machinery used by the fishing and fish processing industries.

Qualitative objectives	Strategies and Guidelines
6. Improved employment structure in the fish production and processing industries.	<ul style="list-style-type: none"> • Increasing the efficiency of producing units. • Reducing overmanning in the producing units in line with their increased efficiency. • Creating employment opportunities in the fishery and aquaculture sectors based on an efficient use of resources.

Source: Iranian Fisheries Company.

4.2.4 Conclusions and recommendations

The fishery industries face numerous export constraints at both the national and subsector levels due to a variety of policy-based measures, which may be categorized under the following major headings:

- international economic conditions and policy measures in the importing countries;
- the domestic macro-economic policy framework, including the policy approach adopted towards the development of non-oil exports;
- the policies adopted by the relevant agencies with regard to the fisheries industry itself.

In addition, the export potential of the industry may be constrained by a number of organizational, technical and infrastructural weaknesses.

Past trends in the international trade in fishery products point to a continued expansion in exports from developing to developed countries, with the developed countries imposing their food standards on the exporting countries through various rules and regulations. In the case of Iran, the European Union has been the principal market for the country's fishery exports in recent years, accounting for more than 90% of total export value, followed by Japan and other Asian countries. The rules and standards in force in the EU act as serious constraints to an expansion of Iran's fishery exports to Europe, however, as Iranian exporters are often not able to meet these standards. While the observance of such standards has not yet become obligatory in the markets of Japan and other Asian countries, it may be expected that the EU's policies may in time be emulated by these countries as well. Various measures are therefore being taken to meet these requirements, of which the most important include:

- Improvements in storage facilities aboard fishing vessels;
- Improvements in the methods used to unload fishing vessels when they return to shore, including the appointment of quality control teams at the landing sites;
- Improving the inland transport systems and infrastructure for fish;
- Improving the quality conditions in the processing units by promoting international standards and implementing a Hazard Analysis at Critical Control Points (HACCP) system;
- Compiling a database of standards and quality requirements in specific export markets.

At the national level, the development of non-oil exports has been regarded as one of the main objectives of the government since the adoption of the first five-year plan in 1989. The achievement of this objective has been hampered to a considerable degree by the programming approach to economic development adopted by the government authorities, which has resulted in the development of specific sectors being based on administrative decisions rather than their comparative or competitive advantage. This has resulted in the emergence of serious sectoral imbalances within the economy, which in turn have prevented the efficient growth of export-oriented non-oil industries. In the case of the fisheries industries, these imbalances include:

- Inadequate development of packaging facilities to produce products with a high value-added suitable for export;
- Inadequate development of transportation and storage facilities to maintain the quality of goods, particularly in the case of highly perishable agricultural products;

- Insufficient adoption of modern commercial methods and information technologies, resulting in sub-optimal use of resources and increased financial costs;
- The absence of professional export-oriented marketing research facilities, resulting in information gaps and a lack of familiarity on the part of exporters with the rules, regulations and standards prevailing in export markets;
- The absence of an active, reliable and fast credit and banking system to provide the required financial services in the appropriate time frame.
- The lack of an organized specialized training facilities for export-oriented companies, which may both hamper the participation of Iranian entrepreneurs into the world markets or result in the entry of uninitiated or inexperienced entrepreneurs into the export arena with a possibly irretrievable impact on the country's export market.

Despite a general recognition even within Iran that the government's involvement in the markets should be restricted to removing barriers and limitations by reforming regulations and policies, the export sector also continues to be hampered by a number of policy-induced constraints. Like all other economic subsectors or industries, the fisheries industry is as vulnerable to the high level of government intervention, which has resulted in the imposition of a variety of inconsistent rules and regulations concerning exports. The impact of these measures is compounded by the absence of an appropriate strategy for the export-oriented development of agriculture goods in general, and by undue complexities in the procedures governing the issuing of export licences and excessive customs formalities, particularly for agricultural products.

While some important measures have been taken during the past decade to liberalize the export regime for fish and fish products, most notably through the removal of the Iranian Fisheries Company's monopoly on the export and domestic distribution of fish except caviar and sturgeon, the export of fishery products continues to be heavily influenced by the government's macro-economic policies in the area of non-oil export development. These have, until recently, been aimed mainly at increasing production of exportable non-oil goods. Recognizing that increased output levels alone will not be sufficient to enhance exports, the authorities are now beginning to pay increased attention to developing external markets and enhancing the quality and price competitiveness of Iran's fishery products in these markets. This will require increased investment in efforts to identify and meet the specific needs of particular markets with regard to such matters as types of product and processing, quality, and packaging. More generally, the Iranian authorities will need to develop more multidimensional policies for the export development, which would have to include the following components:

- The provision of appropriate support facilities and information for the sustainable export activities;
- The promotion of professional exporting firms with specialized knowledge of export markets and procedures;
- Changes in the production, processing and transportation systems for fishery products to enhance both the quantity and quality of Iran's exports in this field;
- The adoption of consistent rules and regulations to facilitate exports.

In addition to the policy-induced constraints, the Iranian fisheries industry also faces a number of institutional constraints to the expansion of its exports. The most significant of these are legal restrictions barring the establishment of a suitable structure for export management within the subsector, which could provide the market-related information and consultation services required by exporters. Another institutional weakness is the employment of traditional marketing methods by the exporting companies, which do not ensure a sustainable business. As a partial means of overcoming these constraints, a Fish Export Union has recently been formed by companies engaged in export activities. Given its still relatively youthful age, however, this body has not yet succeeded in establishing a high degree of organizational and managerial authority, and still needs to gain the full trust of the industry.

The most important criterion for export success under heavy competition is the sustainability of supply of goods of a high and consistent quality. The achievement of this goal requires the maintenance of quality standards in the production, handling, processing and transportation. The Iranian fisheries industry faces significant technical constraints in all of these areas, however, as exemplified by the fact that:

- The fishing fleets (with the exception of the comparatively small industrial fishing fleet) generally lack suitable on-board freezing facilities, which results in both quantitative and qualitative losses;
- The inland transportation facilities for fish are not adequate and far from meeting international standards;
- The fish processing units, with very few exceptions, have serious problems producing goods with a high degree of added-value, so that least processed products constitute the bulk of Iran's fishery exports at present;
- The available packaging facilities are of low quality.

Inadequate infrastructure also imposes a serious constraint on the export competitiveness of the Iranian fisheries industry. Some efforts have been made in recent years to ameliorate these constraints, especially through the introduction of a major programme to construct fishing ports, both in the south and the north, since the beginning of the first five year plan. By contrast, the processing plants scattered along the coastlines and even in some interior parts of the country often continue to be constrained by the inadequacy of the localized infrastructure facilities.

In addition to the general constraints affecting all fisheries exports, several export items are subject to a number of specific constraints. In the case of caviar, for example, the high level of world demand and the breakdown of the erstwhile fishing regime has resulted in serious overfishing of sturgeon in recent years. In the case of shrimp, Iran is unable to realize the full international market potential due to inadequate domestic processing facilities. The same is true for canned fish, since production lines in most of canning plants are not of international standard and are therefore unable to produce canned products of an acceptable quality. This problem is exacerbated by the limited experience of Iranian traders in exporting canned fish, such as canned tuna to Europe and canned kilka and sturgeon to the central Asian countries.

These constraints notwithstanding, several products of the fisheries industries are believed to be competitive in international markets. Caviar remains the most important of these, of course, with Iran supplying more than a quarter of the available caviar in the world market. Other items assumed to be export competitive include shrimp; lobster; crayfish; squid and cuttlefish; and the high-value fish species of the Persian Gulf and Sea of Oman. This competitiveness is threatening to be eroded by the continuing high rates of domestic inflation, however, which is causing sharp increases in the landed costs of these goods and reducing the competitive margins of Iranian exporters.

Against this background, a number of recommendations may be offered to enhance Iran's export potential for fish and fish products. To begin with, the experience of successful countries in this field indicates that the achievement of success requires the adoption of an holistic approach to the promotion of such exports. This approach should include:

- The integration of export capacities and facilities within the production structure;
 - An optimal utilization of appropriate industrial technology
 - The application of monitoring and quality control systems at all stages of production and export.
 - A fundamental understanding of various export markets and continuous ongoing evaluation of the prevailing circumstance;
 - The adoption of proper professional training methods to ensure that exporters have the appropriate professional qualifications;
-

- An understanding that all regulations, rules and government procedures should facilitate and systemize these affairs.
- An understanding that the possible reduction in domestic consumption to promote exports will not disturb the existing social fabric.

The adoption of such a broad-based approach towards exports needs to be supported by the adoption of a proper export strategy taking into account the various components of the export-oriented system as well as the prevailing external and internal conditions. These components comprise:

- The export commodity itself;
- The exporters;
- The provision of export equipment and facilities;
- Qualitative standards and a quality control system;
- Inter-industrial regulations and rules.

Every policy designed to promote the export industry should address all of these components. It should also focus on all levels of the supply chain, including catchment, aquaculture, handling and unloading, and processing. Lastly, it should also take into consideration the prevailing environmental conditions, to ensure that the programme is viable and sustainable.

An important framework for the development of an export-based fisheries industry is provided by the Code of Conduct for Responsible Fisheries drawn up by the FAO. With regard to the international trade in aquatic creatures, this code of conduct places particular emphasis on the need for:

- Such trade to be brought progressively into line with the principles and procedures of the WTO convention;
- Ensuring that such trade does not have an adverse effect on natural resources and fish stocks;
- Policies and decisions regarding the trade of aquatic creatures and products to be clear and transparent;
- Removing such impediments to trade as duties and non-tariff barriers, and setting suitable conditions to ensure that customers have a free choice with regard to product selection;
- International collaboration to restrain the trade in endangered species;
- Preparing suitable conditions for all stakeholders in the fisheries industries, including the government, the enterprises involved, the consumers and relevant environmentalist groups, to establish appropriate trade promotion policies for aquatic creatures;
- Ensuring the conformity of the national regulatory framework with international rules and regulations;
- Facilitating the exchange of information and statistical data on the trade in aquatic creatures.

On the basis of these FAO principles, the following general recommendations are offered with regard to the development of Iran's fisheries exports:

- The rules and regulations governing non-oil exports should be stabilized to ensure consistency and continuity of the trade regime for exporters.
- Suitable conditions should be established for the promotion of legal exports of aquatic resources and a reduction of smuggling;
- The prevailing macro-economic policies should be reviewed to reduce domestic inflationary pressures, which erode the price-competitiveness of Iranian non-oil exports;
- Efforts should be made to increase the competitiveness of Iranian exports of fish and fish products by reducing the final price of these products through increased efficiency in the production structures of the primary materials (catching and aquaculture) and the adoption of improved technologies.
- The trade in aquatic creatures should be liberalized, permitting the private sector to export and import fish and fish products in line with market signals;

- The government's export promotion services for the fisheries industry should be streamlined into a single department of the Iranian Fisheries Company to prevent duplication and ensure consistency;
- The export promotion efforts of the Iranian Fisheries Company should be coordinated with the activities of other government agencies, such as the customs service;
- Professional associations of exporters should be reinforced, and should cooperate in the decision-making process with regard to export promotion policies;
- Government assistance may be provided in identifying markets, suitable export commodities and marketing strategies, inter alia through the commercial attaches of Iran's diplomatic missions abroad;
- The government may also help to develop external markets by signing inter-governmental agreements;
- The effect of export promotion policies on the natural resource base should be continuously monitored, and adjusted if necessary;
- Iranian standards should be brought into conformity with international standards;
- The quality control system for exported fish and fish products should be reinforced, and appropriate equipment should be made available;
- The export of live and fresh aquatic creatures should be encouraged in preference to the export of frozen fish and fish products in order to obtain higher prices;
- The capacity of relevant training facilities should be strengthened in order to improve the knowledge and ability of exporters;
- The financial services and facilities available to exporters should be improved;
- Information systems on developments in domestic and international markets should be established for exporters;
- The establishment of research and professional institutions to study such relevant issues as market development and product promotion should be supported;
- Appropriate packaging facilities should be developed;
- The development of a domestic manufacturing capacity for the production of equipment needed for the processing of fish and other aquatic creatures should be considered;
- The export of fisheries and aquatic resources should be regarded as an independent activity, and differentiated from processing activities;
- The development of domestic production capacities, especially in the field of aquaculture, should be specifically targeted at particular export markets to ensure that the requirements of these markets are met.

In addition to these general recommendations, the foregoing analysis also permits more specific recommendations to be offered with regard to particular products such as caviar, shrimp, tuna, etc. In the case of caviar, the Iranian Fisheries Company could increase its revenues by adjusting its products more closely to the differentiated needs of particular exports markets and entering into joint marketing arrangements with domestic and foreign companies to reduce the incidence of resale in foreign markets. In this context, efforts should continue to be made to reach a general agreement between the coastal states of the Caspian Sea on the trade in caviar, both to obtain higher prices and ensure the long-term sustainability of the industry.

Since the shrimp produced in Iran are for the most part exported to their destination markets indirectly, efforts to enter into direct marketing arrangements with clients in the end-use markets may be considered. Investment in appropriate processing equipment leading to a higher degree of local processing, especially in the case of shrimp farmed in inland waters, should also be undertaken with some urgency, as it would significantly enhance the revenue generating capacity of the industry. Similar investments in a modern canning industry would significantly enhance the export potential of Iran's tuna and kilka fisheries. In the case of tuna, efforts also need to be made to upgrade the fishing fleet and adopt a better method of capture than the gillnets used at present in order to reduce costs and prevent a deterioration in the quality of the catch.

In addition to caviar, shrimp and tuna, several other fishery products have a promising export potential. These include:

- squid, cuttlefish and ink fish;
- kilka (whole, canned and powdered)
- eels
- turtles
- coral reef fish
- various species of shellfish
- artemia
- rare species of edible fish
- freshwater crabs
- Caspian salmon
- aquarium fish

Although these resources play only a minor role in Iran's fisheries exports at present, they exist in substantial quantities in Iranian waters and are likely to face considerable demand in foreign markets.

Finally, a few points may be made with regard to the role of government in export promotion. In the Iranian fisheries sector, where the Iranian Fisheries Company acts as the representative of the government, the role of this company in managing the industry should be carefully reviewed. In particular, it is argued that the private sector, operating in a market-oriented manner, should play the leading part in the industry, and especially in its efforts to penetrate new foreign markets. The role of the Iranian Fisheries Company should therefore more properly be to:

- Follow up on the government's policy decisions for the fisheries sector by drafting and introducing the relevant implementing regulations;
- Participate in improving national standards in conformity with international standards;
- Provide technical guidance to exporters through training programmes;
- Monitor continuously the activities of all participants in the fishing industry at all stages of the production processes in order to be able to assess the strengths and weaknesses of the industry and provide appropriate advice;
- Support the reinforcement of exporters' associations and the establishment of institutes offering services to exporters;
- Cooperate in the establishment of a suitable market information system.

The implementation of these assignments will require the establishment of an effective management and planning department dedicated to export promotion within the Iranian Fisheries Company.

4.3 The leather industry

4.3.1 Introduction

The past three decades have witnessed dramatic structural changes in the global leather and leather goods industries:

- In the 1960s and early 1970s most European countries were primarily interested in importing raw hides and skins, with little demand for hides processed beyond the pickled or wet blue stages.
- By the beginning of current decade, the countries of Southeast Asia emerged as important suppliers of leather products to the world market.
- The Republic of Korea and Taiwan Province of China, hitherto the world's leading exporters, have had to yield their primacy to other countries of the region due to their escalating labour costs.

- The leather industries of China, Indonesia and Thailand have grown particularly rapidly in recent years.
- India, Pakistan, Turkey and Viet Nam are poised to gain a larger share of world trade in leather products.

Three categories of bovine and ovine animal husbandry can be distinguished in Iran. The first of these is practiced by nomadic herdsmen belonging to such ethnic groups as the Bakhtiari, Boirahmad, Ghashghai, Mamasani, Sanjabi and Shahsavan, who live mainly by sheep herding and are constantly on the move between different seasonal pastures. The second comprises small-scale sedentary farmers and peasants engaged in traditional farming, who also hold a few head of cattle and a number of sheep. The third consists of large-scale modern animal farms operated by commercial agro-industrial complexes, which may be either privately owned or state-owned. Though relatively successful, these farms are few in number, and the vast bulk of the hides and skins produced in Iran come from nomadic and rural herdsmen who form the majority of the country's livestock farmers.

Table 4.3.1 shows the number of cattle, sheep and goats in Iran. The total number of sheep and goats amounted to 75.6m in 1995. Considering some 21.7m of this total to be slaughterable, the number of skins produced in 1995 should also have amounted to 21.7m. The recorded production in that year amounted to only 16.2m, however, reflecting losses of 25-30%.⁸

Table 4.3.1. Iran: Population of cattle, sheep and goats
('000 head)

	1990	1991	1992	1995
Cattle	7,915	7,080	7,200	9,044
Sheep	44,518	44,681	45,000	75,630 ^{1/}
Goats	24,748	24,748	23,500	

Sources: 1990-92: FAO, *World Statistical Compendium*, 1994.
1995: Ministry of Jihad-e-Sazandegi, unpublished data, 1996.

Note: 1/ Total sheep and goats

The high rate of loss is determined by the structure of the animal husbandry industry. As indicated above, the majority of Iran's livestock farming is undertaken by nomadic tribes, small land owners and peasants. It is therefore extremely difficult to promote improved techniques of animal husbandry among the many small owners of domestic herds. The problem becomes more severe when it comes to the nomadic tribes who are constantly on the move.

In most cases cattle and sheep owners are not aware of the exact value of an animal's many parts: its hides and skins, hooves, horns, blood, etc. It is true that the intrinsic value of a single hide or skin at the production stage is relatively low when compared with its value once it has been preserved and graded. It could be revised upwards, if improved methods were introduced for maintaining, slaughtering and flaying the animals and preserving the hides.

These problems notwithstanding, the skins of Iranian sheep and lambs are generally of a high quality, which frequently exceeds that of such industrialized countries as, say, Australia. This intrinsic high quality is often degraded by a variety of factors, however, including, inter alia:

⁸ There is a discrepancy in the ratio of slaughtered/live sheep between FAO figures (57%; recording 25.7 million sheepskins 54 million animals in 1992) and those by the Ministry of Jihad-e-Sazandegi stating the ratio as 28-30%. The latter figures are assumed in this report. In the case of cattle, however, both sources assume an average of 30%.

- Most herds, i.e. those owned by nomadic tribes and peasants, are kept in the open throughout the year. They move or drift from pasture to pasture, where they are often injured by thorny bushes which scar their hides. When the wounds heal, the scars harden and tighten, rendering it impossible for tanners to dye those areas the same colour as the rest of the hide.
- Many sheep and cows are slaughtered by individuals or traditional itinerant slaughterers outside proper slaughterhouses. The hides and skins are thrown away, put into mundane use by the family (like making a rug to sit on or making a container), wasted because of lack of care and proper preservation, or simply given to the slaughterer, who does not care much for the hide, either.
- Taking off the skin, flaying, which is itself a fine and a delicate job and needs special tools, is often done by the slaughterer himself with an ordinary slaughtering knife. This causes additional damage to the skins.
- Slaughterhouses are mostly small and not equipped with developed tanning departments. Hence, little effort is made for post mortem operations and the rendering of offal such blood, horn, etc., which are usually discarded. Proper flaying and preservation of skins and hides requires a more careful approach by trained personnel at the slaughterhouses, which consider the skins and hides secondary and often of little importance.
- One of the biggest problems is the need to convince nomadic and peasant herdsman to cure their hides and skins correctly. This problem is exacerbated by the fact that the price he obtains for a simple hide or skin is usually very low, almost next to nothing. The skin is thus virtually considered a "reject" and does not find its way to tanneries.

4.3.2 Tanning industries

The tanning industry in Iran originates in the western region because of the availability of water. Old traditional tanneries operated mostly as a home-based cottage industry and the associated skills were consequently kept secret and passed down from father to son. This made tanning an intramurally private trade, as a result of which there was no exchange of information with outsiders. This has prevented knowledge of technological advances in the outside world from filtering through, and hindered the Iranian leather industry from keeping pace with modern developments in the outside world.

The first industrial tannery was established in Hamadan in 1993. The light leather industry consists of 170 firms with a total production of about 130 million square feet, most of which are privately owned. The heavy leather industry comprises 80 firms with a total production of about 90 million square feet. Geographically, these firms are mostly centred in East Azerbaijan, Tehran, Khorassan and Hamadan Provinces. Figures 4.3.1 and 4.3.2 show the distribution of tanneries in different provinces.

Tanneries can be major sources of pollution - both by pouring effluents into watercourses and by releasing smoke and odours into the air. The following may be listed as major causes of pollution:

- Improper preservation of skins and hides slaughtered by traditional slaughterers.
- Inadequate drainage channels for directing blood and effluents into the sewage system.
- The spread of wastes from the cutting and splitting of hides outside tanneries.
- Burning of horns and hoofs attached to the skins brought to the tanneries. This creates SH_2 , which can ultimately cause acid rains and pollute waterways and farms. Traditional tanners operating without permits are the main source of the environmental pollution arising from the leather industry.

Figure 4.3.1. Iran: Provincial distribution of light leather factories (%)

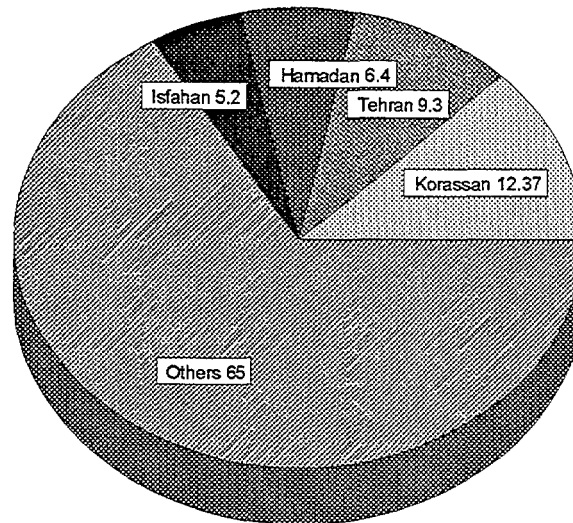
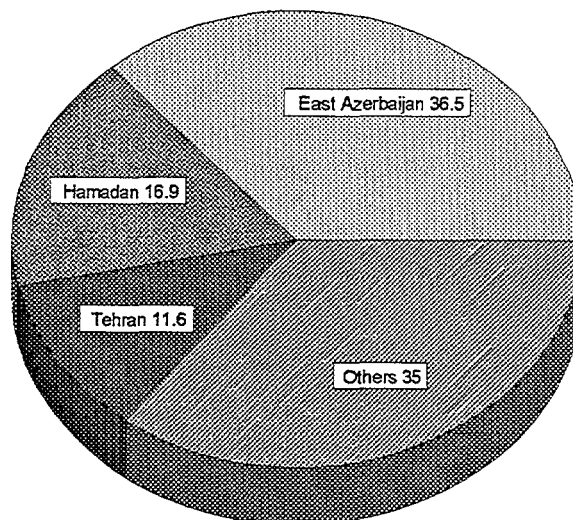


Figure 4.3.2. Iran: Provincial distribution of heavy leather factories (%)



The best way to treat sewage and reclaim the usable products in tanneries is to establish them in "industrial towns" like the one under construction in Garmsar. Being situated near each other, the tanneries can then share the means and cost of waste disposal and reclamation. Furthermore, the close proximity of tanneries in such industrial towns makes it much easier for the government to provide the necessary utilities and other services, such as transport links.⁹

4.3.3 Exports of leather goods

Data on Iran's exports of hides and skins are presented in Table 4.3.2.

