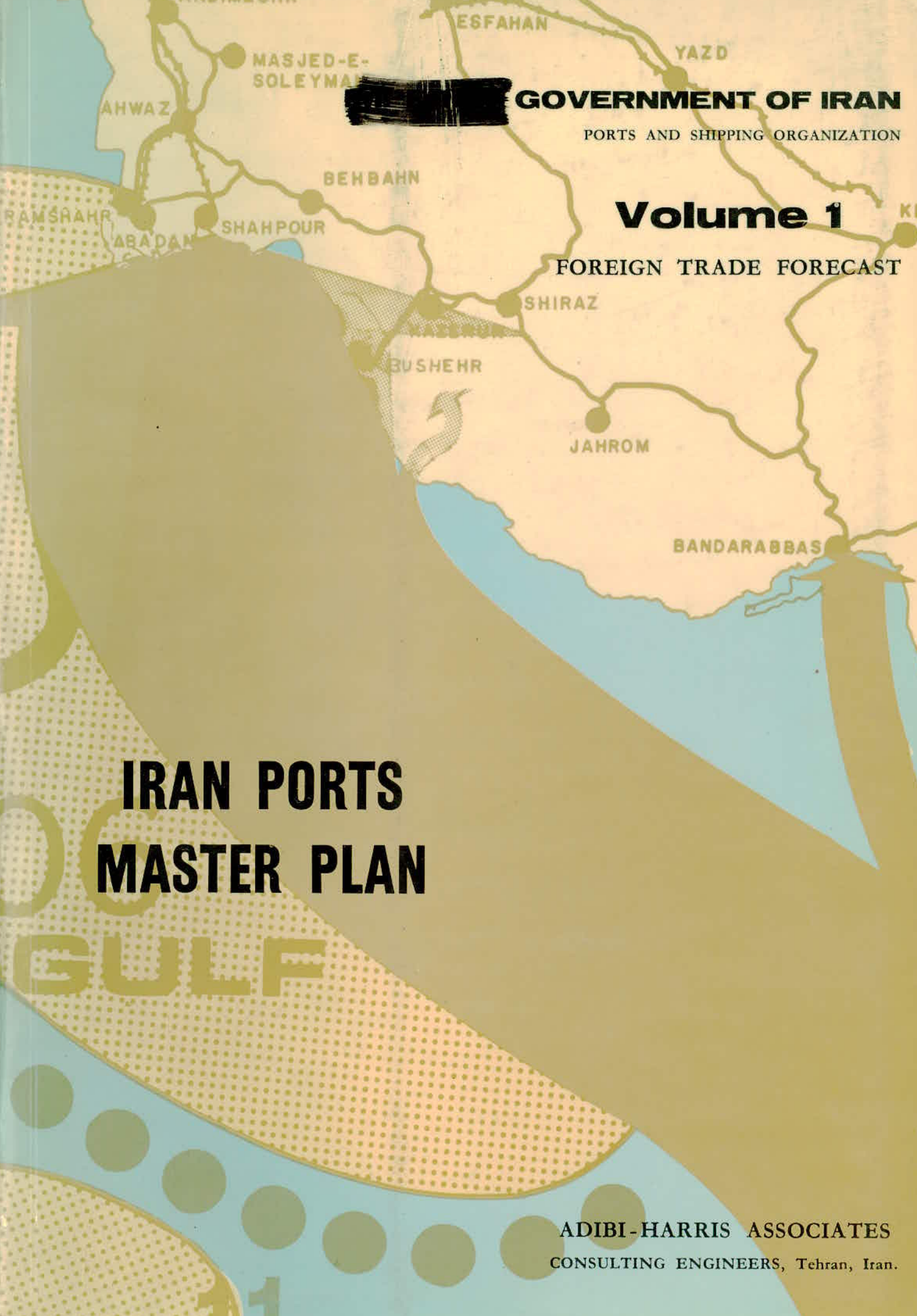


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GOVERNMENT OF IRAN

PORTS AND SHIPPING ORGANIZATION

Volume 1

FOREIGN TRADE FORECAST

IRAN PORTS MASTER PLAN

ADIBI-HARRIS ASSOCIATES

CONSULTING ENGINEERS, Tehran, Iran.


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PORTS AND SHIPPING ORGANIZATION 23

IRAN PORTS MASTER PLAN

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FOREIGN TRADE FORECAST

1974

ADIBI-HARRIS ASSOCIATES

CONSULTING ENGINEERS, Tehran, Iran.

IRAN PORTS MASTER PLAN

FINAL REPORT

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SECTION 1

INTRODUCTION

1.1 AIM, SCOPE AND LEVEL OF DEVELOPMENT

The final aim of a national port master plan is usually considered to be the definition of location, specialization, design, effective operation, and investment for a series of points through which a known share of country's merchandise can be transferred at world cost standards. While the aim may remain constant, the scope of the planning effort needed to reach this aim is, however, a function of the level of development of the country in question. The total merchandise delivery cost is a function of a system of interdependent factors, of which the service performed by ports is only one. In a developed country where those factors other than the ports are characterised by:

- a high degree of regional specialization;
- a high degree of hinterland development and infrastructural support
- a mature transportation network; and
- a history of foreign trade relations;

the planning effort can concentrate more on the port system itself, i.e., the rationalization of ports as termini of known trade flows. At lower levels of development, however, the scope of the master plan must by necessity broaden.

1.2 IRAN, A DEVELOPING COUNTRY

With a current per capita G.N.P. of approximately 36,800 Rls.[1] Iran can be classified as a "developing country". Behind this economic convention lies a reality which mandates the broadest possible scope for the master plan, that is, to include a detailed analysis of the entire system of factors influencing the cost of delivering merchandise through foreign trade.

1.3 RESOURCES

The first factor that must be given examination is the resources from which the country's accumulation will come; i.e., the source of development itself. In order for planners to begin to understand the nature of foreign trade flow, they must develop a con-

1) Plan Organization, The Fifth Plan (Tehran 1973) p. 73.

cept of the growth in time and space of the domestic market: population, workforce, consumption expenditures, natural resources, etc. Beyond this, a concept of spatial economy must be developed, that is, the location of production facilities and their internal demand linkages.

1.4 THE TRADE FLOW

The second factor requiring detailed analysis in master planning the ports of a developing country is the nature of the trade flow itself. How fast will its volume grow? What new commodities will appear within its structure? What newly manufactured commodity, presently classified as "other" or "miscellaneous", will grow to replace traditional commodities such as carpets or nuts as leading non-oil exports? What will be the pattern of import substitution? How successful will Iran be in marketing its planned industrial exports? How is import demand expected to grow as the country gets richer? In other words, for a country at Iran's level of development there is generally no such thing as simulating future merchandise flows on the basis of extrapolated past trends. Thus, planners must enter into the nation's development process itself, analyse its investment programme and assess the growth of the domestic market and interpret the country's role in the international market. A developing economy must be understood, not simply simulated.

1.5 ORIGINS & DESTINATIONS

The third factor deserving special attention in a developing economy is the regional -- international and domestic -- origins and destinations of merchandise trade flows. As regards domestic regions, this is so precisely because the very lack of effective ports and transport linkages has prevented the development of regional specialization. In a booming economy like Iran's, with the completion of major sections of the transport network in view, planners can anticipate the future existence of major flows of primary as well as manufactured goods from burgeoning cities which today are mere dots on the map. Again, where the industrial complexes giving forth tomorrow's flow exist today only in the nation's planning documents, the port master planners must collect, digest and assess the impact of the realization of new origins as well as destinations over time.

The problem of international origins and destinations is even more complex. Where port locations are not yet fixed, knowing the international points of merchandise origin or destination is critical to defining the optimum set of port locations. But when

the country has little export-import experience in the probable future commodity flows, then the planner is faced with another area of economic research.

1.6 THE TRANSPORTATION NETWORK

The fourth factor of critical importance is the network of national and international transport routes. In Iran the transportation network is far from mature. Some of the major links which may well transmit millions of tons of merchandise over Iran's borders are as yet still in the concept stage. Here again the port planners are forced to examine future impacts of factors still nonexistant.

With Iran's geographical position, future developments in any part of the Middle East transport network will have great impact not only on increasing or decreasing the share of trade arriving by ship, but also on the total volume of foreign trade and transit cargo movement. As the location, size, and specialization of ports depend highly on the conformation of international modes, planners by force must foresee eventualities in their development.

1.7 TRANSPORT COSTS

A fifth factor, closely related to the third, is the unit cost of transporting different commodities, by different modes, over different routes to and from Iran. Obviously, with major changes in the transport network, with increases in the volume of flow and with technological change in the cost/time characteristics of modes themselves, significant fluctuation can be expected in rates both domestic and international. As the spatial pattern of trade flows, and consequently the mode distribution of the flow, are sensitive to fluctuations in freight rates, port planners must analyze potential changes and compile transport cost vectors covering all alternative routes and modes.