Table 4.3.2. Iran: Export of hides and skins

Year	Tonnes	'000 pieces	\$ million
1974-76 (average)	15,700	..	23
1992	15,000	..	66
1994	..	13,354	71
1995	..	12,239	64
1996	..	17,358	87

Sources: FAO, *World Statistical Compendium for Raw Hides and Skins, Leather and Leather Footwear 1974-92*, Rome, 1994; Ministry of Jihad-e-Sazandegi, *An Analysis of the Importance of Hides and Sins and their Position in Iran's Economy and Non-oil Exports (Farsi)*, Tehran, 1998.

Iran's hides and skins are exported mainly in pickled form. This means that flaying, fleshing and similar difficult polluting activities are carried out within Iran, while the clean, fine and high value-added processing activities are undertaken outside the country. Some countries like the Republic of Korea and China import large quantities of the hides and skins they need only to export their processed products and obtain high added value. The following example shows the potential gains Iran is foregoing by exporting raw material:

Assuming the price of pickled sheepskin was \$5.30 per piece in 1995, Iran's export of approximately 17.4 million pieces earned some \$92 million. If all of these skins had been manufactured into clothes and exported, and assuming the following coefficients,

- surface of each piece of skin	6 square feet
- surface required for each suit of leather garment	32 square feet
- price of each suit	\$100

from table 9 we have:

$17,358,000 \times 6 = 104,148,000$ square feet of pickled skin exported in 1996.

This means that export revenues of $(104,148,000 / 32 \times 100) = \$325,462,500$ might have been earned instead of the \$91,997,400 actually obtained in 1996. Substantial potential gains are therefore available from the development of an export-oriented downstream leather goods industry, and further investments in such an industry need to be considered as a matter of urgency.

Iran already produces a wide range of high-quality leather goods, including shoes, handbags and briefcases. Many of these are hand-made in small home-based workshops, and have a considerable export potential.

⁹ For a detailed discussion of the reclamation of effluents in Iran see Ministry of Jihad-e-Sazandegi, *A Survey of Processing of Hides and Skins in the Islamic Republic of Iran (Farsi)*, Tehran, 1996.

Iran's annual shoe production is estimated at about 40 million pairs, of which about half are manufactured by 15 firms that produce machine-made shoes. The remainder are hand-made shoes produced by individuals in small unlicensed home-based workshops. The export of hand-made shoes would be facilitated by encouraging the producers to form export unions, which could obtain bulk orders to precise specifications from overseas customers, and collect the domestic hand-made shoes from the individual shoemakers for export. Iran's mechanized shoe industry has suffered a decline in quality during the past two decades after it was put under state control in 1979, following which the emphasis has been put on quantity rather than quality. Nevertheless, the country's major shoemaking companies, such as Melli, Wien and Bella, have the experience and the potential to become significant exporters provided they are managed more efficiently and effectively. In this context, a reversal to private ownership may be considered.

Handbags and briefcases are made in small and medium-sized workshops. The industry is expanding rapidly in the face of good internal demand for its products, and further expansion is possible if export markets can be developed. The formation of export unions could provide the necessary means and incentives for the development of such markets.

4.3.4 Conclusions and recommendations

One of the most basic constraints facing the leather products industry is the traditional nature of livestock farming practiced in Iran. A restructuring of the animal husbandry systems could lead to significant improvements in the quantity and quality of the hides and skins produced in Iran, and pave the way for corresponding improvements in the leather goods industries.

In particular, an integrated cattle rearing system may be considered, involving the establishment of integrated units comprising pasture land, animal raising units, an industrial slaughterhouse, rendering sections for offal, well-equipped modern tanneries and a reclamation unit for effluents. A thorough study of the feasibility of such a scheme is urgently necessary.

In the case of the sheep and goat herders, who often comprise small landowners and peasants with little pasture land of their own, the promotion of cooperative farming practices may be considered. This would make the rearing of sheep and goats more economical for the individual farmers and would also facilitate the provision of extension and veterinary services by the government. Some forms of cooperation, such as joint grazing of sheep by village shepherds, are already practiced in the provinces of Azerbaijan, Talesh and Yazd. They should be improved and made more systematic.

Farmers should also be discouraged, through systematic extension education, from keeping a few sheep on arable farms. It would in most cases be more efficient for them to concentrate on either crop farming or animal husbandry. In the latter case, they would be more likely to maintain large economical flocks, and to grow fodder and grass to make their own pastures. Government services and banking support could provide the necessary incentives.

The transformation should not, and cannot, apply to all areas. It should be done with due care and a thorough study of the soil, climatic and social conditions prevailing in each area. A master plan should be prepared to identify zones where large scale livestock rearing areas with sufficient pasture and fodder-growing capacity can be established.

These recommendations do not apply to nomads as they are constantly on the move. The only solution in their case would be for the extension and veterinary services to pay more attention to them. Fortunately nomads work and stay in groups and have a cohesive "group culture" which make it much easier to reach and convince them than the individual small peasants.

Significant improvements in the quantity and quality of the leather produced in Iran could also be gained through improved slaughtering practices. The ban against illegal slaughtering must be rigorously enforced, and the construction of industrial slaughterhouse complexes should be promoted by the government to replace the existing small and poorly equipped slaughterhouses.

The export of leather goods would benefit greatly from an increased participation of the domestic leather industry in the many fairs and exhibitions on leather and leather goods held throughout the world. This would enable domestic producers and exporters to familiarize themselves technological developments, international requirements and standards, consumer preferences, etc, and to find prospective customers for their products. Technical schools should also be established to train technicians and skilled labourers; the teaching of hide and leather technology may even be started at college level for the training of specialists.

The formation of joint ventures with foreign entrepreneurs would also be beneficial in transferring capital and modern technology to the domestic leather goods industry, and helping it to enhance its competitiveness in international export markets. The many benefits to be gained from such partnerships include the adoption of improved tanning and finishing processes, improvements in effluent control, and the increased familiarization of local entrepreneurs with world market requirements as regards style, quality, colour, workmanship, etc.

4.4 The textile industry

4.4.1 Introduction

The developing countries, especially those in Asia, have gained considerable ground in the world trade in textiles and garments during the past two decades. The average rate of export growth during 1985-94 has amounted to 20.5% in Asian countries compared to 10.9% for the world as a whole. For garments alone the corresponding figures are 25.3% for Asian countries and 12.3% for the world. This has led to about 60% of the world's garments being supplied by Asia at present. This development has been stimulated by the comparatively low cost of labour in developing countries and by the fact that the machinery used by the textile industry has remained comparatively simple and unchanged for generations (the only exception being the full automation of the open-end rotor spinning method).

Of the world's total exports of \$107 billion for garments and \$111 billion for textiles, Iran's share is 0.5% and 0.2% respectively. An overview of Iran's textile-related import and export transactions in recent years yields comparatively disappointing results. The total imports of the sector - comprising machinery, equipment and raw materials - amounted to \$364 million in 1996, while total exports amounted to \$369 million. This trend has persisted into 1997.

Cotton, one of the oldest and the most commonly used fibres in the textile industry, has been cultivated in Iran for the past 300 years. In 1975 the country produced 716,000 tonnes of unginned cotton, the highest production in Iran's history. This was followed by a gradual decline in output, which reached its lowest level of 204,000 tonnes, in 1981. The reasons for this drastic decline include:

- Many privately-owned large plantations were brought under state ownership and were later divided into smallholdings and transferred to peasants.
- The low procurement prices offered by the government compared with those of other crops such as wheat and rice encouraged cotton growers to shift to the cultivation of more profitable crops.

- The shortage prompted the government to ban cotton exports in 1980; this caused a surge in the price of cotton yarn but no increase in production. The following years witnessed steady rise in the import of cotton.

Recognizing the problems arising from the small-scale peasant farming systems traditionally found in Iran, the government has changed its agricultural policy and begun to promote large-scale farming systems. Furthermore, because of the need for cotton seed oil the government provided additional support to increase the production of cotton. The rise in the world price of cotton in 1993 gave further encouragement to Iranian farmers to grow cotton. By 1996 production had reached 523,000 tonnes and in 1997 it rose further to 598,000 tonnes, of which 35,000 tonnes were exported. The national textile industry's need for 150,000 tonnes of ginned cotton (corresponding to approximately 450,000 tonnes of unginned cotton) was satisfied.¹⁰ A Cotton Fund was established in 1995 to balance the market price in favour of cotton production by buying cotton from local farmers, if necessary, although farmers were not forced to sell to the Fund and were given the freedom to sell to the highest bidder.

Iran is also a significant producer of wool as a result of its large sheep population. Much of the wool produced in Iran is considered coarse wool, however, with a length of 125-150 mm and a diameter of 15-35 microns. It is therefore mostly used by the carpet industry, and the country is forced to import worsted wool for most of its other textile needs. Herdsmen do not usually shear the sheep as the price of the sheep is paid on the basis of the live weight of the animal, which is higher than that of the wool alone. However, the wool taken off the skin in the tanning processes is generally of low quality and has little industrial value.

The country has 102 commercial wool-spinning mills producing about 24,000 tonnes of wool yarn annually, and there are a large number of family-based spinning enterprises which are estimated to have a similar total production. An additional 55 commercial mills are under construction. Most of the wool spinning factories are only equipped to handle coarse wool and lack washing and dyeing lines. Their machinery and equipment is mostly manufactured domestically and is not sophisticated enough to produce high quality products. To improve the situation the following recommendations are offered:

- Sheep should be shorn before they are slaughtered. In addition to improving the quality of the wool, this would increase the country's wool production by 25-30%.
- Wool spinning factories should be equipped with wool washing lines. The oil obtained from the wool, lanolin, is of high value in making cosmetics, coatings for metals, softeners, and paints.

With a relatively large goat population (23 million in 1992) Iran is one of the world's leading producers of soft wool, cashmere. Total world production of soft wool amounts to 8,000 tonnes, of which 5,000 tonnes is produced in China, 1,500 tonnes in Iran, 800 tonnes in Afghanistan and the rest in other countries. Iran's cashmere ranks the third in quality in the world. However, lacking a domestic processing capacity, the country exports its entire cashmere wool in raw form. The differences in the value of each kilogramme of cashmere and its processed products and by-products are shown in Table 4.4.1, which highlights the extent of the potential export revenues the country is losing by exporting unprocessed cashmere.

¹⁰ It may be noted that Iran's cotton ginning plants have a total capacity of about 750 thousands tonnes of cotton).

Table 4.4.1. Price differential between exports of raw and processed cashmere (\$/kg)

Raw cashmere	5-8
De-haired cashmere (99% pure)	50-70
Cashmere yarn	80+
Cashmere garment	150+

Iran produced 800 tonnes of silk in 1997. Almost the entire output is produced by the state-owned Iran Sericulture Company (ISC) formed in 1981 through the merger of three different companies - the Pilevar Company, the Silk Production Industrial Complex, and Gilan Silk Company. ISC intends to raise its production to 3,000 tonnes of raw silk and to promote the production of silk yarn and the silk processing industry. There are currently two silk spinning factories in the province of Gilan and one in the province of Khorassan. More than 95% of the silk yarn produced is used in the silk carpet weaving industry, which is located mainly in Qom, Isfahan, Kashan and Naeen.

Iran meets most of its requirements for synthetic fibres from imports, although it has the potential of raising domestic production through its petrochemical industry. The situation is expected to change as a number of projects currently being implemented in petrochemical sector, especially for producing polyethylene terephthalate (PET) and polyester, are completed. Tables 4.4.2 and 4.4.3 show the volume of synthetic fibres imported and produced in Iran.

Table 4.4.2. Iran: Imports of synthetic fibres and yarn, 1976-92, selected years (Tonnes)

	1976	1977	1980	1985	1989	1990	1991	1992
Yarn ^{1/}	20,564	21,837	24,334	30,707	1,924	12,646	26,577	18,107
Viscose rayon	27,735	39,237	38,794	3,226	3,898	9,128	18,585	2,420
Polyester	6,659	6,589	11,461	2,852	2,629	9,855	28,788	4,458
Acrylic	27,950	18,493	30,777	68,905	27,550	48,618	74,402	35,474
Nylon	689	833	524	225	..	34	76	220
Polypropylene	..	..	..	4,046	1,899	9,481	11,176	13,329
Others	8,145	11,690	3,969	981	344	902	3,438	3,570
Total ^{2/}	71,178	76,842	85,525	80,235	36,320	78,018	136,465	59,471

Source: *Foreign Trade Statistical Yearbook*, various issues.

Notes: 1/ Synthetic/blended.
2/ Fibres only, excluding yarn.

Table 4.4.3. Iran: Domestic production of synthetic fibres, selected years, 1981-93 (Tonnes)

	1981	1983	1989	1990	1991	1992	1993
Polyester fibre	7,990	15,277	17,802	26,469	26,826	29,523	31,925
Polyester yarn	6,602	13,105	5,619	15,580	14,852	16,031	17,047
Acrylic fibre	7,670	12,270	13,240	16,742	18,014	16,763	19,237
Acrylic tops	6,607	13,574	10,650	13,256	10,746	7,180	5,964
Nylon filament	9,742	6,529	7,355	11,654	13,388	14,120	13,870
Polypropylene	..	606	1,333	2,189	2,500	2,370	2,417

Source: Ministry of Industries, *Textile, Clothing, Footwear and Leather Industries Output Statistics, 1981-93*.

4.4.2 Blankets

There are 30 manufacturers of blankets in Iran, which had an average annual output of 14,400 tonnes of yarn and 6.8 million blankets in 1984-93, even though their nominal capacity stands at

33,900 tonnes and 15.5 million blankets respectively. Taking into account the per capita consumption of 0.2 blankets per year and an estimated population of 62.5 million by the end of the Second Five-Year Plan in March 2000, Iran will need 12 million blankets to meet domestic demand alone. Permits have been issued for 10 million blankets to be produced per year. If only 50% of the permit holders complete their projects and start operation, then 20 million blankets will be produced annually, leaving 8 million for export.

Most of the spinning factories producing blanket yarns either lack dyeing lines or have not been well designed and established. They have to have their yarns dyed elsewhere, which raises the cost of production by up to 50%. The following suggestions should be taken into account to help the blanket industry:

- Financial and technical aid should be given by the government to the factories so that they can complete their spinning and weaving lines and add dyeing lines.
- Long-term loans should be given to other factories whose lines are complete but who need to renovate their plant, buy spare parts and raise their production quality.

4.4.3 Machine-made carpets and moquette

The average annual production of machine-made carpets in 1984-93 amounted to 5,530 tonnes of yarn and 7.7 million square metres of carpet. Considering a per capita consumption of 0.6 kilogrammes of yarn per year and 0.3 square metres for machine-made carpets, domestic demand is projected at 33,840 tonnes of yarn and 18.8 million square metres of carpet by the end of the Second Five-Year Plan. Domestic production consequently does not satisfy the local demand. In the case of moquette, average annual production in 1984-93 stood at 22.5 million square metres, whereas the country's domestic demand by the end of the Second Five-Year Plan has been projected at 122.5 million square metres.

These two industries depend heavily on imported yarn and face high production costs. In addition, their products cannot compete qualitatively in international markets. They are therefore not recommended for export, at least in the short term.

4.4.4 Hand-made carpets

Next to the oil industry, the hand-made carpet industry is Iran's most important earner of foreign currency, and Persian carpets are known throughout the world for their high quality and distinctive designs. It is estimated that the country's 2-2.5 million weavers produce some 9 million square metres of carpets and rugs annually on about 1-1.2 million handlooms. The main centres of the carpet weaving industry are in Azerbaijan, Isfahan, Kerman, Khorassan and Yazd.

The Iran Carpet Company with 20,000 weavers is the largest carpet producer in the country. It was established in 1935 with the aim of helping to improve and expand the carpet industry. Despite its large size, however, the company does not have a predominant share in the market, which continues to be dominated by a large number of small home-based and individual weavers.

Since the 1980s the Ministry of Jihad-e-Sazandegi (Construction Crusade) has been promoting the formation of rural carpet weaving cooperatives. It seeks to expand the industry by rendering financial assistance to the cooperatives to procure equipment and raw material. By 1992, 95 cooperatives with 270,000 weavers and 127,000 looms had been set up.

Table 4.4.4 shows that the export of hand-made carpets declined between 1993 and 1996. More recent unpublished data suggest that it suffered a further drastic decline in 1997. A survey of exporters indicated the following reasons for this decline:

- The official rate of exchange for the rial is unreasonable;

- The rules and regulations governing exports change frequently and are not stable;
- Some merchants export carpets of low quality and damage the reputation of the industry, which wants the export trade to be limited to traders licenced by the Carpet Exporters Union;
- Workshops claiming to produce Persian Carpets have been established in some neighbouring countries, even though their products are of lower quality than those of Iranian weavers;
- China has developed its carpet industry during the past 20 years and emerged as a formidable competitor for Iran, since silk rugs produced in China have a very high quality and sell at much lower prices than Persian Carpets.

Table 4.4.4. Iran: Export of hand-made carpets, 1993-96

	1993	1994	1995	1996
Volume (pieces)	29,816	37,612	25,911	22,014
Value (\$ million)	1,392	2,145	982	650

Source: *Foreign Trade Yearbook of Islamic Republic of Iran (Export)*, various years.

The government will have to take a number of firm measures to guarantee the continuity of Iran's export markets for hand-made carpets. These measures should be formulated and implemented in close collaboration with the country's reputed carpet merchants, giving due attention to their knowledge and experience of the trade.

4.4.5 Serge

The serge weaving industry has a long history in Iran and its product is of high quality. It comprises 21 factories with an installed capacity of 43 million square metres of fabric annually. The annual average of production in 1984-93 has fallen short of the nominal capacity, however, amounting to 24.1 million square metres of serge fabric and 3,140 tonnes of serge yarn. It is estimated that by the end of the Second Five-Year Plan Iran will need 31.25 million square metres of serge fabric. Taking into account the fact that licences have been issued for the establishment of new firms with a total production capacity of 53 million square metres of serge fabric, and that the fabric production technology in Iran is very modern and up to date, the industry has a good potential for re-emerging as an export supplier. The government should give priority to the renovation and development of serge enterprises, and in particular in helping the industry to overcome its principal shortcoming - the fact that the domestic production capacity of serge yarn (11,322 tonnes) is not sufficient to satisfy the need of the weaving factories. Even this constraint is not binding, however, since Iranian producers would still find it profitable to import the yarn and export the fabric.

4.4.6 Garments

Table 4.4.5 provides the latest available output data of Iran's formal garment industry, operating under licences issued by the Ministry of Industries, to 1992/93. Although no firm data are available for later years, production is believed to have grown significantly in the meantime and was estimated at 55 million pieces in 1996-97. This volume of production represents only about 50% of the nominal installed capacity, however, in addition to which a further 279 factories with a combined capacity of 75.2 million pieces have been approved. Apart from the factories licensed by the Ministry of Industries, there are myriads of small workshops which produce a sizeable volume of garments. Given the informal nature of these enterprises, however, there are no reliable statistics regarding their number and volume of production.

In 1996-97 Iran exported 19,312 tonnes of garments valued at \$210 million. The further promotion of garment exports is justified by the relatively high quality of these garments and by

the low labour costs prevailing in Iran, the simple machinery involved in the production of garments, and the economies of scale to be achieved through high volumes of production.

Table 4.4.5. Iran: Production of garments in licenced factories, 1988-92^{1/}
(Pieces)

	1988	1989	1990	1991	1992
Children's wear	960	965	945	1,020	980
Underwear	370	4,000	4,300	4,600	4,700
Ladies' wear	1,450	1,240	1,300	1,090	1,510
Men's wear	4,370	4,300	4,400	4,270	3,960
Sports wear	2,480	3,002	2,950	3,140	2,890
Work uniform	1,750	1,640	1,360	1,500	1,590
Others	6,020	6,140	5,240	6,050	5,960
Total	21,037	21,767	20,860	22,245	21,950

Source: Ministry of Industries, unpublished data.

Note: 1/ Iranian years beginning 21 March.

4.4.7 Other textiles

Table 4.4.6 shows other important textile-related activities. From among the items listed, knitwear (comprising tricots, flat and circular knitted garments, socks, etc.) has a particularly good prospect of being developed into an export-oriented industry, although some planning and support would be needed to achieve this goal.

Table 4.4.6. Iran: Number and production of main textile enterprises

	Number of enterprises	Average production (1984-93)	Units
Knitting industry			
Linen & rechele	91	9,530	tonnes
Circular knitting	299	12,870	tonnes
Tricots	974	982	tonnes
Socks & stockings	364	3,253	million dozen
Texturizing	13	15,860	tonnes
Tarpaulins	76	6,308	million square metres
Towels	119	1,320	tonnes
Hydrophylic cotton	9	1,849	tonnes
Zips	6	6,480	million square metres
Play balls	4	43,884	pieces
Fishing nets	2	425	tonnes
High-bulk yarn	23	31,795	tonnes
Jute			
Jute yarn	1	11,500	tonnes
Jute sacks	1	67,790	tonnes
Chatai jute	1	1,140	tonnes

Source: Ministry of Industries, unpublished data.

4.4.8 Conclusions and recommendations

The following principal conclusions may be drawn from the detailed analyses of each branch of the textile industry presented above:

- With regard to raw materials and fibres, the production of cotton has a promising future. Wool (coarse and fine) is produced in ample quantity and good quality. The production of synthetic fibres will rise as a result of the investments made and the projects being carried out by the Iran Petrochemical Company. These favourable prospects notwithstanding, it may be noted

that domestic production of fibres does not constitute a critical determinant of an efficient export-oriented industry - many countries are successful exporters of final products derived from imported raw materials, to which they have added value.

- The blankets, serge fabrics, garments and knitted products industries are well- developed and have a good export background and potential. Persian Carpets are also a unique product with a high export potential, but serious and prompt measures are needed to overcome the threat posed by emerging competitors. Iran's ready-made clothing industry, comprising such major domestic forms as Iran Barak, Iran Merinoos, Jamco, Jamegan and Hakopian, also have a promising export outlook. Tailoring is a well-established craft in Iran, and it reveals itself even in the ready-made clothing industry. It only needs a little more incentive and less state intervention to raise the quality of the products and gain markets.
- The past decade has seen a substantial increase in competition from the East European countries, such as the former Czechoslovakia, Hungary and Poland, in Iran's traditional West European export markets. Outward processing agreements, lower transport costs, wage costs comparable to those of developing countries, proximity to markets, and European political relations are likely to ensure that the competition from these countries will persist. This will pose another challenge to Iranian textile exporters in gaining and maintaining market share.

An important general constraint facing textile exporters is the instability, discontinuity, and lack of coordination of the government's export policies. An exporter may thus win a market and conclude a contract with great effort, only to be disappointed by an overnight change in the rules and policies. This either forces the exporter to revoke the contract, (much to the discredit of Iran's export reputation, or to fulfill it at considerable loss. This uncertainty discourages entrepreneurs to undertake export-oriented transactions in the future.

Shortages of high-quality raw materials impose a constraint on the development of an export-oriented textile industry. The often low quality of domestic yarns, and the import of mediocre qualities of yarn to match the comparatively low purchasing power of domestic consumers, has gradually lowered the quality of the finished apparel. In this regard the production factors such as machinery, colour, design, sewing, etc. have followed suit. The quality problem is heightened, moreover, by the often very high age of the factories in Iran, where most of the textile mills and tanneries are in need of repair and renovation. As a result they operate at only 50% of their nominal capacities.

Textile exporters also suffer from many of the macro-economic distortions noted above in the context of the food-processing and leather-based industries. In particular, it is recommended that textile exporters should be permitted to spend at least 50% of their foreign exchange earnings to import necessary equipment and inputs, and to retain possession of the rest. The government has recently eased existing regulations by allowing exporters to spend 100% of their foreign exchange earnings to import what they need, and in the Iranian year 1376 (1997/98) the Ministry of Industries allocated \$50 million of foreign exchange to the textile industry to renovate its equipment and procure spare parts.

4.5 Non-metallic mineral (building materials) industries

4.5.1 Introduction

Iran has a long history in the production of non-metallic mineral products and building materials. While these have historically been produced by conventional methods, there has been an increasing shift towards industrial production in the past few decades. This has resulted in a virtual cessation of imports of building materials, with the country's needs now being met almost entirely through its own production. This has a high standard, and has also begun to penetrate export markets.

The industry is based on an abundance of natural resources, including clay, marl, silicate, limestone, bentonite, talc, sodium carbonate, kaolin, feldspar, and a variety of mineral oxides. The availability of skilled labour and cheap energy, as well as Iran's proximity to consumer markets, has made the building materials industry very attractive for investors producing both for the domestic market and for export.

The non-metallic building materials industry has developed very rapidly in the past two decades, which have seen significant increases in capacity, improvements in quality, and the adoption of advanced technologies. Extensive new investments in the industry, the purchase of modern machinery, and the production of locally made equipment have enhanced the international competitiveness of the industry in terms of both quality and price. These developments have resulted in Iran's status in international markets being changed from that of a net importer to that of a net exporter, and have generated considerable interest for Iranian products in international markets.

Table 4.5.1. Iran: Production of non-metallic mineral products, 1994-97^{1/}

Product	Unit	1994	1995	1996	1997	Capacity
Tiles	mill square	35	46	51	60	65
Cement	metres	16.3	17.5	18.5	19.6	22.5
Sheet glass	mill tonnes	259	228	250	280	293
Stone	'000 tonnes	..	6,893	6,690	12,456 ²	..
Sanitary ware	'000 tonnes	40	45	45	45	51
Fibre cement	'000 tonnes	372	440	490	490	631

Source: Ministry of Industries.

Notes: 1/ Iranian years beginning 21 March.
2/ First six months only.

Table 4.5.2. Iran: Exports of non-metallic mineral products, 1995-97^{1/}

	1995	1996	1997 ^{2/}
Volume ('000 tonnes)	590	1,103	560
Value (\$ million)	36	54	4

Source: Ministry of Industries.

Note: 1/ Iranian years beginning 21 March.

2/ The decrease in 1997 is due to changes in measuring techniques and a ban on the export of the cement in that year. Increased local consumption also played an important role in restraining exports in the said year.

4.5.2 Floor and wall tiles

The history of tile production in Iran goes back thousands of years, with tiles being used for both decoration and sanitary purposes. Production was dominated by traditional hand-made tiles until about 1960, following which six modern plants were established, taking the total capacity of the industry to about 17.5 million square metres by 1978. Actual production in that year amounted to 11.5 million square metres. Imports were estimated at approximately 3.2 million square metres for the year 1978.

With the establishment of 12 more production units between 1978 and 1991, Iran's total tile producing capacity reached 28.5 million square metres by the latter year, of which about 3 million square metres with a total value of \$13.2 million was exported. Today the country's total production is estimated at about 60 million square metres, which are produced in 30 different

production is estimated at about 60 million square metres, which are produced in 30 different production units. Of these, floor tiles account for 15.5 million square metres and wall tiles for the rest. Production capacity, meanwhile, has risen to 85 million square metres, of which 33 million square metres is for floor tiles. In addition, at least eight new production plants with a combined annual capacity of 20 million square metres are currently under construction and more than 40% complete.

Iran's current output of 60 million square metres per annum makes it the 10th largest producer of tiles in the world. With the new production facilities coming into stream, it is poised to climb further up the ranks of the ten leading producers.

The local demand for tiles is directly related to developments in the construction industry, and if past trends persist, it is estimated that the industry will have an exportable surplus of about 15-20%. The quality of tiles produced in Iran ranges from medium to high, and some locally manufactured tiles match the best in the world. With most of the country's tile manufacturers having been certified by the Iran Standard and Industrial Research Institute, and two having obtained the ISO 9002 certificate, the industry should have no problems competing in export markets on quality grounds.

Table 4.5.3. Iran: Producers of wall tiles, 1997

Name	Capacity (million square metres)	Location	Year of Commencement
Hafez	1.5	Shiraz	before 1978
Irana	7	Tehran	before 1978
Pars	2	Ghazvin	before 1978
Saadi	2.5	Tehran	before 1978
Isfahan	2.5	Isfahan	before 1978
Saadi expansion project 1	2	Tehran	1982
Khazar	1	Rasht	1989
Alvand	2.5	Ghazvin	1991
Gilan	1.5	Gilan (Manjil)	1993
Semnan	1.5	Semnan	1993
Tabriz	1.5	Tabriz	1994
Tous	1.5	Khorasan	1994
Zarin	1.5	Khorasan	1994
Hafez expansion project	4.5	Shiraz	1994
Saadi expansion project 2	2	Tehran	1994
Saveh	4	Saveh	1995
Saman	3	Boroujerd	1995
Shiraz	1.5	Kazeroun (Shiraz)	1995
Isfahan expansion project	3.5	Isfahan	1995
Irana expansion project	2	Tehran	1996
Alvand expansion project	1.5	Ghazvin	1997
Bisotoun	1.5	Kermanshah	1998
Total	52		

The raw materials used in the tile industry are obtained from the following domestic sources:

- Kaolin from mines located at Abadeh, Gonabad, Koshk-e-Nosrat, Marand, Samirom, Takestan and Zonuz;
- Feldspar from mines at Azna, Boroujerd, Yazd and Zanjan;
- Silicate from mines at Damavand;
- Bentonite from mines at Azna, Boroujerd and Lavasan (Tehran);
- Talc from mines at Azna, Doroud and Hamadan;
- Calcium carbonate from mines at Maymeh;
- Red ferro-oxide from mines at Hormoz island;
- Manganese oxide from mines at Ghom

The total annual consumption of these materials amounts to more than 960,000 tonnes. In addition, the glaze consumed by the tile industry is also produced within Iran.

Table 4.5.4. Iran: Producers of floor tiles, 1997

Name	Capacity (million square metres)	Location	Year of Commencement
Alborz Ceramics	0.3	Ghazvin	before 1978
Yazd	0.5	Yazd	before 1978
Nilo	1	Isfahan	before 1978
Gilan	0.5	Gilan	before 1978
Mayboud	1	Mayboud	1989
Kavir	2	Yazd	1992
Kashan	0.75	Kashan	1992
Behrang	0.75	Damghan	1993
Firouzeh	0.75	Mashhad	1993
Tabriz Floor	1	Marand	1993
Ehsan Mayboud	1	Mayboud	1994
Marjan	0.6	Isfahan	1994
Yazd expansion project	1.5	Yazd	1994
Nilo expansion project	2	Isfahan	1994
Takseram Granite	1	Isfahan	1995
Hormoz Ceramic	0.3	Bandar Abbas	1995
Birjand Badakhshan	0.2	Birjand	1997
Kasra	1	Sanandaj	1998
Khayam Mayboud	1.5	Mayboud	1998
Kashan expansion project	1	Kashan	1998
Tabriz Floor expansion project	2	Marand	1998
Mayboud expansion project	1	Mayboud	1998
Jaam	1.5	Lorestan	1998
Ehsan expansion project	1.5	Mayboud	1998
Narin	1	Yazd	1998
Hafez expansion project	1	Shiraz	1998
Shirkoh	3	Yazd	1999
Masoud	2	Yazd	1999
Kashan Granite	1.2	Kashan	1999
Total	32.95		

Table 4.5.5. Iran: Active floor tiles projects, 1997

Name	Capacity (million square metres)	Location
Mayboud China	2	Mayboud
Mayboud Orchin	2	Mayboud
Negar	2	Isfahan

The equipment and machinery used by the tile industry are procured from the following sources:

- Machinery used for the preparation of raw materials from Germany, Iran, Italy, Sweden and Turkey;
- Presses from Germany, Iran and Italy;
- Dryers from Germany, Iran and Italy;
- Glazing lines from Germany, Iran and Italy;
- Furnaces from Germany, Iran and Italy;
- Packaging equipment from Iran and Italy;
- Other auxiliary equipment from different sources.

The industry remains dependent on imports of the following materials:

- Raw materials: Kaolin for glaze, ball clay, aluminum oxide, zirconium silicate, zinc oxide, colouring materials and deflocculant materials;
- Intermediate materials: Porcelain and silex balls, porcelain liners, high alumina balls, silk screen materials.
- Parts: Hydraulic and electronics parts, special steel, rubbers for dyes and casts, rollers, ball bearings and motors.

The high quality and variety of designs, sizes and colours of Iranian tiles have made them very popular in the home market. Floor tiles in particular are becoming increasingly popular substitutes for machine made carpets and wooden, PVC and stone flooring. This high degree of local popularity is reflected in comparatively high domestic prices, which often exceed export prices. Consequently, Iranian tile producers have little incentive to develop export markets, and export activities are mainly confined to the need to generate foreign currency for the purchase of raw materials and spare parts or to finance the establishment of new plants or the expansion of existing capacity.

Official data of Iran's export of the tiles in 1995-97 are reproduced in Table 4.5.6, although these are widely believed to underestimate the true volume of the country's tile exports by almost 50%. These unofficial estimates, if true, would place Iran among the ten leading exporting countries in the world. These exports are shipped to 36 countries, with the neighbouring countries in the Persian Gulf and the CIS, as well as Canada, Europe, and Africa constituting the main export markets.

Table 4.5.6. Iran: Exports of floor and wall tiles, 1995-97^{1/}

	1995	1996	1997
Value (\$ million)	14.2	17.0	16.6
Volume (square metres)	5.1	6.1	6.0

Source: Ministry of Industries, unpublished data.
Note: 1/ Iranian years beginning 21 March.

All available indicators suggest that Iran has a strong comparative advantage in tile production, and could rise much higher in the ranks of the world's leading exporters. The most important production costs of the tile industry comprise the costs of raw materials, energy, and manpower. The respective share of these cost categories in total production costs in Iran are 30-40%, 5-6% and 30-35% respectively. Energy costs in other producing countries are about 20-25% higher than in Iran, and manpower costs are also higher. Only the raw material costs are slightly lower in other competing countries. Labour productivity in the Iranian tile industry is estimated at approximately 3,500 square metres per employee per year for wall tiles and approximately 5,000-7,000 square metres for floor tiles.

The volume of exports could be still be significantly increased to about 20% of total production without affecting the domestic market, while efforts should also be made to extract improved prices. The average price for tiles exported from Iran currently amounts to \$2.80 per square metre while the selling price in the export markets is estimated at up to \$10.00 per square metre.

The principal constraints to the further expansion of Iran's tile exports include an inadequate infrastructure for research and development (R&D) activities, an insufficient exchange of technical information in trade and production, and inconsistencies in the quality of its raw material supplies. In the case of some raw materials such as glaze it may be advisable to import more of this commodity until local production reaches the desired standard. The possibility of supporting and encouraging some manufacturing firms to produce high quality exportable tiles might also be

considered. The levying of low custom duties on imports of raw materials for these firms is also practical and advisable.

4.5.3 Sanitary wares

Despite its long history in the production with of ceramics, and especially of tiles, which goes back several thousand years, Iran is a relative newcomer to the production of sanitary ware. The first plant was only established in the late 1960s, and the industry is now dominated by the nine plants listed in Table 4.5.7. Plants currently under construction are listed in Table 4.5.8.

Table 4.5.7. Iran: Producers of sanitary ware

Name	Location	Tonnes
Pars Seram	Tehran	12,000
Mina	Ghazvin	13,000
Gol nama	Saveh	3,000
Morvarid	Yazd	4,000
Golsar Fars	Shiraz	6,000
Chini Kord	Kermanshah	6,000
Aras	Tabriz	4,000
Aria Seram	Mashhad	4,000
Zomorod Seram	Hamedan	2,000
Total		51,000

Table 4.5.8. Iran: Active sanitary ware projects, 1997

Name	Capacity ('000 tonnes)	Location
Salaran Sanitary ware	10	Isfahan
Ardakan Sanitary Ware	10	Yazd

The raw materials used in the sanitary ware industry are obtained from the following domestic sources:

- Kaolin from mines located at Abadeh, Gonabad, Koshk-e-Nosrat, Marand, Sarum, Takestan and Zonuz;
- Feldspar from mines at Azna, Boroujerd, Yazd and Zanjan;
- Silicate from mines at Hamadan;
- Sodium carbonate (soda ash) from the cities of Karmsar, Maymeh and Sefid Sang;
- Barium carbonate from the Barium Chimi factory at Mashhad;
- Ball clay from the Raw Materials Production Factory at Abadeh in Isfahan province;
- Sodium silicate from the city of Isfahan;
- Manganese oxide from mines at Qom.

The quality of some locally produced raw materials such as feldspar is not up to the required standard, however, due to its lack of uniformity. This problem will need to be resolved to ensure the export competitiveness of the Iranian sanitary ware industry.

The industry remains dependent on imports of the following materials:

- Raw materials: Special grades of kaolin, ball clay, aluminum oxide, zirconium silicate, zinc oxide, colouring materials, chemicals and CMC (carboxy methyl cellulose) glues;
- Intermediate materials: Porcelain, silex balls, liners, high alumina porcelain, deflocculants and furnace materials;
- Parts: Hydraulic and electronics parts, industrial steel, ball bearings, motors and pumps.

The distribution of the Iranian sanitary ware industry's production costs between the major categories of raw materials, energy and labour amounts to approximately 49%, 8% and 43% respectively. This cost distribution gives the Iranian sanitary ware industry a strong cost advantage over most of its major international competitors, since most of the required raw materials can be obtained relatively cheaply from domestic sources and domestic labour costs are also comparatively low. Whereas the cheapest Italian sanitary wares sell at about \$4.50 per kilogramme, the price of the most expensive Iranian-made products is about \$1.50 per kilogramme.

Although the Iranian industry still has difficulties matching its Italian, French, or American competitors in terms of quality, the price advantage should help it overcome this weakness in neighbouring countries. The deployment of more modern machinery and the increased use of some imported raw materials could even open the door for increased exports in more competitive markets in Europe and elsewhere.

Recent export trends of Iranian sanitary ware products are presented in Table 4.5.9. The principal export markets are the CIS countries, Africa, and the Emirates of the Persian Gulf.

Table 4.5.9. Iran: Exports of sanitary ware, 1995-97^{1/}

	1995	1996	1997
Value (\$ million)	1.63	1.56	1.44
Volume ('000 tonnes)	5.42	3.16	3.23

Source: Ministry of Industries.
Note: 1/ Iranian years beginning 21 March.

4.5.4 Sheet glass

Glass blowing is an old industry in Iran. Household and ornamental objects made out of glass were first made as far back as 3,500 years ago. In the safavid dynasty (1501-1732) glass was used to decorate mosques. The first modern glass factory was established in Iran in 1938, and is still in production.

Iran possesses significant reserves of most of the necessary raw materials needed for the production of glass:

- silicate, which represents the principal raw material for the production of glass and accounts for about 58% of the weight of the final output, is mined at 77 locations in the provinces of West and East Azerbaijan, Ghazvin, Hamadan, Iranshahr, Kerman, Khorasan, Lorestan, Semnan, Tehran, Yazd and Zanjan. Iran also has many silicate processing plants;
- dolomite, which accounts for some 16% of the final weight of sheet glass, is obtained from mines in the Central, Semnan and Zanjan provinces;
- limestone, comprising 3.2% of the final weight of sheet glass industry, is mined throughout the country;
- feldspar, accounting for 3% of the weight of sheet glass, is mined in the province of Zanjan;
- sodium sulfate, which constitutes 1.2% of the weight of sheet glass, is obtained from mines located at Varamin in the province of Tehran;
- charcoal, which comprises 0.7% of the weight of sheet glass, is obtained from the woods in northern Iran.

The only major input for which Iran is significantly dependent on imports is soda ash, which constitutes about 18% of the final weight of sheet glass. About 30% of the glass industry's requirements are covered by the Shiraz Petrochemical Complex, with the remainder having to be

imported. A production unit with a capacity of 100,000 tonnes per year is under construction in Maragheh, however. When completed, it will allow the country to meet its entire demand for sodium carbonate from domestic sources.

The Iranian glass industry produces a broad range of outputs, as indicated in Table 4.5.10. Of these, sheet glass has the most promising export potential, and is currently produced by five companies as listed in Table 4.5.11, which have a total capacity of some 294,000 tonnes per year and an actual output of about 257,000 tonnes per year. Recent trends in sheet glass exports are indicated in Table 4.5.12.

Table 4.5.10. Iran: Outputs of the glass industry, 1997

Product	% of total
Sheet glass (3-4 mm)	46.5
Sheet glass (5-6 mm)	14.0
Sheet glass (10+ mm)	5.5
All tinted glass	21.0
All coloured glass	13.0
Total	100.0

Source: Ministry of Industries.

Table 4.5.11. Iran: Producers of sheet glass

Name	Capacity ('000 tonnes)	Market share (%)	Year of Commencement
Shisheh Iran	15.0	5	1938
Shisheh Ghazvin	120.4	42	1967
Shisheh Abgineh	38.2	13	1972
Shisheh Abgineh expansion project	60.0	20	1991
Saveh Jam	60.0	20	1991

Source: Ministry of Industries.

Table 4.5.12. Iran: Exports of sheet glass, 1995-97^{1/}

	1995	1996	1997
Value (\$ million)	2.5	1.9	2.0
Volume ('000 tonnes)	11.5	7.1	12.7

Source: Ministry of Industries.

Note: 1/ Iranian years beginning 21 March.

Float glass is not currently produced in Iran, and the country's requirements of some 4 million square metres per year for this type of glass are met mainly by imports from Saudi Arabia and Ukraine. Several investment projects in the float glass industry have been approved, however, as indicated in Table 4.5.13. When these projects are completed, imports will no longer be necessary.

Table 4.5.13. Iran: Float glass investment projects under implementation

Name	Location	Capacity (1000 tonnes)	Machinery supplier	Status
Lia Glass	Ghazvin	100	Glaver Bell Belgium	L/C opened
Azar Glass	Ghazvin	80	Z.M.E.C. China	L/C opened
Ghazvin Glass	Ghazvin	120	Glaver Bell Belgium	-
Iran Float	Saveh	100	Stein Heurtey France	-

Source: Ministry of Industries.

4.5.5 Cement

The cement industry is not new in Iran. The first plant commenced production 65 years ago and the country's output in 1979 amounted to 7 million tonnes. The development of the cement industry during the past five decades is shown in Table 4.5.14. At present the country has 51 production lines located in 29 factories.

Table 4.5.14. Iran: Development of cement industry, 1950-97

Period	Number of units added	Capacity added (tonnes/day)
1950-60	5	1,260
1960-70	12	5,700
1970-80	20	42,300
1980-90	4	8,300
1990-97	10	16,500
Total	51	74,060

The Iranian cement industry benefits from the abundance of most necessary raw materials, such as limestone, gypsum, silica and iron ore, in various parts of Iran, as well as the availability of the required specialist and skilled labour as a result of the Iran's long experience as a cement producer. It is owned mostly by the public sector and only 10% is in private ownership. It has a very low level of import-dependence for raw materials, and relies on foreign suppliers (mainly in Germany, Austria, France, Japan, and Romania) only for the procurement of some spare parts and electrical components. The industry's final output consists of both clinker (unmilled cement) and cement, with the latter being produced in 14 varying types and qualities for different applications.

Table 4.5.15. Iran: Production of cement by plant

Name	Capacity ('000 tonnes/year)	
	Clinker	Cement
Abyek	2,250	2,340
Urumieh	690	718
Isfahan	680	707
Behbahan	825	858
Tehran	2,226	2,315
Tehran 5th unit	99	103
Tehran 7th unit	600	624
Doroud	1,197	1,245
Khazar	600	624
Sepahan	1,980	2,052
Shomal	660	684
Shargh	493	513
Soufian	1,428	1,485
Gharb	600	624
Fars	1,052	992
Kerman	1,104	1,148
Loshan	99	103
Neka	600	624
Shomal (white)	86	89
Saveh (white)	165	172
Nairiz (white)	165	172
Abadeh	165	172
Ardebil	690	718
Ekbatan	165	172
Khash	600	624
Ghaen	660	686
Kordestan	690	718
Hormozgan	990	1,029
Khozestsan	1,020	1,060
Total	22,558	23,379

Source: Cement magazine no.32, 1997.

Table 4.5.16. Iran: New cement projects completed in 1998 and nearing completion

Name	Capacity (tonnes/day)
Estahaban	500
Elam	2,000
Bojnourd	2,000
Boushehr	3,000
Yazd	3,600
Shahroud	2,300
Darab	3,000
Sharg expansion	3,300
Fars Nou	2,000
Ghesham	700
Karoun	3,000
Kerman	700
Kehkoyeh	700
Lar	700
Nasr	1,800
Hormozgan 2	3,000
Benvid	500
Shekarabad	500
Isfahan expansion	1,000
Total	34,300 (=11.32 mn annually)

Source: Ministry of Industries.

Iran's cement production is expected to reach 24 million tonnes per year after the commencement of the Hormozgan cement plant. Taking into the account the Sharg expansion project and the new plants being established at Shahroud, Elam and Estahaban, production was scheduled to increase to 26 million tonnes per year by the end of 1998. It is further expected that the industry's output will reach 30 million tonnes by 2000.

Most available estimates suggest that Iran has an exportable surplus of 10% at the present, implying that about 2-2.5 million tonnes of cement could be exported without affecting the local market. This level of surplus is expected to remain unchanged in the foreseeable future despite the projected completion of a number of new production units during this period as demand in the domestic market is also projected to rise correspondingly. Consequently, about 3 million tonnes of cement per year are expected to be available for export in the future.

Iran's exports of cement during the past three years are shown in Table 4.5.17. These data indicate a significant increase in 1996 followed by a sharp decline in 1997 due to an export ban imposed by the government.

Table 4.5.17. Iran: Exports of cement, 1995-97^{1/}

	1995	1996	1997
Value (\$ million)	11.8	16.8	4.2
Volume ('000 tonnes)	203	303	66

Source: Hormozgan Cement Company, Annual Report.

Note: 1/ Iranian years beginning 21 March.

The most important markets for Iran's exports of clinker and cement are the neighbouring countries, such as the United Arab Emirates, Kuwait, Qatar, and Bahrain, which jointly import some 1.4 million tonnes of cement and 3.2 million tonnes of clinker annually. The competition in these markets is likely to increase in the coming years, however, as other regional producers increase their production capacity. Saudi Arabia, which currently produces 20 million tonnes of cement and exports 3 million tonnes each year is expected to increase its production to 29 million

Table 4.5.18. The regional cement industry in West Asia and the Persian Gulf

Country	Population (million)	Consumption per head (kg)	Number of plants	Annual production (million tonnes)	Annual consumption (million tonnes)	Annual exports (million tonnes)	Annual imports (million tonnes) ¹	Expansion plans (million tonnes)	Selling price (\$/tonne)
Saudi Arabia	16.0	1,195		20.0	17.0	3.0		9.0	
United Arab Emirates	1.9	2,789	6	9.0	8.0	1.0	3.0	3.0	60
Kuwait	2.1	785	1	1.8	2.0		0.4		60
Bahrain	0.6	1,120		0.2	0.6		0.4		70
Qatar	0.5	1,680	2	0.6	0.9		0.6		
Oman	1.6	838	2	1.3	1.4		0.7		70
Iraq	22.0	492	10	12.0	9.5			13.0	19
Turkey	62.0			36.0	32.0	4.0		5.0	
Cyprus				2.0		0.5			

Source: Hormozgan Cement Company, *Annual Report*, various issues.

Note: 1/ Includes clinker.

tonnes by 2000 and therefore to be in a position to export up to 9 million tonnes annually. Iraq, which has an annual production capacity of 12 millions tonnes at present, is capable of producing up to 25 million tonnes per year at a comparatively low selling price of \$19 per tonne. In most neighbouring countries the production costs for cement are higher than in Iran, both because they do not have the natural resources needed by the industry, and because their factories consist mostly of cement mills. They consequently need clinker for milling and conversion into cement. This provides Iran with the opportunity to enter into long-term export contracts for clinker with these neighbouring countries.

4.5.6 Fibre cement pipes and sheets

This industry had its origins in 1957, when a factory in Tehran commenced production. The next production unit was set up in Isfahan 15 years later. This was followed by the establishment of eight other factories in subsequent years due to the relatively simple technology and high profitability of the industry. Its main products are corrugated and plain sheets, various types of pipes for irrigation and sewerage, and roof coverage. The principal producers are listed in Table 4.5.19.

Table 4.5.19. Iran: Producers of fibre cement pipes and sheets

Name	Capacity ('000 tonnes)	
	Pipes	Sheets
Iranit Tehran	40	47
Iranit Isfahan	60	48
Farsit Doroud	60	66
Farsit Ahvaz	30	40
Azarit	20	20
Persit	20	20
Permit	20	20
Kermanit	30	30
Sarit		30
Shomalit		30
Total	280	351

Source: Ministry of Industries.

The raw materials for this industry consist of cement, asbestos, and acrylic. The required cement is obtained from local producers, while the asbestos is imported from Brazil, Canada, the CIS countries (including Russia), Greece and Zambia. Asbestos mines also exist in Khorasan province, which can produce up to 36,000 tonnes of short-fibre asbestos. Approximately half of the acrylic needed by this industry is currently imported, but could be produced domestically once local production units come onstream. The machinery required by the industry is imported from Austria and France, although domestic production of some of the required equipment has also been initiated.

The fibre cement pipes and sheets produced in Iran are manufactured according to international standards. In the case of fibre cement sheets the ISOR 393 and ISIR 631 standards are observed, while in the case of fibre cement pipes the ISO 9002, ISIRI 405, ISOR 160, ISOR 881 and ASTM standards are followed.

With 140,000 tonnes of idle capacity in factories producing fibre cement pipes and sheets, Iran has considerable scope for exporting these products. In fact, local producers are often forced to export their products in order to be able to import the needed raw materials and spare parts. Recent developments in Iran's exports of these products are shown in Table 4.5.20.

Table 4.5.20. Iran: Exports of fibre cement pipes and sheets, 1995-97^{1/}

	1995	1996	1997
Value (\$ '000)	206.85	806.50	1,307.21
Volume ('000 tonnes)	1.43	4.84	8.93

Source: Ministry of Industries.

Note: 1/ Iranian years beginning 21 March.

The fibre cement products are sold on average for \$150 per tonne, and the consumption of foreign currency for each tonne of production is about \$50.

The principal problems facing this industry are:

- The raw materials are only produced in a small number of countries, such as Russia and Canada, and therefore not easily available to all production units;
- There are too many local producer, almost all of whom are working below their optimum capacity;
- Many new substances have been created which can substitute for fibre cement;
- Consumer tastes are changing;
- There are environmental problems connected with the use of asbestos;
- Customs duties have been imposed by some importing countries against Iranian asbestos products.

4.5.7 Granite and building stones

Iran is well endowed with a wide variety of building stone for use in both the construction and decoration of buildings, including granite, limestone, marble, sandstone, travertine and conglomerate. The country's reserves of such stones were estimated at 2,786 million tonnes in 1995, with this figure being revised to 4,400 million tonnes in a new study conducted in 1996. The principal locations for the quarrying of such stones are, in order of priority, the provinces of Isfahan, Lorestan, Kurdistan, Markazi, Char Mahal Bakhtiari, Yazd, Kerman, West Azerbaijan, Khorasan, Mazandaran, Kermanshahan and Hormozgan. Despite its leading role as a producer of such stones, however, Iran plays a very modest role in the international market.

In the First and Second Five Year Plan periods the Iranian government invested heavily in the mining and quarrying industry, which also attracted the interest of private investors and traders in the industry. This led, at the beginning of the Second Plan period, to the identification of the following regions as centres for the exploration and production of decorative stones:

- Tabriz, Labid, Ghorveh, and Aligodarz for crystallized limestone;
- Hamadan for granite;
- Azar Shahr and Mahalat for colored and white travertine;
- Najaf Abad and Lashtar for marble;
- Abadeh, Kelar Dasht, Zanjan, and Gonabad for various other decorative stones.

Pinpointing these locations has helped the industry to concentrate on promising its exploration activities in promising sites and to use new production methods - e.g. cutting rather than dynamiting - to provide better stones for the domestic and foreign markets.

The stone industry has become more active, along with the increase in the building industry in the past 25 years. From 335 tonnes in 1970 the industry's output increased to almost 7 million tonnes in 1992, while the number of active mines increased from 50 to 331 during the same period. Meanwhile, the number of stone cutting units increased from 200 in 1970 to 3,000 in 1996, with the total number of staff employed exceeding 30,000.

In the past five years 35 new units equipped with sophisticated Italian machinery have come on stream. Their nominal capacity is 2 million square metres per year, and they are working with a capacity utilization rate of 50%.

The most serious obstacle inhibiting the emergence of the stone industry as a major source of export revenues is its failure to abide by international standards. The stone cutting plants often use their own discretion when it comes to honouring standards, following some and ignoring others. The resulting low quality of exported rocks and stones has had a negative effects on the reputation of Iranian stones in export markets. This issue is being addresses by the Iranian Institute of Standards and Industrial Research, however, which is compiling a set of national standards for the stone industry.

Table 4.5.21. Iran: Exports of rocks, 1995-97^{1/}

	1994	1995	1996	1997
Value (\$ million)	10.5	25.8	12.5	17.0
Volume ('000 tonnes)	34.93	98.31	48.25	65.24

Source: Ministry of Mines and Metals.
Note: 1/ Iranian years beginning 21 March.

Table 4.5.22. Iran: Exports of building stones, 1995-97^{1/}

	1994	1995	1996	1997
Value (\$ million)	7.7	10.0	12.9	14.2
Volume ('000 tonnes)	36.60	61.59	78.82	87.23

Source: Ministry of Mines and Metals.
Note: 1/ Iranian years beginning 21 March.

4.5.8 Conclusions and recommendations

Of the building materials produced in Iran, the following have the most favourable export prospects:

- Tiles
- Sanitary ware
- Sheet glass
- Cement
- Fibre cement pipes and sheets
- Granite and building stone

Considerable progress has also been achieved in the development of local processing machinery industries. In the cement industry alone more than 55% of the needed machinery is produced locally in volume terms, and plans have already been drawn up to increase the local supply of such machinery to 80%. In the tile industry, similarly, glazing lines, spray dryer lines, ball mills, silos and conveyer belts are made in Iran, while measures are in progress to increase the domestic share content of the equipment needed in baking furnaces to 40%. In the sheet glass industry section, design, production and erection of the silos, steel frames, burners, compressors, blowers and some other equipment are done in the country. All the machinery needed for the production of asbestos sheets and pipes is also made locally. While all of the machinery needed by the stone cutting industry can also be produced within Iran, some export-oriented firms continue to import it from Italy in order to ensure that their products match international standards of quality. The sanitary

ware industry also continues to import most of its machinery due to the technologically advanced nature of this equipment.

To maintain competitiveness, the non-metallic mineral products industry is moving towards the full utilization of automation and advanced technology. The manpower needs of the industry are mostly for skilled and professional staff. On and off the job training courses are offered according to set programmes. With several universities offering appropriate courses, the number of graduates specializing in the glass and ceramics industries have increased.

The future prospects of the non-metallic building materials industry are relatively favourable, with considerable scope for:

- The installation of new factories in areas where raw materials or manpower are available or in the vicinity of local and export markets;
- The renovation and modernization of the existing production units and increasing the production capacity;
- The expansion of the raw materials production units in order to upgrade the quality and lower the prices of the raw materials;
- The development of the companies specializing in measures to improve the design and quality of the products manufactured.

The realization of this potential for growth will be restrained to some degree by a number of constraints, however. These include:

- The high investment needed to establish new production units;
- Fluctuations in the quality of domestically produced raw materials, which cause non-uniformity in the finished goods;
- The low efficiency of the labour force in comparison with the world standard;
- Legal obstacles in the form of export laws governing each product and lack of specific measures to facilitate or encourage the production and export of these products;
- The lack of trade information on foreign markets to enable exporters to adopt effective export strategies;
- Inadequate government support for participation in international trade fairs;
- Insufficient communication with international firms and limited exchange of know how and skilled manpower.

Although steps have taken to overcome these difficulties, further actions are still needed.

The future expansion of this industry would require:

- Increases in the efficiency of the firms producing raw materials in order to ensure that the industry obtains raw materials of a consistently high standard and quality;
- The establishment, with the assistance of academic organizations and the private and public sectors, of a research centre capable of introducing new and up dated raw materials for these industries;
- Measures to encourage individuals or organizations to bring the research mentioned above into production;
- The provision of financial facilities by the government to enable the producing firms to update their machineries and technologies.
- Increases in labour efficiency.
- Improved contact and communications between domestic producers/exporters and reputable international producers in order to reduce the isolation of the Iranian industry.
- The inclusion of technology transfer provisions in all commercial transactions between Iranian buyers and foreign sellers.

4.6 The petrochemical industries

4.6.1 Introduction

Oil was first discovered in Iran in 1908 at Masjed-e-Soleyman, and in the meantime the country has emerged as a leading producer of crude oil and natural gas, with 85 deposits having been discovered by 1997, of which 65 were located onshore and 20 offshore. Its total proven and recoverable fossil fuel reserves were officially estimated at about 92.6 billion barrels in 1997, of which 76.6 billion barrels were located onshore and the balance (16 billion barrels) were located offshore.¹¹ Of the total, approximately 50.4 billion barrels are directly recoverable (43.6 billion barrels onshore and 6.8 billion barrels offshore), while the balance can only be exploited through the application of enhanced recovery techniques, e.g. through the injection of natural gas. Iran's total potential reserves of liquid hydrocarbons are believed to amount to some 520 billion barrels, of which 15 billion barrels are natural gas condensates.

In addition, Iran possesses the world's second largest proven reserves of natural gas, which were estimated at approximately 23.4 billion cubic metres (equal to 826.4 trillion standard cubic feet, or tscf) in 1997, representing 14.1% of the world total, 35.2% of the total reserves of the OPEC countries and 44.1% of the reserves of the countries of the Middle East. The gas-oil ratio (GOR) in Iran amounts to 141.6%, while the average GOR for the world as a whole is 98%. Recent surveys indicate that 60.5% of Iran's natural gas resources (associated and non-associated reserves) are located onshore and 39.5% offshore. The country's potential natural gas reserves are estimated at approximately 29.21 trillion cubic metres (equivalent to 1,031.62 tscf). Based on the average performance of the natural gas industry to date, the total volume of recoverable reserves (both associated and non-associated) is currently estimated at 19.35 trillion cubic metres (683.33 tscf).

The gas liquids associated with Iran's reserves of crude oil and its abundant natural gas reserves constitute the basic feedstock of the country's petrochemical industry. This is dominated by the state-owned National Petrochemical Company (NPC), which had a total staff of 16,456 at the end of the Iranian year 1375 (March 1997). Considerable effort has been invested over the years to enhance the skills of the NPC's employees, with numerous training courses and programmes having been conducted within the company and staff having been sent for post-graduate courses in such fields as polymer engineering at various universities.

4.6.2 Historical background of the petrochemical industries

Iran's petrochemical industry traces its origins to 1958, when a study was initiated into the feasibility of producing PVC in Ahwaz. In 1959 the Plan and Budget Organization of the Iranian government purchased machinery from Italy to produce PVC pipes as a substitute for the iron pipes in use at the time. In 1961 this machinery was transferred to the Petrochemical Enterprise, the forerunner of the NPC, and Iran's first downstream petrochemical plant was established under the name of "Polika" in the town of Karaj.

The next step towards the development of the Iranian petrochemical industry was taken in 1963 when a fertilizer plant was installed in Shiraz in southern Iran. This was followed in 1964 by the establishment of the NPC to oversee the management and future development of the country's petrochemical industry, including the production, sale, distribution and export of commodities derived from hydrocarbons and related materials, both organic and inorganic. Since then, through joint investments with international companies, the NPC has established several major

¹¹ OPEC Secretariat, Vienna.

Table 4.6.1. Iran: Development of the National Petrochemical Company (NPC)

Year	Event
1963	First Iranian fertilizer plant constructed in Shiraz.. Pazargad Chemical Company (PZCC) begins production at Abadan site.
1964	National petrochemical Company of Iran (NPC) established.
1965	Abadan Petrochemical Company (APC) established.
1966	Razi Petrochemical Company (RPC) established. Shiraz Petrochemical Company (SPC) becomes a subsidiary of NPC. Kharg Petrochemical Company (KPC) established.
1969	Propane, butane, pentane and sulphur plants at KPC come on stream. PVC and DBB plants of APC begin production.
1970	RPC begins production.
1972	Iran Carbon Company (ICC) established.
1973	Farabi Petrochemical Company established. Soda ash (light & dense) plant of SPC comes on stream. RPC becomes a subsidiary of NPC. Bandar Imam Petrochemical Company (BIPC) established.
1975	ICC begins production.
1976	Mixed fertilizer plant at SPC comes on stream.
1977	Farabi Petrochemical Company (FPC) begins production.
1985	Chemical fertilizer expansion project at SPC comes on stream. Razi petrochemical expansion project begins production. Esfahan Petrochemical Company (EPC) established.
1987	Arak Petrochemical Company (ArPC) established.
1988	PZCC begins production at Shiraz site. Petrochemical Industries design and Engineering Company (PIDEC) established.
1989	BIPC becomes subsidiary of NPC. Erection and Construction Company (ECC) established.
1990	Methanol plant of SPC begins production.
1991	Diammonium phosphate expansion project of RPC begins production. LPG unit of BIPC (Phase 1) comes on stream Petrochemical Industries Investment Company (PIIC) established.
1992	Soda ash expansion project of SPC begins production. EPC begins production. NPC Europe Ltd. Established
1993	Perchlorine plant of SPC begins production. Chlor alkali plant of APC begins production. Phase 1 of ArPC comes on stream.
1994	HDPE/LDPE plants of ArPC come on stream. Olefin plant of BIPC comes on stream. Argon plant of SPC comes on stream. Ethylene oxide and ethylene glycol plants of ArPC (Phase 2) come on stream. Carbon black expansion project of ICC begins production. Phase 2 of BIPC comes on stream. Butadiene plant of ArPC begins production. FPC and APC leased by Petrochemical Industries Investment Company. Petrochemical Industries Development Management Company (PIDMCO) established.
1995	Polybutadiene, vinylacetate and acid plants of ArPC come on stream. PVC plant of BIPC begins production. ICC is floated on the Tehran stock exchange. Crystal melamine (Orumyeh) Project begins production.
1996	Khorasan Petrochemical Company (KhPC) begins production. ABC, FBC and PBC privatized.
1997	Aromatic plant of BIPC begins production. First phase of Tabriz Petrochemical Company begins production. First phase of Arak butachlor project begins production.

Source: National Petroleum Company, *NPC Directory*, Tehran, March 1998.

petrochemical plants producing a variety of chemicals and petrochemicals for both the domestic and foreign markets, making Iran the second-largest producer after Saudi Arabia of these products in the Middle East today. Table 4.6.1 provides a short history of the NPC.

Despite Iran's leading position as a producer and exporter of hydrocarbons, investment in a domestic petrochemical industry to convert these natural resources into industrial products was not undertaken in a systematic manner until the late 1980s. Even in the second half of the 1970s, when Iran earned some \$140 billion from its exports of crude oil, only \$1 billion was invested in the development of a petrochemical industry. Initial attempts by the new government to reduce Iran's dependence on crude oil exports by developing the petrochemical industry after the Islamic revolution were frustrated by the outbreak of the war in 1980, which caused a sharp fall in production as most of Iran's petrochemical plants were located in the southern war-zones. By 1988 production had fallen to around 900 kilotonnes.

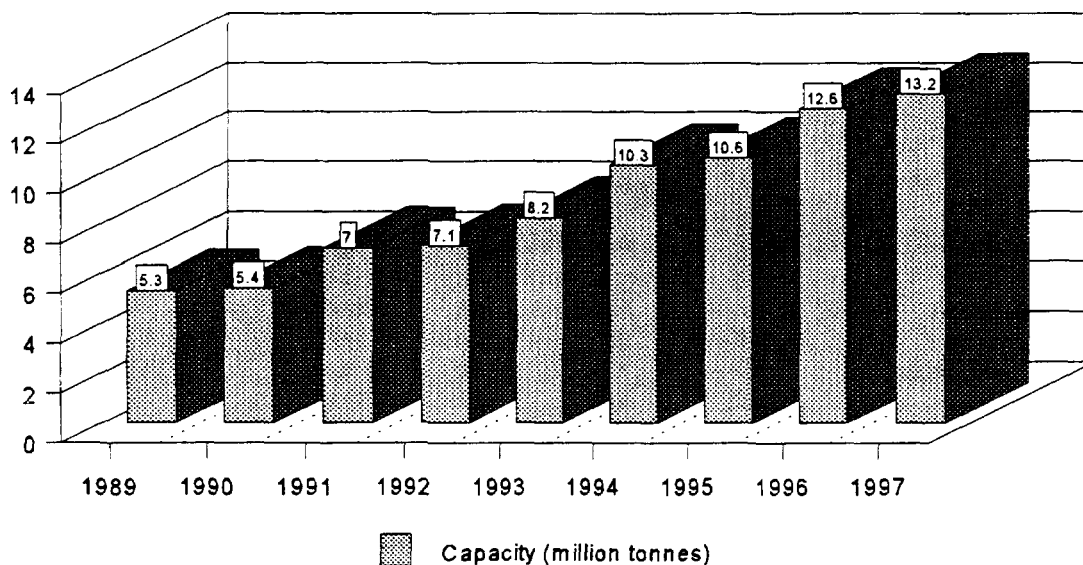
The first significant attempt to develop the petrochemical industry was made after the cease-fire in 1989 when the NPC, in keeping with the government's policy of reducing its reliance on oil revenues, began rebuilding and expanding the petrochemical industry during the First Socio-Economic and Cultural Development Plan of the Islamic Republic of Iran (1989-94). This involved an investment of \$6 billion in foreign currency for the restoration of war-damaged units, the expansion of existing plants, and the establishment of ten major new projects. This investment was initially oriented towards import substitution to meet domestic needs, and later towards export promotion.

The available data indicate that Iran's petrochemical industry succeeded in achieving its goals during the First Five-Year Development Plan and that the import substitution policy represented a reasonable initial step for stimulating its development. The existing plants were thoroughly renovated and revamped, with the original out of date machinery and equipment being replaced by new technology corresponding to current international standards, and kept at a high level of efficiency through regular repair and maintenance. Meanwhile, the newly-built petrochemical complexes were equipped with state-of-the-art technology.

The investments carried out during the First Five-Year Plan and in the following years resulted in an increase in the NPC's production capacity from 5.3 million tonnes in 1989 to more than 10.6 million tonnes in 1995, and a further increase to 13.2 million tonnes by 1997, as indicated in Figure 4.6.1. Actual production rose from 2.4 million tonnes to 11.2 million tonnes during the same period, as shown in Figure 4.6.2. At the same time, the NPC also increased the range of its outputs to include fertilizer, petrochemicals and polymers.

As indicated in Tables 4.6.2 and 4.6.3, Iran's dependence on imported petrochemicals and raw materials was significantly reduced as a result of the policies pursued since 1989. At the same time, the value of domestic sales also rose substantially between 1989 and 1996 from IR36 billion to IR2,155 billion as shown in Table 4.6.4 and Figure 4.6.3, and is estimated to have risen further to IR2,744 billion in 1997. The NPC now supplies raw materials to more than 6,000 downstream industrial units in Iran.

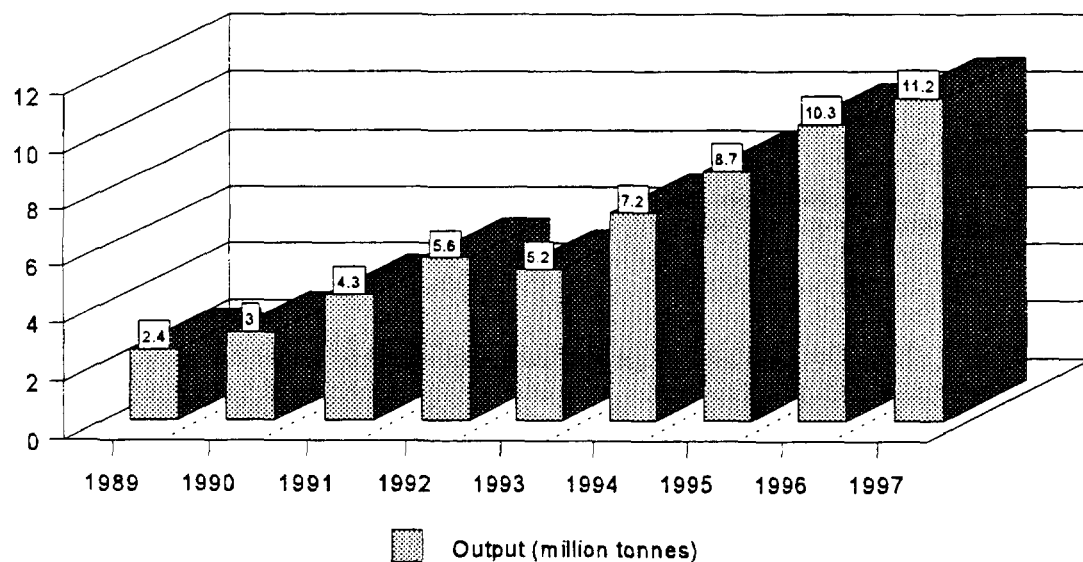
Figure 4.6.1. Iran: Nominal production capacity of the National Petrochemical Company, 1989-97^{1/}
(million tonnes)



Source: Nematzadeh, Mohammad Reza, *Middle East Petrochemical Industry with Special Reference to Iran*, Paper presented at the 9th annual Financial Times Petrochemical Industry Conference, London, 11-12 November 1997.

Note: 1/ Iranian years beginning 21 March.

Figure 4.6.2. Iran: Output of the National Petrochemical Company, 1989-97^{1/}
(million tonnes)



Source: Nematzadeh, Mohammad Reza, *Middle East Petrochemical Industry with Special Reference to Iran*, Paper presented at the 9th annual Financial Times Petrochemical Industry Conference, London, 11-12 November 1997.

Note: 1/ Iranian years beginning 21 March.

Table 4.6.2. Iran: Petrochemical imports, 1990-95^{1/}
(⁰000 tonnes)

	1990	1991	1992	1993	1994	1995
ABS/SAN		6.6	6.7	6.5	4.8	..
DOP	0.0	0.1	2.4	5.5	3.7	6.3
Epoxy resin	5.3	0.9	0.7	1.0	0.4	..
MEG	23	23.8	29.4	21.6	0.05	..
PBR	..	1.1	..	..	1.8	0.0
PC ²	750.0	750.0	750.0	750.0	750.0	750.0
PE	149.0	124.0	167.0	154.0	46.3	3.5
PP	36.0	40.0	46.0	50.0	10.9	0.0
PS	27.0	32.5	34.5	34.0	21.5	22.8
of which: resistant	12.0	14.0	15.5	15.0	10.5	11.7
normal	11.0	13.5	14.0	14.0	8.0	7.3
expandable	4.0	5.0	5.0	5.0	3.0	3.8
PVC	85.0	45.0	61.0	75.0	32.0	6.0
Poisons ³	5.4	50.2	34.4	14.6	12.9	6.5
Total	1,081.1	1,074.2	1,132.1	1,112.1	884.4	795.1

Source: National Petrochemical Company, *Strategic Development Program, Book 2, Petrochemicals Markets, Volumes I & II, Programming & Development Management*, November 1996.

- Notes: 1/ Iranian years beginning 21 March.
2/ 700-800 tonnes polycarbonates per year.
3/ Comprising insecticides, herbicides and fungicides.

Table 4.6.3. Iran: Imports of raw materials and intermediate products for the fertilizer industry, 1989-96^{1/}
(⁰000 tonnes)

	1989	1990	1991	1992	1993	1994	1995	1996
Rock phosphate	3,5647	10,481	41,669	42,797	..	24,202	35,539	37,722
Phosphoric acid	..	1,710	9,614	5,148	1,826	4,221	..	2,088
Ammonia	..	4,161	3,108	..	..	..	..	..
Total	3,5647	16,352	54,392	47,945	1,863	29,122	35,539	39,810

Source: Razi Petrochemical Complex, *Annual Report*, various issues.

Note: 1/ Iranian years beginning 21 March.

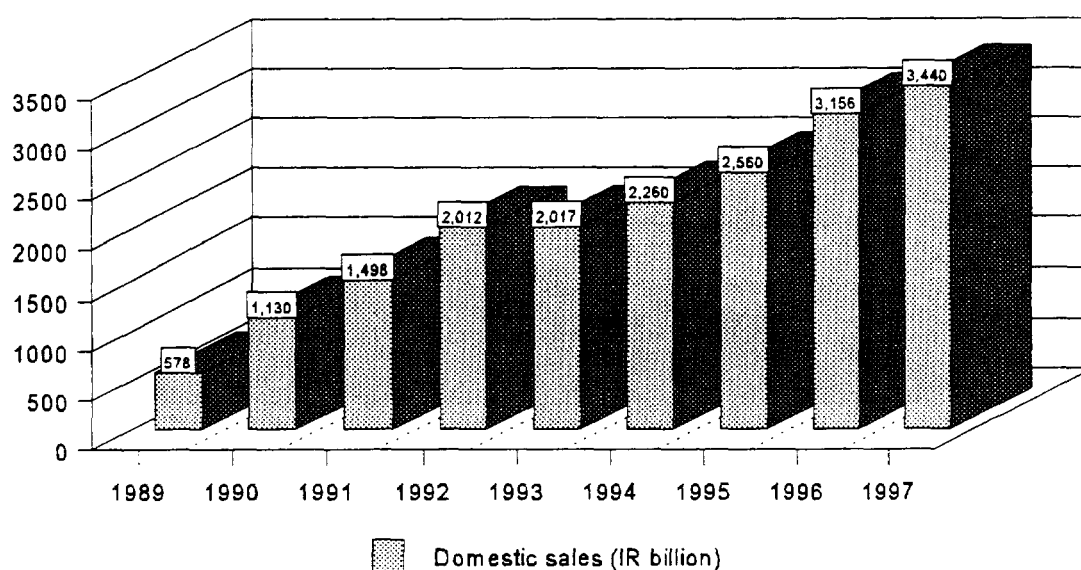
Table 4.6.4. Iran: Domestic sales of petrochemical products by major category, 1995-96^{1/}

	1995		1996		% change	
	Volume (⁰ 000 t)	Value (IR mn)	Volume (⁰ 000 t)	Value (IR mn)	Volume	Value
Chemicals	638	515,771	1,102	711,470	159	138
Fertilizers	1,541	361,662	1,712	424,528	111	117
Plastics	381	768,650	432	1,018,911	113	133
Total	2,560	1,646,083	3,156	2,154,909	123	131

Source: NPC Annual Report 1376 (March 1996 - March 1997).

Note: 1/ Iranian years beginning 21 March.

Figure 4.6.3. Iran: Domestic sales of the National Petrochemical Company, 1989-97^{1/}
(IR billion)

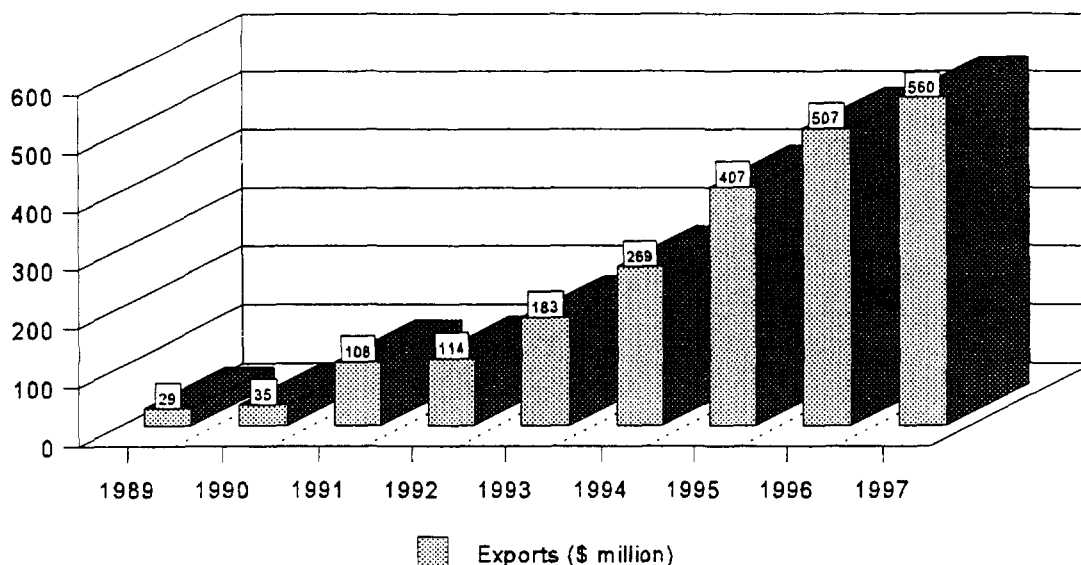


Source: Nematzadeh, Mohammad Reza, *Middle East Petrochemical Industry with Special Reference to Iran*, Paper presented at the 9th annual Financial Times Petrochemical Industry Conference, London, 11-12 November 1997.

Note: 1/ Iranian years beginning 21 March.

The production increases enabled the NPC to increase its exports, with the value of exports rising at an average rate of 49% per year from \$29 million in 1989 to \$700 million in 1997 as shown in Figures 4.6.4-4.6.5 and Table 4.6.5. The export target for 1998 was set at \$1 billion worth of petrochemicals to be exported to over 16 countries in the Far East, Southeast Asia, North Africa and Europe. The growing export revenue has enabled the NPC to fund the foreign currency portion of its investments from its own resources.

Despite these developments, however, much can still be done to shift the focus of the petrochemical industry towards export markets. The need for such a shift in the industry's orientation is particularly urgent in view of the need to finance planned petrochemical projects worth \$24 billion, of which \$12 billion is projected to be in hard currency that the NPC will have to cover exclusively from foreign exchange revenues generated from the export of its petrochemical products. In order to reduce its own investment requirements, the NPC is also pursuing a strategy to promote the active participation of the private sector, both Iranian and foreign, in the development of the petrochemical industry.

Figure 4.6.4. Iran: Petrochemical exports, 1989-97^{1/}
(\$ million)

Source: Petrochemical Commercial Company, unpublished data.
 Note: 1/ Iranian years beginning 21 March.

Table 4.6.5. Iran: Exports of petrochemicals, 1989-97^{1/}

Year	Quantity ('000 tonnes)	Value (\$ million)	Unit Value (\$/tonne)
1989	355	29	81.7
1990	348	35	100.6
1991	1,115	130	116.6
1992	1,033	114	110.4
1993	2,021	193	95.5
1994	1,900	270	142.1
1995	2,433	408	168.4
1996	2,656	507	190.9
1997	3,285	700	195.4

Source: National Petroleum Corporation, *Annual Report 1376* (March 1996 - March 1997), Tehran, 1997.
 Note: 1/ Iranian years beginning 21 March.

4.6.3 Principal outputs of the petrochemical industry

The NPC produces a vast range of chemicals and petrochemicals, both for use as intermediates in the manufacture of other chemicals and petrochemicals, and as final products for sale on domestic or foreign markets. Table 4.6.6 provides information on the location, production capacity and principal markets of the various chemicals and petrochemicals produced by the NPC.

Table 4.6.6. Iran: Production of petrochemicals by the National Petrochemical Company

Product	Production Site	Production Capacity ('000 t/y)	Type		Market	
			Final	Intermediate	Domestic	Export
Acetic Acid	Arak	30.0	✓	✓	✓	✓
Alachlor	Arak	0.5	✓		✓	✓
Ammonia	Shiraz	432.0	✓	✓	✓	✓
	Razi	660.0	✓	✓		✓
	Khorasan	330.0	✓	✓	✓	✓
Ammonium nitrate	Shiraz	215.0	✓		✓	
Ammonium sulphate	Orumieh	9.0	✓		✓	
Argon gas	Shiraz	5.0	✓		✓	✓
Benzene	Isfahan	55.6	✓		✓	✓
	Bandar Imam	300.0				
	Tabriz	55.0		✓		
Butachlor	Arak	2.5	✓		✓	
Butadiene	Bandar Imam	27.0	✓	✓		✓
	Arak	26.0		✓		
Butane	Kharg	54.5	✓		✓	✓
Butanols	Arak	10.5	✓			✓
Butene-1	Arak	7.0		✓		
	Tabriz	7.0		✓		
c4 cut	Arak	52.0		✓		
	Bandar Imam	88.0		✓		
	Tabriz	21.0	✓	✓		✓
c4	Bandar Imam	8.3		✓		
Caustic soda	Bandar Imam	250.0	✓		✓	
	Abadan	30.0	✓		✓	
	Pazargad	5.0	✓		✓	
	Shiraz	22.4	✓		✓	
Chlorine	Pazargad	4.4	✓		✓	✓
	Shiraz	20.0	✓		✓	
Chloroacetyl chloride	Arak	1.5	✓	✓		✓
Dense sodium carbonate	Shiraz	51.0	✓		✓	
Diammonium phosphate	Razi	450.0	✓		✓	
Diethyle aniline	Arak	2.0		✓		
Diethyle phthalate	Farabi	40.0	✓		✓	✓
Dodecil benzene	Abadan	10.0	✓		✓	✓
2 Ethylhexanol	Arak	45.0	✓		✓	✓
Ethyl benzene	Tabriz	100.0		✓		✓
Ethylene	Arak	247.0		✓	✓	
	Bandar Imam	311.0	✓	✓		✓
	Abadan	24.0		✓		
	Tabriz	136.0		✓		
Ethylene dichloride	Abadan	62.0		✓		
	Bandar Imam	440.0	✓	✓	✓	✓
Ethylene glycol	Arak	105.0	✓		✓	✓
Ethylene oxide	Arak	110.0		✓		

Product	Production Site	Production Capacity ('000 t/y)	Type		Market	
			Final	Intermediate	Domestic	Export
High density polyethylene	Arak	60.0	✓		✓	
	Bandar Imam	60.0	✓		✓	
Hydrochloric acid	Bandar Imam	50.0	✓	✓	✓	
	Pazargad	5.9	✓		✓	
	Shiraz	19.8	✓		✓	
Light sodium carbonate	Shiraz	80.0	✓		✓	
Linear low density polyethylene	Arak	60.0	✓		✓	
Liquefied petroleum gas	Bandar Imam	1,900.0	✓			✓
Low density polyethylene	Bandar Imam	100.0	✓		✓	
LLDPE/HDPE	Tabriz	100.0	✓		✓	
Monochloro acetic acid	Arak	5.0	✓		✓	
Nitric acid	Shiraz	341.0	✓	✓	✓	
O-Xylene	Isfahan	22.0	✓		✓	✓
P-Xylene	Isfahan	44.0	✓		✓	✓
Mixed xylene	Bandar Imam	140.0	✓			✓
Pentane	Kharg	112.0	✓		✓	✓
Perchlorine	Shiraz	5.0	✓		✓	✓
Phosphoric acid	Razi	255.0		✓	✓	
Phthalic anhydride (powdered)	Farabi	5.6	✓		✓	
Phthalic anhydride (liquid)	Farabi	21.5		✓		
Polybutadiene	Arak	25.0	✓		✓	✓
Polypropylene	Arak	50.0	✓		✓	
	Bandar Imam	50.0	✓		✓	
Polystyrene	Tabriz	80.0	✓		✓	
Polyvinyl chloride	Abadan	36.0	✓		✓	
	Bandar Imam	175.0	✓		✓	✓
Propane	Kharg	66.0	✓		✓	✓
Propylene	Tabriz	56.0		✓		✓
	Abadan	13.0		✓		
	Arak	94.0	✓	✓		✓
	Bandar Imam	118.0	✓	✓		✓
Pyrolysis gasoline	Arak	105.0	✓		✓	✓
	Bandar Imam	130.0	✓			✓
Sodium bicarbonate	Shiraz	20.0	✓		✓	
Sodium hypochloride	Pazargad	8.6	✓		✓	
	Shiraz	13.2	✓		✓	
Styrene	Tabriz	95.0		✓		✓
Styrene Butadiene Rubber	Bandar Imam	40.0	✓		✓	✓
Sulphur	Kharg	198.0	✓		✓	✓
	Razi	508.0	✓			✓
Sulphuric acid	Razi	627.0	✓		✓	✓

Product	Production Site	Production Capacity ('000 ty)	Type		Market	
			Final	Intermediate	Domestic	Export
Toluene	Isfahan	71.5	✓		✓	
Urea	Shiraz	543.0	✓		✓	
	Razi	726.0	✓		✓	✓
	Khorasan	495.0	✓		✓	
Vinyl acetate	Arak	30.0	✓		✓	✓
Vinyl chloride monomer	Bandar Imam	175.0		✓		
	Abadan	37.5		✓		

Source: National Petroleum Company, *Directory*, November 1996.

The principal outputs of the Iranian petrochemical industry with an export potential are the following:

- Acetic acid;
- benzene;
- caustic soda;
- ethyl hexanol;
- ethylene;
- ethylene dichloride (EDC);
- ethylene glycol;
- liquefied petroleum gas (LPG);
- methanol;
- orthoxylene (o-xylene);
- paraxylene (p-xylene);
- pentane plus (c5+)
- poly vinyl chloride (PVC);
- propylene;
- pyrolysis gasoline
- styrene butadiene rubber (SBR);
- sulphur;
- sulphuric acid;
- vinyl acetate monomer;
- and vinyl chloride monomer (VCM)

4.6.4 Survey of selected export-oriented plants and their products

The NPC currently operates eight petrochemical complexes, which will be considered separately in this section. In addition, the NPC also has two subsidiaries, the Erection and Construction Company (ECC) and the Petrochemical Industry Design and Engineering Company (PIDEC), both of which have been formed to help Iran attain technical and industrial self-reliance. The two companies, of which the major share of capital is now privately owned, have played a considerable role in implementing the projects of the First Five-Year Development Plan, and may therefore be considered as qualified and experienced contractors. PIDEC was awarded the ISO 9001 quality management system certificate by Lloyd's Register Quality Assurance Limited on 3 September 1997. This certificate applies to the company's project management, design, engineering and procurement activities for gas, oil and petrochemical plants.

Shiraz Petrochemical Complex (SPC)

This installation was established in 1963 in the city of Shiraz and currently has a production capacity of 1.9 million tonnes per year. It produces ammonia, urea, ammonium nitrate, light and

dense soda ash, sodium bicarbonate, nitric acid, caustic soda, calcium hypochlorite, hydrochloric acid, sodium hypochlorite, liquid chlorine, methanol and argon. These products are used in crop production and glass manufacturing; the bakery, pharmaceutical and military industries; as gasoline additives; and in the production of paints, thinners and pastes.

During the war with Iraq the chlor alkali unit of the Abadan complex was transferred to Shiraz and began production in 1988. The STPP and NPK/DAP units of the SPC are currently out of service, however, due to Iran's dependence on imported rock phosphate and the lack of profitability of these units. In the Iranian year 1375 (21 March 1996 - 20 March 1997) the output of the SPC reached almost 1.8 million tonnes. This represented a utilization rate of 96% of the complex's nominal capacity of 1.85 million tonnes, and amounted to 17.8% of the total output of all petrochemical complexes in Iran.

The complex employs more than 2,400 people and runs at a relatively high degree of efficiency. Apart from argon gas and methanol, which are exported if there is a surplus in excess of domestic consumption, all of the products produced by the SPC are consumed domestically. The complex is dependent on imports of spare parts and catalysts.

Kharg Petrochemical Complex (KPC)

This complex was established in 1967 on Kharg Island in the Persian Gulf as an export-oriented installation and has a production capacity of 430,000 tonnes per year. It produces propane, butane, pentane and sulphur for use as fuel and in the production of sulphuric acid, rubber and methanol. Most of the KPC's output is exported.

The total production of this complex amounted to 417,009 tonnes in the Iranian year 1375, implying a utilization rate is of 97% its nominal capacity of 430,500 tonnes and representing 4.2% of the total output of the Iranian petrochemical industry.

The complex has a staff of some 370 and is comparatively efficient. It is dependent on foreign suppliers for spare parts and chemicals.

Bandar Imam Petrochemical Complex (BIPC)

This giant complex is located in the port city of Bandar Imam Khomeini on the Persian Gulf. It was initiated in 1973, as the Iran-Japan Petrochemical Complex (IJPC), but was abandoned only months before its commissioning on the eve of the Islamic revolution in 1979 despite the investment of vast amounts of money in the preceding six years. The Japanese partners returned twice in the following years to complete the project but eventually withdrew from their partnership due to the war with Iraq, during which the nearly-completed complex was severely damaged. The rehabilitation of the BIPC began in 1989 after the end of the war, and the complex's LPG unit commenced production in 1991. Since then other units have come on stream and the project is now complete. It has a production capacity of 4.4 million tonnes per year and produces low-density and high-density polyethylene, polypropylene, propylene, styrene butadiene rubber (SBR), pyrolysis gasoline, ethylene dichloride, liquefied petroleum gas (LPG), PVC, caustic soda, hydrochloric acid, benzene, mixed xylenes and gas condensate. The complex's products are used in the oil industry, drilling, the steel industry, the production of detergent, polymer, plastics, films, sheets, paint and pastes, as well as being consumed as fuel.

This complex produced an output of 3.74 million tonnes in the Iranian year 1375, representing 37.4% of the total output of the NPC. It is regarded as being economically efficient, with its 1375 output implying a 93% utilization rate of its installed capacity of 4.04 million tonnes. The BIPC's production of benzene, LPG, mixed xylene and pyrolysis gasoline is intended only for export, but

its butadiene, caustic soda, ethylene, EDC, PVC, SBR and propylene have both domestic and export uses. The complex employs an active workforce of more than 3,900 persons. Its PE production unit was awarded the ISO 9002 certificate from the Norwegian company Det Norske Veritas (DNV) in April 1998.

Razi Petrochemical Complex (RPC)

This plant is located in the port city of Mahshahr on the Persian Gulf. It was established in 1966 and has a production capacity of 3.7 million tonnes per year. It produces ammonia, urea, diammonium phosphate (DAP), sulphur and phosphoric and sulphuric acids, and also has the second-largest fertilizer unit in Iran. The products of the complex are used primarily in the domestic market in such fields as crop production, textile manufacturing, photography, the pharmaceutical and plastics industries and metal plating. After the start up of the Khorasan Petrochemical Complex (KhPC) in 1996, the surplus urea produced in this complex, amounting to some 67,000 tonnes, has been exported. The sulphur and sulphuric acid produced at this complex are also exported.

The output of the RPC amounted to 2.43 million tonnes in 1375 tonnes, which corresponded to 24.3% of the total output of the NPC. This output represented a relatively low utilization (66%) of the complex's nominal capacity of 3.66 million tonnes, indicating considerable scope for an improvement in its operational efficiency. The plant employs almost 2,300 people.

Arak Petrochemical Complex (ArPC)

This complex was established in 1987 in the city of Arak with a production capacity of 1 million tonnes per year. It produces high-density and linear low-density polyethylene, polypropylene, acetic acid, vinyl acetate, polybutadiene, butadiene monomer, pyrolysis gasoline, butene-1, ethylene glycol, ethylene oxide, ethyl hexanol, ethanol amine and butanols. Of these, butanols, chloroacetyl chloride and propylene are produced for export. Acetic acid, alachlor, 2-ethyl hexanol, ethylene glycol, polybutadiene, pyrolysis gasoline and vinyl acetate are produced for both the domestic and export markets.

The products manufactured in the ArPC are used in the plastics industry and in the production of film and cable, liquid detergent, polyester, footwear, pipes, anti-freeze, synthetic fibres and foams. The output of the complex was recorded at 896,115 tonnes in 1375. Compared to its nominal capacity of 1.07 million tonnes, this represented a reasonably efficient capacity utilization rate of 83.7%, and accounted for 9% of the NPC's total production in the reported year. The complex has a workforce of almost 1,750 persons, and is scheduled to be further expanded in the coming years at a total investment estimate at about IR110 billion.

Isfahan Petrochemical Complex (IPC)

This complex was established in 1989 on the outskirts of the historic city of Isfahan and came on stream in 1992. It has a production capacity of 193,000 tonnes per year for a variety of petrochemical products, including benzene, toluene, orthoxylene and paraxylene. Most of the output of the complex is used domestically in military industries, paint manufacturing and as a feedstock for the production of linear alkyl benzene (LAB) and dimethyl terephthalate (DMT). O-xylene and p-xylene are also produced for export, with some 50% of the output of these products being exported. The production of this complex was recorded at 246,550 tonnes in 1375, accounting for 2.5% of the NPC's total output and representing 127% of the plant's nominal capacity of 193,230, tonnes. The complex has a workforce of some 770 persons, and was awarded the ISO 9002 quality management systems certificate by SGS Yarsley International Certification Services Ltd of the United Kingdom in February 1997.

Tabriz Petrochemical Complex (TPC)

This complex is located on the outskirts of the city of Tabriz. It was established in 1990 and commenced production in 1995. It has a production capacity of 652,000 tonnes per year and produces high-density and linear low-density polyethylene, ethylene, propylene, 4-cut, different types of polystyrene (high impact, general -purpose and expansion), ethyl benzene, butene-1 and benzene. The complex's products are used in the manufacture of rubber and plastics products, glue, foam and paint. Except for 4-cut and styrene, which are produced for export, the plant's output is used in the domestic market. The output of the complex amounted to 52% of its nominal capacity in 1997, and it had a staff of almost 800 persons.

The TPC is also responsible for the management and operation of the Orumieh Petrochemical Complex (OPC) located on the outskirts of Orumieh, which came on stream in 1995. The plant uses technology licenced from the China National Chemical Construction Corporation (CNCCC) and has an installed capacity for the production of 3,000 tonnes of melamine crystals and 9,000 tonnes of ammonium sulphate (produced as a by-product) per year. The total output of the plant amounted to only 6,435 tonnes in 1375, amounting to only 52% of its nominal capacity. This unacceptably low rate of capacity utilization is ascribed to the antiquated design of the plant and the poor quality of its machinery and equipment. The output is used entirely in the domestic market.

Khorasan Petrochemical Complex (KhPC)

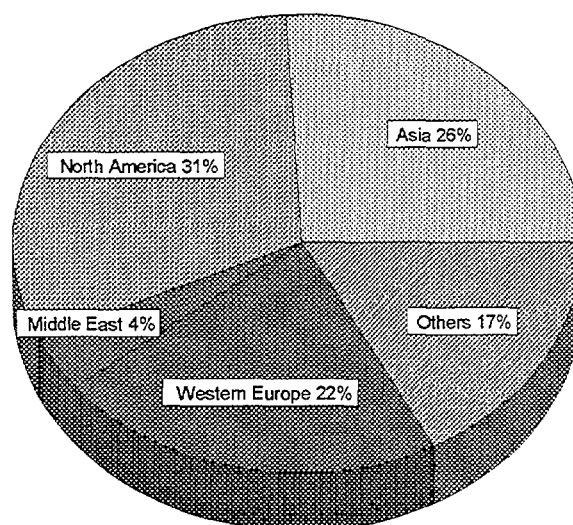
This complex is located in the city of Bojnourd in Khorasan province and commenced production in 1996. Its has a nominal production capacity of 825,000 tonnes per year and produces ammonia and urea, which are used as fertilizer and in the pharmaceutical and cosmetic industries, in animal feed formulation and in the production of fire extinguishing powder. The completion of this plant has enabled Iran to meet its demand for urea fertilizer from domestic sources and generated a surplus for export. In the Iranian year 1375 some 67,000 tonnes produced by the Razi Petrochemical Complex thus became available for export, and it is projected that Iran's total exports of urea will reach 100,000 tonnes by the end of 1377 (20 March 1999).

The output of this complex amounted to 456,713 tonnes in 1375, which corresponded to 55% of its nominal capacity and 4.5 % of the total production of the NPC in that year. This low rate of capacity utilization was due to the fact that the complex was then in its first year of operation, however, and does not imply any deficiency in the complex. The plant has a workforce of 322 and required an investment of IR1.22 billion plus \$466 million.

4.6.5 Competitiveness of the Iranian petrochemical industry

Total world production capacity of basic petrochemicals was 413 million tonnes in 1995, while that of the Middle East was 15 million tonnes, representing 3.7% of global production as indicated in Figure 4.6.5. This share is expected to rise to 6.6% by the year 2000. Among the Middle Eastern producers of petrochemicals, Saudi Arabia ranks first, with 56% of the region's total capacity. With a share of 12.6%, Iran is the second largest producer, and has a considerable potential to improve its market share in view of its ability to meet the three essential requirements for a sustained development of the industry, namely the availability of feedstock as well as markets and the requisite infrastructure.

Figure 4.6.5. Global production capacity for petrochemicals, 1995
(% distribution)



Source: Nematzadeh, Mohammad Reza, *Middle East Petrochemical Industry with Special Reference to Iran*, Paper presented at the 9th annual Financial Times Petrochemical Industry Conference, London, 11-12 November 1997.

With regard to feedstocks, Iran owns large reserves of oil and the world's second largest reserves of natural and associated gas, providing almost unlimited feedstock for most branches of the petrochemical industry, except for some areas of fertilizer production. This is particularly true of diammonium phosphate (DAP), for the production of which Iran continues to depend on imports of rock phosphate while its own deposits remain to be exploited. In addition, imports of potassic fertilizers have also increased in recent years in response to growing domestic demand. Meanwhile, the Iranian petrochemical industry also remains dependent to some degree on imports of machinery, equipment, spare parts and tools.

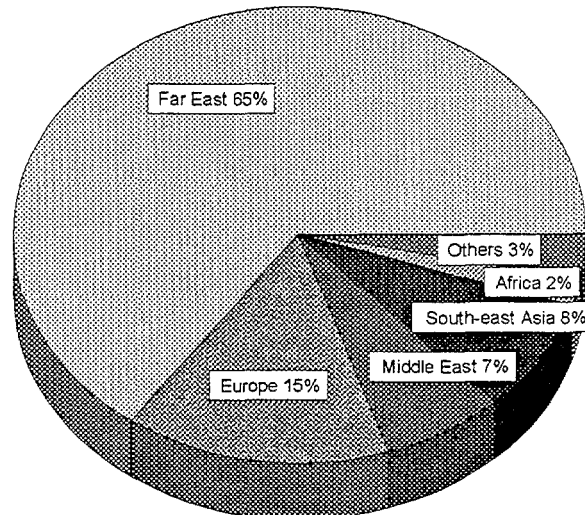
Iran also enjoys a competitive edge in terms of the availability of low cost manpower with the requisite skills. While the country's petrochemical industry thus has to call on external technical experience and knowledge from time to time, it is for the most part able to rely on the available domestic pool of qualified personnel. The availability of these skills have enabled the Iranian petrochemical industry to keep pace with rapid developments in global markets by expanding and modernizing its existing facilities and increasing production.

The resulting cost advantage is reinforced by a number of other favourable conditions, which strengthen the competitiveness of Iran's petrochemical exports in international markets. These include:

- comparatively low fuel costs;
- access to regional hydrocarbon resources from a wide geographical area;
- the availability of well-developed engineering and construction companies;
- the presence of developed and expanding domestic downstream and processing industries;
- the existence of legal frameworks and foreign investment protection legislation;
- tax incentives and tariff protection;
- infrastructure development schemes;
- a long history and experience of oil and gas operations, including petroleum refining and the manufacture of petrochemicals.

Iran's natural export markets are the Asian countries, and some 65% of its petrochemical exports are shipped to the Far East as shown in Figure 4.6.6. The principal competitors in these markets are the USA, Canada and Saudi Arabia. While Saudi Arabia's export policies have been very effective in these markets, recent data show that Iran has been able to compete successfully by matching or undercutting the international prices for petrochemical exports to them.

Figure 4.6.6. Iran: Exports of petrochemicals by destination, 1997
(% share)



Source: Petroleum Commercial Company, unpublished data..

The strong correlation between the overall world-wide growth in GDP and the increase in demand for petrochemical products gives additional confidence in the long-term growth prospects of Iran's petrochemical industry, although short-term fluctuations due to periodic shifts in external patterns of supply and demand cannot be ruled out from time to time.

A particularly serious short-term setback is expected to be caused by the Asian financial crisis and its knock-on effects on the wider world economy. In the worst-case scenarios being drawn out by some analysts, this could lead to a period of slow global growth and continued uncertainty for the next five years. The impact of the crisis will be felt especially keenly on demand for Iranian petrochemicals in the Asian countries, which absorb 65% of these exports. Some studies have shown the decline in demand and the growing international competition for sales in these markets may reduce the price of petrochemicals by up to 20% over 1999-2000.

With its growing population of more than 60 million, however, Iran also has a sizable domestic market for petrochemical products, which could take up some the slack in international markets caused by the financial crisis. The petrochemicals produced by the NPC supply feedstock for a large number of downstream Iranian industries, and the company therefore does not depend exclusively on exports for its sustained production growth. In addition, Iran's favourable geographical position between the Persian Gulf and the Caspian Sea, where it enjoys excellent access to the Middle Eastern, Asian and the CIS markets, grants it an additional advantage. Iran already exports substantial amounts of plastic products to the neighbouring republics of the former Soviet Union, and there is considerable potential for a further widening of Iran's trade relations within the region.

4.6.6 Investment prospects in the petrochemical industry

The NPC's long-term policy concentrates on the production of basic petrochemicals and the direct administration of the industry's upstream sector. While continuing to supervise the downstream part of the industry, the NPC will leave the actual implementation of these activities to the private sector. Apart from encouraging and supporting the domestic private sector to invest in the petrochemical industry, the NPC also wants to pave the way for the latter to enter into cooperative arrangements with foreign partners in such areas as technology transfer and joint investment. This is consistent with current Iranian laws, which encourage such investments.

The importance of privatization has been recognized by almost all countries. In order to keep pace with this trend, the NPC has followed the government policy of privatization, and has been fairly successful. This is underlined by the establishment of the Petrochemical Industries Investment Company (PIIC) in 1991.

In practical terms, the NPC has already handed over several projects to the private sector and is offering a number of others in the Second Five-Year Plan period. For the implementation of projects assigned to the private sector, the NPC will supply feedstock at preferential prices. Other facilities such as special investment credits may also be granted by the relevant authorities on the NPC's recommendation.

After pursuing a policy of import substitution during the first five-year plan (1989-94), the NPC has adopted a policy of export promotion in the second plan (1995-2000). Its main objectives during the latter period are to keep pace with the rapid developments in global markets by expanding and modernizing existing projects and increasing production. In addition, the strategic programme provides for a significant decentralization of the NPC's activities, involving an increased delegation of authority to subsidiaries and affiliates, and measures to encourage the private sector to assume a greater role in the further development of the petrochemical industry. Privatization, foreign and/or joint financing are prominent features of the second plan, as is an increased involvement of NPC subsidiary companies.

A blueprint for the future development of the petrochemical industry has recently been issued in the form of a strategic programme calling for the establishment of 29 new plants, which is scheduled to be implemented in five consecutive phases. The activities planned for each phase are as follows:

- Phase 1:
 - The establishment of plants producing MTBE, methanol, olefin derivatives, PTA/PET, paraxylene and engineering polymers. The execution of some of these projects has already begun.
 - The proposed plants will increase Iran's production capacity by about 2.9 million tonnes per year and involve a total capital investment of \$3.6 billion, of which \$1.9 billion will be in hard currency.
 - The principal feedstocks for this phase will be natural gas, LPG, ethane and raffinate.
- Phase 2:
 - The establishment of plants producing aromatics, PET, fertilizer and isocyanates, as well as a laboratory complex.
 - The total installed production capacity for this phase is planned at 3.6 million tonnes per year, and the total capital investment required is estimated at \$2.8 billion, of which \$1.4 billion will be in hard currency.
 - The principal feedstocks in this phase will be natural gas and gas condensate.

- Phase 3
 - The establishment of plants producing olefin derivatives, caprolactam, propylene derivatives, agricultural chemicals, methanol, and MTBE.
 - The total installed production capacity for this phase is planned at 5.5 million tonnes per year, and the total capital investment required is estimated at \$2.1 billion in hard currency and the equivalent of another \$2 billion in local currency.
 - The principal feedstocks in this phase will be natural gas and LPG.
- Phase 4
 - The establishment of further plants producing olefin derivatives, aromatics, PET, caprolactam and phosphate products.
 - The total installed production capacity for this phase is planned at 5.3 million tonnes per year, and the total capital investment required is estimated at \$8.3 billion, of which \$4.1 billion will be in hard currency.
 - The principal feedstocks in this phase will be natural gas, gas condensate, and LPG.
- Phase 5
 - The establishment of plants producing olefin derivatives, fertilizer, LAB, isocyanates, propylene derivatives and methanol.
 - The total installed production capacity for this phase is planned at 3.8 million tonnes per year, and the total capital investment required is estimated at \$5.2 billion, of which \$2.6 billion will be in hard currency.
 - The principal feedstocks in this phase will be natural gas and LPG.

Work on the first and second phases of this programme commenced in 1995 and is progressing on schedule. Detailed technical and economic studies have been carried out to evaluate the programme, and show that all of the 29 projects proposed for it are feasible. The foreign currency investment required for these projects has been estimated at \$12 billion, in addition to the local currency component of IR36,000 billion.

In order to speed up the completion of the projects envisaged in the strategic programme, the plan's period has been shortened from 25 years to 15 years, ending in 2010. By the time this programme is completed Iran's annual production of petrochemicals is expected to increase by 30 million tonnes with a value of \$9.7 billion, of which about 20 million tonnes will consist of exportable products. This growth in output will greatly strengthen the industry's capacity to penetrate export markets, with 60% of the additional production earmarked for export and only 40% for domestic use.

Of the 29 projects planned for execution under the strategic development programme, 22 are to be located in the general area of Bandar Imam Khomeini in the Persian Gulf. This is primarily due to feedstock source proximity, product export capability, and the NPC's prior investments in developing the local infrastructure. The remaining seven projects will be located in specific areas throughout the country.

Bandar Imam Khomeini is a port located on the northeast of the Persian Gulf about 115 kilometres from the city of Abadan. The area has a total population of 250,000. With the existing oil and petrochemical installations and planned petrochemical projects, the region will become one of the most active industrial areas in Iran. In addition to the existing petrochemical complexes such as Bandar Imam, Razi and Farabi, the area is also home to related installations such as the Mahshahr LNG fractionation plant and the Abadan refinery export terminal. The port of Bandar Imam has 33 berths with a nominal transaction capacity of 16 million tonnes per year, and is connected to

the Iranian rail and highway network as well as having a local airport with passenger jet landing capabilities.

Based on the local availability of natural gas and the existing infrastructure and processing facilities, the NPC has recently proposed the establishment of a Bandar Imam Special Petrochemical Economic Zone, which has been approved by the Free Zone High Council (FZHC), the government body which oversees free zone activities in Iran. This proposal is intended to facilitate investment promotion activities, and in particular to attract foreign capital through the provision of special incentives, including lower custom duties.

A major reason for the NPC's success in developing the petrochemical industry was the timely implementation of the projects on the basis of credit facilities secured through international financial institutions, comprising European banks in particular and banks from Japan and the Republic of Korea to a lesser degree. The projects implemented during the first Five-Year Plan (1989-94) were financed mainly by export credit facilities, with syndicated loans from different sources being put together by major European financial institutions and covered by the export credit guarantee agencies of their respective countries. These credit facilities were also secured by guarantees provided by the Iranian banking system. In addition, suppliers' credits were made available to some extent, mainly by exporters from Japan and the Republic of Korea.

The NPC acted as the borrower, and in all cases the basic assumption was that the credit facility will be repaid through the proceeds accruing from the export of the output of projects funded through these loans. By utilizing these credit facilities, the NPC successfully implemented those projects, with a proportion of their output being exported to international markets through the Petrochemical Commercial Company (PCC), a subsidiary of the NPC responsible for marketing NPC products. Thus far the NPC has successfully met all of its commitments for the repayment of credit facilities according to schedule.

Similar arrangements are being made for the implementation of projects under the Second Five-Year Development Plan. In addition, however, the possibility of utilizing other financing schemes such as suppliers' credits, countertrade or buy-back arrangements has been explored and is under negotiation for some projects. The assignment of letters of credit from the export of petrochemical products as collateral could be considered and practiced to a limited extent, as well as commodity pre-finance arrangements. For the future, the NPC is also particularly interested in implementing typical project finance arrangements, whereby debt service payments are met by the cash flows generated by the project alone and long-term marketing contracts can be used as a security measure.

4.6.7 Conclusions and recommendations

The principal constraints affecting the export performance of Iran's chemicals and petrochemicals industries include the following:

- Continued dependence, at least to some degree, on imports of machinery, equipment and spare parts, and a high dependence on foreign exchange for investment;
- High operating costs in some instances;
- Extensive bureaucracy and frequent variations in customs tariffs and regulations
- Excess supply in world petrochemical markets;
- Unfavourable location of some NPC complexes at a long distance from sea ports, which imposes high transportation costs between the plants and the ports. This problem could be resolved by the development of new markets in eastern Europe and the former USSR, to which the products of these plants could be transported by road.

Packaging problems also act as constraints on Iran's petrochemical exports. In some cases, such as the one-ton packs of polystyrene produced at the Tabriz Petrochemical Complex, the large size of the packs causes transportation problems. In other cases, e.g. in the case of light-sensitive petrochemicals, the products deteriorate in transit due to poor and damaged packing.

The exports of some petrochemicals are constrained by specific problems:

- In the case of sulphuric acid, exports are limited by low world prices, the distance to major present export markets and the high costs and difficulties of transportation, including the risk of corrosion.
- The Arak Petrochemical Complex (ArPC) has the capacity to produce 3,000 tonnes of butacholor and alachlor annually. The domestic market uses only 500 tonnes and the balance is exportable, but no effective measure has so far been done to find suitable markets.
- The Khorassan Petrochemical Complex (KhPC) produces a surplus of ammonia, but its export is not feasible due to low world prices and high transportation costs.
- The high moisture content of Iran's sulphur causes lumping and reduces its exportability. Granulation projects are in preparation to solve this problem.

The infrastructure required by large industrial projects, such as roads, railways, pipelines, airports, sea-ports and communication systems is well developed in Iran, especially on the Persian Gulf coast where most of the petrochemical complexes are located. In this regard there are no special constraints in Iran.

Recognizing the importance of research and technology acquisition for the long-term sustainability of sector efforts must be deployed principally to creating an innovative research culture aimed at solving the NPC's major problems in areas affecting production and revenues. The programme's major fields of activity address the following

- reducing production costs, minimizing waste, increasing productivity and improving product quality;
- improving safety measures and reducing pollution to reach national and international standards;
- revamping the producing units and protecting them from corrosion, metal fatigue and mechanical deterioration;
- selecting suitable production processes;
- improving management processes within the entire industry;
- developing applied research programmes aimed at facilitating the domestic manufacture of the equipment needed by the industry;
- encouraging creativity and innovations throughout the petrochemical industry and developing a research culture within the operating units.

The degree of processing of petrochemical products corresponds to international standards, and the quality of Iranian petrochemicals is regarded as good. The qualifications and training of the industry's staff are generally adequate, and foreign advisors and technical teams are invited if there is a special need. The principal area where additional training is needed for the development of qualified personnel is in the identification of new markets and the promotion of Iranian products in the face of strong international and regional competition, e.g. from the Saudi Arabian Basic Industries Corporation (SABIC).

The present financial crisis in East and Southeast Asia will also have significant implications for Iran's petrochemical exports, since these regions are important potential markets. In order to minimize the impact of the declining demand in these markets, Iran should seek to broaden its perspectives and gain an increased share of the markets in South America and eastern Europe. Very little has so far been done by the NPC in this regard.

4.7 Engineering & electronics (domestic appliances) industries

4.7.1 Introduction

The engineering and electronic industry produces a vast range of outputs including home appliances, electrical goods and electronic devices. Due to their diversity, these products face different patterns of consumer demand in both domestic and international markets, and their prospects as potential non-oil exports must therefore be analyzed separately. In this section the main focus will be on electrical home appliances and some non-electrical engineering products such as gas stoves and water heaters. The home appliances covered in this section consequently comprise:

- Television sets and radios
- Refrigerators and freezers
- Gas stoves and cookers
- Juicers and mixers
- Meat grinders
- Water heaters
- Water coolers and fans
- Rice cookers
- Vacuum cleaners
- Dish washers
- Washing machines and dryers
- Heaters
- Pressing irons
- Sewing machines

In assessing the export potential of these products it needs to be borne in mind that the existing industry is based primarily on meeting domestic demand. In part this reflects the fact that Iranian manufacturers are not export-oriented on the whole, and tend to export only as a last resort when the government forces them to do so to gain foreign exchange for their own industries. This lack of an export orientation is determined to some extent by the unfavourable policies governing exports and exchange rates, and the difficulties encountered by entrepreneurs in obtaining export permits, customs clearance and foreign exchange, all of which encourage a concentration of sales in the domestic market.

It is therefore assumed that domestic market demand will play an important role in determining the export potential of electrical and other household appliances manufactured in Iran. In particular, it appears likely that sustainable export growth will not be achieved in these industries as long as there is an immediate need for these products at home market.

Iran lacks the resource base to support a significant export-oriented home appliance industry. The industry is largely capital-intensive, and therefore not consistent with Iran's resource endowments, which are heavily weighted towards raw materials and labour. Even to the extent that the industry requires labour, it can often not obtain the necessary skills within Iran.

The rapid expansion of the industry during 1968-75 in response to sharply rising domestic demand could not be sustained due to the unavailability of the required skilled and semi-skilled labour force. The exodus of skilled technicians and managers after 1979 worsened the situation and the industry was forced to rely, for about two decades, on unskilled labour. It also faced a considerable degree of overstaffing due to the Iran-Iraq war and the pressure exerted by the government and non-government organizations against layoffs. The industry's *modus operandi* also changed, with its requirements for imported and locally produced inputs being procured at subsidized prices and its finished products being sold at controlled prices. The degree of subsidy granted to imported

inputs has recently being decreased drastically, however, which has made the industry more self reliant.

The home appliance industry has operated largely in a suppliers' market in the past. Although it is still highly protected from imports, restrictions on the granting of permission to establish new domestic production units have recently been lifted, as a result of which the industry now faces stiff internal competition, and from imported goods when available. Despite the increased output of the industry as a whole, production of almost all categories of products remains well below the optimum level. In some areas it is likely to reach the forecast level of domestic demand relatively soon, however, and the need for the industry to improve its competitiveness in terms of both price and quality will soon become increasingly pressing. In this changed environment the closure of a number of inefficient and uncompetitive firms cannot be ruled out.

The home appliance industry does not have a comparative advantage in Iran. It is heavily dependent on imported components for some products, and in the case of others the locally manufactured parts do not always comply with international standards. The production of home appliances thus decreases sharply whenever the import of parts is restricted. These disadvantages are not offset by the low cost of energy prevailing in Iran, since the energy consumption of this industry is relatively low.

Table 4.7.1 presents official production statistics of various home appliances in the past three years, together with the officially estimated production capacity of each of these appliances. These data should be regarded as indicative, however, since Iran possesses many small engineering companies whose capacity and output are not always noted by the official enumerators and statisticians.

Table 4.7.1. Iran: Production of major home appliances, 1994-97^{1/}
(⁰000 units unless otherwise stated)

	1994	1995	1996	1997 ^{2/}	Capacity 1997
Television sets & radios	231	216	471	418	1,662
Refrigerators & freezers	924	750	900	838	1,500
Gas stoves & cookers	1,000	600	510	405	2,600
Juice extractors & mixers	..	51	80	98	300
Meat grinders	..	55	88	95	228
Water heaters (gas & kerosene)	940	980	860	563	1,900
Rice cookers	290	200	216	172	506
Vacuum cleaners	146	120	320	260	800
Washing machines & dryers	90	70	100	118	800
Heaters (gas & kerosene)	1,700	1,180	1,110	775	..
Water coolers & fans	560	460	690	546	1,640
Pressing irons	..	..	..	..	510
Sewing machines	..	..	60	60	100

Source: Ministry of Industries.

Notes: 1/ Iranian years beginning 21 March.

2/ First nine months only.

4.7.2 Development and structure of the home appliance industries

The home appliance industry is relatively new in Iran. It began in the 1960s, when the country shifted its attention from agricultural production to the production of broader range of goods including home appliances, although some items such as heaters and cookers had been produced before on a small scale. The production of home appliances became significant in the early 1980s, when the import of these goods began to be restricted and expensive. Table 4.7.2 shows the export

of home appliances from Iran. When compared with Table 4.7.1, this table suggests that exports are directly related to the production of these items, and that whenever domestic production decreased exports also declined.

Table 4.7.2. Iran: Exports of home appliances, 1995-97^{1/}
(Volume in tonnes, value in \$ million)

volume	1995		1996		1997 ^{2/}		Percent changes	
	value	value	volume	value	volume	value	volume	value
3,354		7.8	2,503	7.6	1,748	3.9	-30	-49

Source: Ministry of Industry, Department of Export Promotion, unpublished data.

Note: 1/ Iranian years beginning 21 March 1995.

2/ First nine months only.

Some of the items produced by this industry, such as refrigerators, freezers, gas stoves and heaters, which are produced in large quantities, could have helped to increase Iran's non-oil exports, but the only item among these that showed any increase in exports was refrigerators. As Table 4.7.2 shows, the total value of home appliance exports decreased from \$7.8 million in 1995 to \$3.9 million in the last nine months of 1997. This decline is attributed mainly to a loss of foreign markets, difficulties caused by the regulations covering exports, and the high demand in the local market.

The home appliances industry constitute very small portion of Iran's total non-oil exports, as indicated in Tables 4.7.3 and 4.7.4. Table 4.7.5, meanwhile, presents general performance indicators for the electrical and electronic goods industry in recent years.

Table 4.7.3. Iran: Non-oil exports by industry, first nine months of 1998

	Value (\$ million)	% share
Industrial goods & petrochemicals	732.6	58
Carpets & handicrafts	215.4	17
Agricultural goods	249.4	20
Other goods	55.2	4
Minerals	16.3	1
Total	1,268.9	100

Source: Ministry of Industries, Department of Statistics and Information, unpublished data, November 1998.

Table 4.7.4. Iran: Non-oil industrial exports by branch, first nine months of 1998
(% share)

Textiles, garments and leather goods	17
Chemicals and cellulose products	40
Processed foods and pharmaceuticals	2
Metals	4
Others	10
Non-metallic mineral products	5
Vehicles	2
Electrical and electronic goods	1
Total	100

Source: Ministry of Industries, Department of Statistics and Information, unpublished data, November 1998.

Table 4.7.5. Iran: Performance electrical and electronics industries, 1993-97^{1/}
(Investment in IR billion; employment in persons)

	1993	1994	1995	1996	1997	Total
Production units	72	208	304	163	75	822
Investment	100	177	316	797	63	1,453
Employment	3,091	4,442	8,569	5,517	1,389	23,008

Source: Ministry of Industries, *Industrial Statistics Books*.

Note: 1/ Iranian years beginning 21 March.

4.7.3 Television sets

The assembly of television sets began in the early 1960s and this industry expanded very rapidly in the following years. From only two in the initial stages, the number of producers of television sets has now risen to 14, of which 12 are located in the vicinity of Tehran with a combined total capacity of more than 1.6 million sets per annum. Most of the sets are assembled locally from imported semi-knocked-down (SKD) kits. While Iranian producers of television sets relied heavily on European suppliers in the past, they have recently shifted to the East Asian countries as their primary sources of supply. It is estimated that 85% of the raw materials used in production of television sets are imported.

Estimates of the local market for television sets range from a low of around 850,000 units per year to a potential high of 1.5 million. Given that production was restrained to about 750,000 units in 1997 due to government restrictions on foreign currency for the import of SKD units, and bearing in mind that this figure included black-and-white television sets and computer monitors, the producers of the televisions sets enjoyed a captive market in Iran. Under these circumstances the local market for television manufacturers was so favourable that they found no need to export. Most of the goods were sold in advance by the manufacturers to local retailers at higher prices than could be obtained in export markets and with less bureaucratic formalities and red tape.

Domestic production has begun to increase more recently, however, and the domestic Iranian market is becoming less of suppliers' market than in the past. The black market that had emerged in response to the shortage of television sets, in particular those with larger screen sizes, is beginning to fade very rapidly. If this trend continues, Iran would theoretically be able to export approximately 500,000 units per year once production approaches the optimum capacity of 1.7 million units per year. The best available estimates, based on approvals for proposed investment projects issued by the Ministry of Industries, indicate an expansion of domestic production capacity by some 100,000 units per year in the near future,

Producers of television sets have had little incentive to export their output in recent years because they are required to sell the foreign currency generated by these exports to the government at a fixed rate. For instance, a 21" television set can be sold in the domestic market for more than \$400, while the same set has to be offered at about \$250 outside the country at the official exchange rate. The final retail price of this set in the export market, taking into account transportation costs and customs duties, would be at least \$400, while a television set manufactured in the Republic of Korea would be sold in the same market for about \$280. Consequently, exports of television sets have been very limited in recent years, and were undertaken by only two manufacturers, mostly to Russia and the CIS countries, in order to generate foreign currency to import the needed components.

The situation is expected to change once local production reaches its optimum. Some producers exported up to 3,000 units per year a few years ago when the regulations governing foreign currency repatriation were not so restrictive and the export price was not set as high as at present. The television manufacturers must start thinking seriously about exporting, and about the need to improve domestic technology to produce high quality sets. In addition, they must develop sales strategies for export markets and improve their after-sales service, which should not be unduly difficult since most of the spare parts for Iranian-made television sets are available internationally. Advertising, subcontracting arrangements with foreign trading companies using the latter's brand name, adjusting export prices, and allowing exporters to retain a larger proportion of the foreign currency generated from their exports, would all help to enhance the export prospects of the industry.

4.7.4 Radios

Iran has eight manufacturers of radios, whose production peaked at 140,000 units in 1991. Due to poor market demand resulting from the inferior quality of these radios, however, most producers have scaled back their production. The total number of units produced in 1997 amounted to a mere 6,200.

4.7.5 Refrigerators and freezers

Local production of refrigerators and freezers for both home and business use has grown very rapidly since the late 1980s. At present there are 21 firms producing refrigerators with a total capacity of 1.12 million units per year. Some of these firms also produce freezers, and a few are producing, or planning to produce, refrigerator-freezer units with a combined capacity of 380,000 units per year. Actual current production of some 800,000 units per year falls short of the estimated domestic demand of about 1.4 million units per year. Output is expected to increase significantly in the coming years, however, with annual capacity rising by some 400,000 units as many of the 40 private investment projects licenced by the Ministry of Industries in the recent past come on stream.

The production of refrigerators depends mainly on the availability of the steel sheets, compressors and plastic materials used in their manufacture. Imported steel plays a particularly important role, since the manufacturers favour steel with a uniform thickness that can be formed into the desired shape. The purchase of locally produced steel sheets does not appear feasible at present since the domestic Mobarakeh steel plant in Isfahan province can only deliver after a waiting period of six months and demands full payment in advance.

Typically, the imported materials account for up to 80% of the total cost of refrigerators and freezers. The production systems and machinery used in this industry are also relatively old, although a change in the refrigeration system from conventional CFC gases to the new R 134 A gas has brought a new outlook to this industry to some extent. The design of Iranian-made refrigerators is very much alike, indicating a definite need for the infusion of new design and technology if the product is to have a viable prospect in export markets. To achieve these goals, the refrigerator industry would benefit from foreign cooperation and investment which would allow it to update its technology, designs, molds and machinery.

Exports of refrigerators began to be undertaken in the early 1990s with a shipment to Russia. As indicated in Table 4.7.6, the subsequent export performance of the refrigerator industry has been patchy, due largely to the lack of a coherent export strategy and declining demand in the main export markets. The export figures for 1994 show that a total of 1,374 refrigerators and freezers were exported with the value of \$494,000. The main export markets were the CIS countries (including Russia), Greece, Kenya, Kuwait, Pakistan and Romania. Kenya led the way with imports

of 461 units in that year. Even the increase of almost 154% in export value between 1996 and 1997 may prove unsustainable, since export markets opened by Iranian producers are often also penetrated by more competitive exporters from other countries, such as the Republic of Korea or Turkey. An example is given by the CIS countries, which were once regarded as a captive market for Iranian goods but have more recently diversified their sources of supply, at least as far as refrigerators and freezers are concerned. Elsewhere, export prospects have been weakened by tariffs imposed by some countries on imports from Iran. An example is given by Pakistan, where exports of Iranian refrigerators have to be routed through Afghanistan.

Table 4.7.6. Iran: Exports of refrigerators and freezers, 1994-98
(Volume in tonnes, value in \$ million)

1995		1996		1997		1998 ^{1/}	
vol.	value	vol.	value	vol.	value	vol.	value
157	0.3	184	0.3	500	0.9	310	0.8

Source: Ministry of Industries, Department of Statistics and Information, unpublished data, November 1998.

Note: 1/ First nine months only.

In the short term, the incentive of Iranian producers to think seriously about exports will also be restrained by the continued existence of a lucrative domestic market for refrigerators and freezers, where whatever is produced can be sold. The price of a 12-foot refrigerator is about \$450 in the local market, while a refrigerator of the same size could not be sold for more than \$200 in foreign markets, where refrigerators with a much better quality, advertising and after-sales service would be available at the same price from the Republic of Korea. This was underlined by recent efforts to export refrigerators to Georgia, where Iranian exporters faced heavy competition from their Korean counterparts, which resulted in a return of the Iranian refrigerators.

4.7.6 Gas stoves and cookers

The manufacture of gas stoves & cookers is one of the oldest industries in Iran. It started off with simple kerosene cookers, but the gas stoves currently manufactured in Iran have the same outlook as the ones manufactured in Europe. The industry uses local components to a very large extent, and depends on imports for only a few small parts, such as safety devices and small motors.

This industry benefits from a large range of models ranging from simple cookers with no oven to very sophisticated gas stoves with fancy ovens capable of cooking variety of foods. The price range is also wide, enabling all the local consumers to be satisfied. There are 36 firms registered with the Ministry of Industries capable of producing more than 880,000 gas stoves with ovens per annum. The real production of these firms is not known since their individual capacity ranges from 1,800 units to 70,000 units per year, and many firms, especially the smaller ones, are known to be producing more than their designated capacity. It is estimated that total capacity of the country for cookers of all kinds exceeds 2.6 million units per year. It is expected to increase by a further 400,000 units in the coming years through the expansion of existing plants and the establishment of new firms.

Although their safety standards comply with European requirements, the stoves and cookers produced in Iran are designed to meet the demands of Iranian consumers. Especially the larger stoves, with five cooking plates and huge ovens capable of cooking six chickens at a time, may not match the cooking habits or kitchen size in other countries. The production level of gas stoves and cookers dropped drastically after the mid 1990s as the foreign currency to import parts from outside became limited, but the quality improved greatly.

Export statistics for gas stoves and cookers presented in Table 4.7.7 show a significant decline in 1997, although a modest recovery was recorded in the first nine months of 1998. Again, the local market is proving too competitive to allow exports to become a real issue. Another major constraining factor is the cost of transportation, which becomes decisive in the case of the large cookers, on which most of the high-quality producers are concentrating their attention. The producers of small ovens or cookers are only satisfying the low-income segment of the market, and the quality of their products is therefore not suitable for export.

These historical trends notwithstanding, Iranian-made gas stoves and cooking ovens have a significant export potential provided that favourable policies are adopted. Iranian producers should therefore identify and analyze promising export markets carefully, and approach them with suitable products. The use of electricity rather than gas as a fuel for cookers manufactured for the export market may also be considered.

Table 4.7.7. Iran: Exports of gas stoves and cookers, 1995-98^{1/}
(Volume in tonnes, value in \$ million)

1995		1996		1997		1998 ^{1/}	
vol.	value	vol.	value	vol.	value	vol.	value
869	1.2	1,461	1.5	289	0.5	460	1.0

Source: Ministry of Industries, Department of Export Promotion, unpublished data, February 1999.

Notes: 1/ Iranian years beginning March 21.

2/ First nine months of corresponding Iranian year only.

4.7.7 Juicers

There are at least seven companies producing juice extractors and mixers with a combined annual capacity of 300,000 units, as well as some other producers whose production is not registered with the Ministry of Industry. The production of these companies meets domestic demand, although the precise extent of this demand is difficult to estimate since these two items are regarded as luxury items and not a household necessity. The electric motors driving these items, which constitute about 50% of their value, and some small parts are imported. The juicers and mixers manufactured in Iran have old-fashioned designs, and even though the motors are imported from Japan and Germany, the design has not changed for several decades and neither the quality nor the price are competitive in export markets.

These have not been exported in any significant quantities in the past, and their shortage in the domestic market has discouraged producers from considering an expansion into export markets. One major producer who also produces and exports rice cookers successfully is testing the waters and has lowered his export price for juicers and mixers by 30-40%. The experience of this exporter will provide the clue for the future development of exports of these items.

4.7.8 Meat grinders

Iran has five major producers of meat grinders with total capacity of 227,000 units per annum, which is expected to increase by a further 70,000 units in the near future as investment projects currently in the pipeline are implemented. The Iranian-made meat grinders use imported motors, blades and gears. Although they also suffer from poor design and reliability, they enjoy a very high demand in the local market due to the unavailability and high price of imported meat grinders.

Although the export of meat grinders has not been very successful in the past, a new attempt has been recently initiated by lowering export prices. This is expected to yield positive results in the coming years.

4.7.9 Water heaters

Two types of water heaters are produced in Iran - large immersion heaters which heat up substantial amounts of water in an attached tank, and smaller wall-mounted flow-through heaters. While the former type is more old-fashioned, it tends to be preferred by Iranian consumers, partly because they can be made to operate with either kerosene or gas while the small heaters work only with the natural gas. The production of water heaters in Iran started a long time ago and the country now has more than 100 producers of all kinds of water heaters with a total production capacity of almost 2 million units per year. This capacity is expected to be increased by some 280,000 units in the near future. The water heaters manufactured in Iran have a high local content.

Export data for 1996-98 presented in Table 4.7.8 show declines in both the volume and value of exports in 1997, followed by a modest increase in export volumes and a sharp rise in export values in 1998. This improved performance reflects a growing trend towards the export of more sophisticated and technologically advanced units, which are lighter in weight but command higher prices. It is expected that export performance will improve further in the coming years as more producers become aware of the potential export markets. Wall-mounted and 12 liter water heaters are believed to have a particularly strong export potential, and have already been exported to a number of neighbouring countries.

Table 4.7.8. Iran: Exports of water heaters, 1996-98
(Volume in tonnes, value in \$ '000)

	1996		1997		1998 ^{1/}	
	volume	value	volume	value	volume	value
	16.1	14.0	8.3	12.3	9.6	25.6

Source: Ministry of Industries, Department of Export Promotion, unpublished data.

Note: 1/ First nine months only.

4.7.10 Rice cookers

There are at least seven producers of rice cookers in Iran with total capacity of more than 500,000 units per year, as well as a number of unregistered producers with a large but indeterminable capacity. The product was introduced into the Iranian market about 25 years ago by Japanese producers and is one of the few items which reflect Iranian cooking habit. The rice cookers made in Iran use imported heating elements and timers, which constitute about 30% of the total cost of the products.

Rice cookers manufactured in Iran are currently being exported to a number of western countries including Austria, Canada, Germany, and the UK, and representatives of an Iranian company are providing after-sales service. The export value of this product by one major company has increased from \$100,000 in 1995 to \$300,000 in 1996, and amounted to about \$200,000 by the end of 1997. It is believed that rice cookers are also exported by small producers and independent merchants.

A recent decrease in the selling price of this product from \$45 to \$30 in export markets by one producer will certainly effect the export market price in near future, and is also expected to stimulate exports and create new markets in neighbouring countries. The value set by the Iranian government for export is \$20. The significant differential between the export price set by the

government and the retail prices prevailing in the international market is contributing to the strong export performance of this product, as is its small size and associated low transport costs. Despite stiff competition from Chinese and Japanese products, Iranian-made rice cookers are continuing to be sold successfully in European markets.

4.7.11 Vacuum cleaners

Seven producers of vacuum cleaners, with the total capacity of about 800,000 units per year, are registered with the Ministry of Industries, although the actual number of companies in this business is at least eleven. Based on investment projects currently in the pipeline, capacity is expected to rise by 150,000 units in the foreseeable future. At present the volume of domestic production approximately matches domestic demand. The Iranian-made vacuum cleaners use imported motors, which constitute about 70% of their cost. They use obsolescent technology and cannot at present be regarded as exportable items on both price and quality grounds.

4.7.12 Washing machines

Iran has at least 13 major producers of full-size washing machines with a combined nominal capacity of 800,000 units per year. Only 195,000 units are actually produced locally, however, using some imported parts, with the rest of the country's production capacity involving the assembly of imported completely-knocked-down (CKD) kits. The local content of this industry is consequently not very high, but is expected to increase in the coming years.

Due to its dependence on imports of CKD and SKD kits, the industry depends totally on permits issued by the Ministry of Industries and the foreign currency allocated to it. The design of these products is generally quite good, and even very high quality products are expected to be assembled domestically in the foreseeable future. The finished cost of these products is so high, however, that they cannot be considered for export at present, and are likely to continue to be targeted at the local market.

In addition, Iran has more than 28 producers of mini-washing machines that are either already in production or expected to come on the stream soon, with total nominal capacity of 560,000 units per year. The quality of these mini-washers is fair, albeit inferior to those produced by companies in Japan, the Republic of Korea and Turkey. Small volumes of exports may nevertheless be feasible. There is no production of laundry dryers in Iran.

4.7.13 Gas and kerosene heaters

The production of gas and the kerosene heaters is one of the oldest industries in Iran, and there are now more than 200 producers. In fact, most producers of water heaters also manufacture these types of heaters. The kerosene heaters are used in villages or small towns with no connection to natural gas, and must therefore be offered at low prices in order to be able to satisfy low income families and individuals.

These products are exported from Iran but the high price of kerosene in the neighboring countries, specially in the CIS, has limited the export of this products to those countries. As indicated in Table 4.7.9, export data for the past two years show a decline of about 64%.

Heaters with gas burners have been exported to Argentina, Australia, Canada and several European, Middle Eastern and CIS countries. The quality of Iranian-made heaters is good and exports will continue, and could be enhanced through increased efforts by producers and the government.

Table 4.7.9. Iran: Exports of kerosene and gas heaters, 1996-97^{1/}
(Volume in tonnes, value in \$ million)

	1996		1997 ^{2/}	
volume	value	volume	value	
810	1.5	289	0.5	

Source: Ministry of Industries, Department of Export Promotion, unpublished data..

Notes: 1/ Iranian years beginning March 21.

2/ First nine months of corresponding Iranian year only.

4.7.14 Water coolers and fans

Water coolers and fans constitute the most common cooling equipment in Iran. The cooler is a cube-shaped metal box fitted with a water sprinkler and a fan. The cooler is built into an external wall of a house, allowing the fan to pass air through the running water and into the living quarters. The country produces more than one million coolers of this type per year. The motors for pumping the water and driving the fan are imported. The other types of coolers used in Iran are portable light-weight coolers with a manual water-feed mechanism. Some producers also manufacture more advanced gas coolers, which are similar to air conditioners using freon gas as a coolant. There are at least 23 manufacturers of standard water coolers with a nominal capacity of more than 1,000,00 units per year, four producers of portable light-weight coolers with a nominal capacity of 34,000 units per year, and six producers of gas coolers with a combined capacity of 104,500 units per year. Each of these types of cooler have their own drawbacks, which significantly affects their export prospects. The standard coolers can only be used in dry, hot climates, while the portable ones have a limited cooling capability and can only be used in small rooms. The gas coolers, finally, can be used in any environment, but involve a high consumption of electricity.

The standard box-type water coolers can be used whenever humidity is less than 35%. The quality of Iranian-made coolers is good, and the product is competitive with American-made coolers. Production figures for the past four years show that only 30% of the country's capacity has usually been utilized. Although this level of production fails to satisfy domestic demand, the gap between domestic supply and demand is gradually declining. The gas coolers are assembled largely from imported CKD and SKD kits, and their final cost is so high that they face very little demand even in the protected home market.

The fans produced in Iran comprise both standing (pedestal and table) fans as well as ceiling fans. The combined capacity of the registered firms producing all types of fans amounts to 760,000 units per year. In addition, there are some small producers of fans, but the quality of their output is not so good.

The export of the conventional box-shaped water coolers, known as desert coolers, has been undertaken both by producers and by independent merchants. The portable water coolers face stiff competition from Far Eastern producers, however, and their export has not been as successful as that of the big water coolers.

4.7.15 Pressing irons

There are at least seven producers of irons in Iran, of which six produce only dry irons. The total production capacity of the country is estimated at around 800,000 units per annum, although investment projects involving an expansion of the existing capacity by 300,000 units per year have been granted by the Ministry of Industries. The quality and the price of pressing irons produced in Iran does not allow exports in appreciable quantities.

4.7.16 Dishwashers

There is no significant production of dish washers in Iran, although a few units have been assembled in recent years from imported CKD units as experimental products. It is expected that dishwashers will begin to be manufactured in Iran in the next few years.

4.7.17 Sewing machines

There is only one producer of high quality sewing machines in Iran. The firm has a production capacity of some 100,000 units per year, but in recent years has been working at about 60% of its designed capacity. The production of sewing machines, which began with the assembling of imported CKD units, is now approaching a local content figure of 30%, which is expected to rise further to 60% in the coming years.

The export price for sewing machines has been set at \$200 per unit by the government. Taking into account transport and other costs, this implies a retail price in the export market of well over \$300, while similar machines produced by competitors are sold at \$300 in the Persian Gulf countries. The lack of an after-sales service network also limits the export demand for Iranian-made sewing machines, while strong domestic demand discourages producers to take upon themselves the problems associated with exports. Although exports of sewing machines remain limited at present, this item could nevertheless have promising export prospects in the future.

4.7.18 The international competitiveness of the industry

Although Iran does not have comparative advantage in the production of home appliances, most of its output could be exported to less quality-conscious regional markets. Much will have to be done to reduce domestic costs, however, in order to reduce the prices of these goods in the world market. Once approach towards achieving this goal could be a substantial increase in the volume of output in order to enable the local producers to benefit from economies of scale. Such a step may well be necessary in the not too distant future when domestic output of home appliances begins to exceed domestic demand. This trend will be reinforced by the government's vigorous drive to boost non-oil exports.

Estimates of the various cost components of the Iranian home appliance industry are presented in Table 4.7.10. These show that the industry has no intrinsic cost advantage. Its only potential advantage would derive from the availability of idle capacity in the existing production units, and Iran's large pool of unskilled labour. At the same time, the industry remains heavily dependent on imported raw materials, which will become increasingly costly to obtain as the Iranian government moves towards a more market-based foreign exchange system and thereby reduces the implicit subsidy granted to importers through the overvaluation of the rial. There is a severe shortage of domestic technology to produce updated products, and access to such technology is limited both by its high cost and the various export restrictions imposed by the owners of such technology. Against this background, the availability of cheap energy is only a minor advantage, since energy accounts for only a small proportion of the total costs of production.

Table 4.7.10. Iran: Estimated cost structure of the home appliances industry, average 1996-98 (% of total)

Raw materials	80
Wages and salaries	10
Energy	2
Depreciation	5
Others	3

Source: Ministry of Industries.

4.7.19 Technology upgrading and investment trends

The capital and technological resources invested in the home appliances industry vary between individual products. In the case of some products, such as gas cookers and water coolers, significant investments have been made in new technology, resulting in a marked improvement in these products. In the case of other products, such as refrigerators and television sets, such investment in new technology has been very limited, resulting in little improvement.

It is widely expected that the home appliances industry will face a serious dilemma in the future. The idle capacity of the existing units will be exacerbated by the additional capacity of the new production units coming on stream, and producers will be confronted with tightening constraints in the form of reduced foreign currency resources and subsidies as well as unavailability of sufficient locally produced raw materials. It is anticipated that the small and uneconomical producers will face particularly grave problems, the only solution to which might be the merger of some of these units and their entry into partnerships with foreign producers who could help them develop high-quality products for export.

4.7.20 Export promotion and marketing requirements

Efforts to promote exports of home appliances face both general and product-specific constraints. The most serious of the former is related to the fact that all exports of home appliances from Iran are undertaken on open account, involving substantial outlays on the part of the exporter in an environment of significantly reduced bank financing, and the risk of a possible return of the exported goods due to unsalability, damage, etc. Other general problems include the many bureaucratic hurdles that an exporter has to overcome in obtaining exports permits, customs clearances, etc.

Several general steps can and should be taken to promote industrial exports in general, and of household appliances in particular. Since customs regulations and delays are costly and discourage all exporters, the simplification of these regulations and speeding up of their implementation would greatly reduce the transaction costs of exporting and facilitate the growth of exports. In this context, the establishment of an independent customs authority for exportable commodities, possibly working 24 hours a day, might be considered.

Other measures that may be considered include:

- Coordinating the export-related regulations and activities of various government agencies, correlating the export policies of all governmental department, and setting long term laws and policies.
- Supporting exports through the provision of cheap transportation for commodities which are bulky or have to travel long distances.
- The establishment of research departments in large enterprises to identify and develop export markets.
- Allowing the export of spare parts and the setting up of after-sale service facilities in the export markets.
- Waiving customs duties on imported parts and materials used in the production of export items.
- Prolonging the time period in which exporters can use the foreign exchange generated by their exports to finance their own imports.
- Encouraging foreign investment in the form of the joint ventures and imposing a requirement on the foreign investor to export a certain proportion of the output.
- Setting up permanent exhibitions of export products in some targeted markets, where selections of Iranian made home appliances could also be displayed and advertised, and after-sales service provided.

On specific products, the following points may be noted:

- The production of television sets depends mainly on imported parts. An independent study should be conducted by producers to evaluate the possibility of exporting under these circumstances. It could also be beneficial to establish collaborative arrangements and/or joint ventures between Iranian producers and well-known world producers, enabling the local producers to receive continuous parts at discounted prices and to benefit from the name recognition and market experiences of their foreign partners.
- The Iranian refrigerator and freezer industry needs updating and new technology. Although potentially exportable, Iranian refrigerators could benefit greatly from infusions of foreign assistance and technology.
- Gas stoves have a high local content and are exportable items. Studies of target markets to evaluate their demand could help this industry. For instance, small cookers with three or four flames may have considerable export potential in African countries and Iran's northern and eastern neighbours. The use of electric rather than gas cooking plates may also help Iranian cookers to penetrate more export markets.
- Iranian-made juice extractors, mixers and meat grinders are low in quality, and their export is very difficult with the existing production technology.
- Water heaters manufactured in Iran are exported and will continue to be exported. The high quality water heaters in particular will have no difficulty finding export markets.
- High-quality rice cookers are also exported. Facilitating their future export growth would help this industry greatly.
- Vacuum cleaners and washing machines are not exportable at this time due to high prices and low quality. Obtaining technical assistance from abroad would help improving these two items and enhance their chances of being exported.
- Heaters are produced in various forms and quality and their export may be facilitated if appropriate support measures are introduced.
- Water coolers are already exported and need no technical improvement.
- The prospect for electric fans is less favourable as the industry does not have access to the latest technology.
- The quality of locally-made pressing irons is relatively low and their export on a significant scale is very doubtful.
- The production of sewing machines has started on the right foot. This industry is approaching its optimum capacity and satisfying local demand. The resulting decrease in average production costs would lower its prices and enable it to compete in the markets of the neighboring countries.

In short refrigerators, gas stoves, gas water heaters, gas heaters, and water coolers have good chances of being exported without major qualitative improvements, although the refrigerator industry is in need of some technical assistance. The television industry has to find a way to decrease its selling prices if it is to become a serious competitor in world markets.

4.7.21 Conclusions and recommendations

The technology to produce home appliances of a high quality standard is definitely lacking in Iran, and assistance is needed to improve quality, increase production, lower production costs and, most importantly, disseminate knowledge about foreign markets and devise export strategies. Joint ventures with experienced international producers could benefit all manufacturers, not only in home market, but also in penetrating and developing export markets which the said foreign producers are already supplying. The existing laws and regulations in Iran governing foreign investments and Iran's fragile political relations with the industrial countries have isolated the country's home appliances industry.

The growth prospects for the home appliances industry are uncertain. As indicated above, it must contend with the disadvantage of insufficient raw materials and the shortage of a suitably skilled labour force. Having operated in a highly protected market for almost three decades, and having been under state control for almost two-thirds of that time, the industry has also not faced the competitive pressures that would have helped to enhance its efficiency.

In its present state, Iran's home appliances industry may thus be regarded as an example of an industry with almost no comparative advantage. Iran lacks the resources to support a sustainable home appliances industry. The supply of low-cost labour lends a modest advantage, but in most cases this advantage does not compensate for the lack of skills needed for this industry. There is no institution to train the labour force, and all training is done on the job. The situation has been aggravated by the emigration of skilled technicians and managers after 1979, and this could be seen as one of the most important reasons why many of the export-oriented plans for these products have not been able to achieve their objectives. Even the newly opened markets in the neighbouring countries, especially the CIS, were lost to competitors.

The home appliances industry started as early as the 1960s with the assembly of imported parts obtained mostly as CKD kits. The products were copied from foreign designs, and licenses or patents were obtained from abroad or joint ventures were established between Iranian companies and foreign producers. Most of the products were designed to satisfy the medium-low income group, while imports supplied the higher income categories. The quality of the products remained the same, but the import of goods became less practical and extremely expensive.

The industry is still largely dependent on imported components, as few of the main components used by the industry are produced domestically. Furthermore, the domestically produced components that do exist often do not comply with the standards set at the beginning by the foreign collaborators, and are now far behind in terms of technology while their prices are not lower than those of imported components. In addition, imported parts are often not easily available due to the political situation and occasional disputes with the original foreign collaborators and supplier. Iranian producers must therefore turn to wherever they can to find suppliers, and because of their lack of bargaining strength and knowledge of negotiating methods are not in a position to receive competitive offers. The price and availability of the imported goods plays key role in this industry, as in some cases they may account for as much as 80% of the price of the finished goods.

The large producers of home appliances in Iran are mostly controlled by the government. Real competition did not exist for a long time, since new production units were not able to come into existence due to government restrictions such as licences to set up new units, limits on the import of the required machinery, and foreign currency allocations to import the machinery and components. In this environment, the old industry continued to produce old models often dating back to the 1970s while the operating capacity of the plants was reduced to one-third of the original level.

The combination of old technology and production equipment, together with the high production costs caused by the high degree of import dependence, the lack of skilled labour and the low utilization of existing production capacity has resulted in the production of low-quality and high-priced outputs.

Since the import of home appliances was prohibited for a long time, and the Iranian rial kept depreciating in value, the price of imported home appliances rose significantly beyond that of domestically produced ones. The industry thus benefitted from protection received directly or indirectly from the government, and never faced real competition. As a result, the home appliance industry operated for the long time in a suppliers' market, exacerbated in some cases by a

government distribution mechanism and a long waiting list. This inevitably gave rise to a black market.

Now, as part of its export promotion policy, the government is trying to force an increase in exports by decree without really helping the exporters. In particular, the government is setting an official export price for each item exported from Iran. The foreign exchange value of this official price has to be surrendered by the exporters to the government within a limited time and exchanged into rials at exchange rates well below the prevailing market rates. Since exports of household appliances are usually financed on open account, with no letters of credit being opened in favour of the exporters by the importers, the exporters are forced to send the goods abroad and await the remittance of the proceeds from the sales. This puts them at the mercy of the foreign importers, which in most cases are small distributors with limited potential. Huge amounts of money are lost, and even though the government provides insurance for the exported goods, claiming the insured value is time-consuming and difficult, and in most cases the insurance refund does not cover the full value of the goods. Some of the items that are damaged or not sold are returned later, causing further losses for the exporters. Often, therefore, goods made for export find their way back into the domestic market.

While there is a captive market at home, in which buyers are waiting with cash in hand, and while exports continue to be associated with bureaucratic delays and significant financial risks, the efforts to promote exports will inevitably have only limited results. The situation is gradually changing, however, and is expected to improve further in the coming years as the number of producing units increases and the gap between domestic demand and supply narrows. This will force producers to think more seriously of exports as a viable option.

Two important sets of measures could be taken to improve the export prospects of home appliances. On the one hand the government would have to establish new rules to encourage exports, and on the other producers themselves have to think and act in a more export-oriented manner. Specifically, the government could eliminate or at least reduce the prices it sets for export products and liberalize the surrender conditions for the foreign exchange earnings generated by exporters. It could also set up permanent workshops and seminars to provide information regarding certain targeted markets, as well as permanent fairs in some markets which could advertise the home appliances produced in Iran. Lowering or lifting customs duties and restrictions on the imported parts used for the manufacture of the exported commodities would also be helpful, as this would lower the price of the finished goods and enhance their export prospects.

Since the home appliance industry is lacking new technology, which is not easily available to Iranian producers due to the prevailing political and economic circumstances, the government could assure the payments of royalty, interest and dividends to foreign investors and collaborators. One major development would be to encourage foreign producers to enter into long term contracts or joint ventures with Iranian manufacturers. A joint venture or long term assistance contract would not only provide a continuous supply of imported parts at competitive prices, but would also provide new technology and open new markets for export. The foreign collaborators could exchange information on production costs, introduce new automation, and finally set up new standards for inspection and quality control.

ANNEX I

Draft of the Export-related provisions of the Third Socioeconomic and Cultural Development Plan

Unofficial translation

Islamic Republic of Iran Ministry of Commerce (Export Promotion Centre of Iran)

Objectives and Mechanisms of the Export Sector in the Third Development Plan, 2000-2005

- 1- **Increasing Iran's share in world trade through**
 - 1/1- Adoption of a strategy to boost exports.
 - 1/2- Adoption of trade-related strategic policies.
 - 1/3- Generation of new comparative advantages in the process of non-oil exports.
 - 1/4- Adoption of a policy for export promotion in all the economic and manufacturing sectors instead of a policy for import substitution.
 - 1/5- Seeking membership of the World Trade Organization (WTO).
 - 1/6- Adoption of new production strategies for exports.
 - 1/7- Overall planning to gain a presence in world markets and penetrate target markets.
 - 1/8- Determination of an annual average growth rate of export growth of 15% for the plan period.
 - 1/9- Full liberalization of exports and elimination of constraints and bans on the export of goods and services.
 - 1/10- Adoption and stabilization of support policies for non-oil exports during the plan period.
 - 1/11- Expansion of political ties aimed to strengthen the sustainability of Iran's trade and export promotion.
 - 1/12- Directing investments towards the production of manufactured goods enjoying a comparative advantage.

- 2- Rationalization of the export foreign exchange rate through**
- Scenario A- In the case of availability of a foreign exchange contract (Payman Name Arzi)**
- 2/1- Sale of "export foreign exchange" earned by exporters to buyers of "settlement notes" (Vaariz Name) in the Tehran Stock Exchange and designated bank branches according to an agreed rate, and settlement of the foreign exchange payment through the banking system.
 - 2/2- Permitting buyers of export settlement notes to finance the import of goods through the banking system by means of documentary credits or foreign exchange orders within the framework of the prevailing export-import regulations, and permitting direct imports of authorized goods without the presentation of an exchange contract.
 - 2/3- Permitting direct imports of authorized goods to exporters equal to the value of the exported goods (contract value) according to the customs advice.
 - 2/4- Granting a grace period of 12 months for the settlement of foreign exchange contracts by exporters during the plan period.
 - 2/5- Granting a 2% rial bonus (according to the agreed rate of the foreign exchange of the settlement note in the stock exchange market on the day of the foreign exchange contract settlement) for every month during which the settlement of foreign exchange commitments for exporters is expedited.
 - 2/6- Levying a 1% rial fine for each month by which the settlement of a contract is delayed by exporters.
 - 2/7- Granting a 4 month grace period to utilize the exports settlement note.
 - 2/8- Exempting litigation arising from delays in the settlement of contracts related to the export of goods and services from the penal code, and their submission to the High Council of Exports.
- Scenario B- Full elimination of foreign exchange contract for export of goods and services.**
- 2/1- Managing demand in the foreign exchange market through appropriate measures to prevent uncontrolled shifts in the exchange rate.
 - 2/2- Permitting the import of goods within the context of the existing import-export regulations through a declaration of foreign exchange earnings to the banking system by the importer subject to the opening of a documentary letter of credit or the collection of a foreign exchange order.
 - 2/3- Issuing a list of goods that may be imported without corresponding exports.
 - 2/4- Controlling of other sources of demand for foreign exchange in the market by issuing a list of goods that may be imported by travelers or from free zones, etc.

- 2/5- Preventing the export of poor quality and unstandardized goods.
- 2/6- Preventing the involvement of unqualified individuals in export activities through the issuance of trade permits.
- 2/7- Permitting manufacturing and exporting firms to utilize the financial sources of foreign enterprises and banks, and to repay such facilities from the proceeds of their exports. The import and clearance of machinery and equipment subject to such agreements shall be permitted after the orders have been registered ("sabte sefaresh") with the Ministry of Commerce and will not require the opening of a documentary letter of credit.

3- Crucial importance of industrial sector in the promotion of exports as well as in enhancing the value added of exportable goods:

- 3/1- Production of goods with a high technology content.
- 3/2- Promotion of manufactured exports.
- 3/3- Investment in processing industries.
- 3/4- Investment in packaging.
- 3/5- Organization of state production on the basis of competitiveness in the world markets.
- 3/6- Granting of special privileges to exporters producing goods with a high level of added value.
- 3/7- Improvement of the terms of trade.
- 3/8- Gradual prevention of the export of raw materials.
- 3/9- Offering no support for the production of non-exportable goods.

4- Improvement and quality upgrading of exportable goods:

- 4/1- Preventing the export of low-quality goods not meeting the standards of the target markets.
- 4/2- Upgrading the technical knowledge of agencies supervising the quality of exports
- 4/3- Applying incentive methods to prompt exporters to comply with the world standards.
- 4/4- Constant supervision over the quality of exportable goods.

5- Promotion of services exports through

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- 5/1- Formulation of comprehensive plans for promotion of the tourism industry.
 - 5/2- Promotion of "suitcase-type trade" (in the export sector).
 - 5/3- Promotion of transit-type activities.
 - 5/4- Promotion of the export of techno-engineering services.
 - 5/5- Export of manpower.
 - 5/6- Promotion of extraterritorial banking, insurance and financial services.
 - 5/7- Extension to the services sector of all the advantages and incentives granted to merchandize exporters.

6- Improvement of the country's export structure through:

- 6/1- Diversifying the structure of exports.
- 6/2- Cutting back the dependency on traditional markets.
- 6/3- Developing new export markets.
- 6/4- Strengthening information dissemination systems.
- 6/5- Reducing the government's role in the export trade and increasing the roles of the cooperative and private sectors in export activities.
- 6/6- Strengthening export associations and removing the existing barriers to their formation.
- 6/8- Gradual assignment of government responsibilities and functions to exporters' associations for self-regulation.
- 6/9- Removing restrictions and bans on the export of goods and services.
- 6/10- Encouraging all provinces to participate in the field of exports, and assigning the necessary powers to them to accelerate export activities.
- 6/11- Appointing the High Council for the Promotion of Non-oil Exports as the only legal authority to decide on export-related issues.
- 6/12- Appointing the Iran Export Promotion Centre as the Secretariat of the High Council for the Promotion of Non-oil Exports).

7- Effective utilization of the free trade and industrial zones towards the realization of the export objectives:

- 7/1- Improving the structure of free trade-industrial zones in order to shift their practical orientation towards export activities.

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- 7/2- Encouraging internal and the external investors in the free zones to undertake export-oriented activities.
 - 7/3- Controlling the import activities of the free zones and gradually limiting the import of consumer and luxury goods from these regions into the country.
 - 7/4- Organizing manufacturing, commercial and tourist activities in these regions on the basis of their respective comparative advantages.
 - 7/5- Requiring manufacturing and commercial enterprises in the free trade and industrial zones to export goods and services at least equivalent to the value of their annual imports.
 - 7/6- Preventing the expansion of industrial and free trade zones, and avoiding the conversion of special economic regions into free trade zones during the third plan.
- 8- Promotion of the society's level of export knowledge and culture through:**
- 8/1- Universalization of the education required for export promotion.
 - 8/2- Generation of a national resolve for promotion of export.
 - 8/3- Expansion of export awareness through the mass media and social and religious institutions.
 - 8/4- Arrangement of specialized education for exporters, promotion of marketing and market research as well as other new techniques for trade promotion.
- 9- Provision and strengthening of export support services through:**
- 9/1- Establishment and strengthening of export-related infrastructure (warehouses, cold storage facilities, export terminals, etc.)
 - 9/2- Upgrading the capacity of the transport fleet and eliminating the shortage of freezer trucks.
 - 9/3- Provision of legal services to exporters and supporting their interests abroad.
 - 9/4- Establishment and strengthening of trade focal points (centres providing export services in Tehran and the provinces).
 - 9/5- Establishment of export planning centres.
 - 9/6- Re-activating the trade representative offices abroad and establishing economic sections in Iran's embassies in the main trade centres.
 - 9/7- Fielding commercial advisors by the Ministry of Commerce to the target markets.
 - 9/8- Implementing wide-ranging marketing plans involving publicity, participation in international fairs, holding of specialized exhibitions, despatch of marketing teams, etc.
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- 9/9- Taking full advantage of bilateral trade arrangements and following up on trade agreements.
 - 9/10- Seeking membership in regional and international commercial and economic organizations.
 - 9/11- Strengthening trade efficiency through an expansion of electronic trade.
 - 9/12- Eliminating banking barriers and bottlenecks, and enhancing the competitiveness of the banking system to support the realization of export targets.
 - 9/13- Removal of bottlenecks related to insurance and export guarantees; structural improvement and strengthening of the Export Guarantee Fund; broadening the scope of this Fund to provide universal insurance and guarantee coverage for non-oil exports.
 - 9/14- Simplification and streamlining of customs regulations in support of the export promotion objective.
 - 9/15- Making the export process more transparent.
 - 9/16- Aligning standard regulations with the policies of export promotion.
 - 9/17- Attracting \$20 billion of foreign investment in export-oriented manufacturing industries in the course of the plan period.
 - 9/18- Establishing the government facilities needed to attract foreign investment in export-based industries.

10- Enhancing the competitiveness of production and exports through

- 10/1- Unification and liberalization of the rial's exchange rate to permit adjustments in line with shifts and its purchasing power.
- 10/2- Strengthening the financial soundness of exporting enterprises and granting credits to export-oriented manufacturing firms at preference rates.
- 10/3- Providing the required conditions for the emergence of large-scale export-oriented firms with the requisite export capabilities.
- 10/4- Increased allocation of bank credits to the non-oil exports sector.
- 10/5- Granting of full tax exemption to incomes resulting from the export of goods and services during the plan period.
- 10/6- Prohibiting the collection of any charges or levies on the export of goods by public agencies, foundations, municipalities, etc., during the plan period.
- 10/7- Granting provisional entry permits for raw material, equipment, machinery and the packaging facilities required by the export-oriented manufacturing industries

subject to the discretion of the relevant government authorities in response to exports equivalent to at least 125% of the value of imported goods.

- 10/8- Initiating measures to reduce transportation costs on export goods.
- 10/9- Making optimum use of the foreign currency earned through exports to meet the import requirements of the sector.
- 10/10- Facilitating joint ventures between Iranian and non-Iranian firms for the manufacture of export goods and to attract foreign investments in the export-oriented industries.

11- Modification of legislation, rules, procedures and guidelines through:

- 11/1- Reducing bureaucratic impediments to exports.
- 11/2- De-regulating and modifying laws relating to production and exports (the export-import laws, labour laws, direct taxation laws, social insurance laws, as well as other laws and regulations requiring modification in order to achieve export promotion targets)
- 11/3- Facilitating trade (business) travel.
- 11/4- Modification of the banking system to enhance its efficiency in the export sector.
- 11/5- Simplification of decision-making mechanisms on export issues and determining a specific sponsor for exports and commercial policies.
- 11/6- Ensuring the conformity of the country's financial, fiscal and credit policies with the export-oriented commercial policies.
- 11/7- Revising the mechanisms for export promotion and adapting these mechanisms to the requirements of the present time.
- 11/8- Stabilizing export policies for the duration of the third plan.