1.8 THE POLITICAL ELEMENT

The sixth factor is a seemingly subjective political element which can always be counted on to make itself felt in port planning. The potential of political instability accompanying the process of development usually takes the form of rather strongly expressed contingency requirements involving ports. In the case of Iran, situated as it is in a politically volatile area, government policy enters deeply into the planning of ports. The master plan effort must interpret to the best of its ability such policy and changes therein.

1.9 POTENTIAL CHANGES

The characteristic in common to the above 6 factors is the probability of major change and the very inconclusive trends upon which to predict the nature of change. Although a handicap to neat, clean, finished criteria, the uncertainty of the future is a basic characteristic of the developing country, and Iran is no exception. The recourse to the certainty of uncertainty is continuous review of all assumptions and findings.

The six factors cited above, plus those factors related to the physical characteristics of alternative potential port locations, enter into the definition of the optium series of ports, i.e., ports through which the sum total of merchandise delivery costs for the system is minimized. In Volume 4 of this study an optimization model for this purpose has been developed. The model is designed in a manner which will not only allow reruns, given changes in factors, but facilitation of the process of continuous review of factors whose calculation is exogeneous to the model.

1.10 CONTENTS OF VOLUME 1

Volume 1 of this study covers the first three of the above described factors. In detail, Section 1 contains an Introduction. Section 2 is a summary and conclusions, Section 3 enters into the development of Iran's domestic market i.e. its growth in time and space. Section 4 examines the macro aspects of Iran's developing economy, policy and foreign trade and extracts the elements of particular significance for the planning of Iran's foreign trade delivery system. Section 5 analyses the commodity nomenclature presently used in Iran and develops an alternative port planning nomenclature specifically suited to the problems of foreign trade delivery. According to the adopted port planning nomenclature, Section 6 forecasts the growth of commodity foreign trade for the coming 10 years and by cargo handling categories for the next 15 years. Section 7 analyses the forecast and its meaning relative to the Iranian economy. Section 8 discusses origins and destination, both domestic and foreign, of the foreign trade. Section 9 analysis and forecasts potential transit cargo. Finally, Section 10 considers the consequences of increased oil revenues which materialized after the basic forecast was undertaken.

SECTION 2

SUMMARY AND CONCLUSION

2.1 SUMMARY

In 1351 Iran's total non-oil foreign trade was almost 8 million tons. Of these,6 million tons moved through P.S.O. facilities and overland. In 1366 the total trade is forecast to reach almost 48 million tons of which the half or 24 million tons will move through P.S.O. and overland. Table 2.1 summarizes Iran Foreign Trade from 1346 to 1366 by cargo type and by import, export and throughputs. In terms of value the increase in total trade is dramatic. Imports in 1351 were valued at almost 200 billion Rials. It is forecast that this will increase to almost 700 billion Rials in 1366. For exports, the figures are even more dramatic. In 1346 the exports were valued at about 27 billion Rials. It is forecast that this will increase to about 600 billion Rials in 1366. Table 2.2. show the values of Iran's imports and exports from 1346 to 1366 in constant 1351 prices.

TABLE 2.2.

VALUE OF IRAN NON-OIL FOREIGN TRADE 1346-1366

(Figures in Billions of Rials)

Year	1346	1351	1356	1361	1366
Imports	110	196	384	520	696
Exports	27	51	175	346	604

2.2. CONCLUSIONS

Total non-oil foreign trade in tons is forecast to increase 6 times during the next 15 years. The P.S.O. and overland portion will increase 4 times during the same period.

In terms of values, imports are expected to increase about 3½ times and exports are expected to increase 12 times from 1351 to 1366.

In about 12 - 13 years time, Iran's GNP per capita is expected to reach the level of that currently (1350) experienced in Western Europe of about $ 2,500 per capita (in 1351 prices) up more than five times from the current GNP per capita.

The above statement is based on 1351 prices. The recent price increases for oil, will shorten the time - depending upon future price fluctuations.

TABLE 2.1

IRAN NON-OIL FOREIGN TRADE 1346-1366
(Figures in Millions of Tons)

		P.S.O. & OVERLAND				
	CARGO TYPE	1346	1351	1356	1361	1366
IMPORT	General	1.13	1.64	3.01	4.92	7.70
	Bulk General	0.22	0.43	1.49	0.62	0.70
	Bulk	0.15	1.02	3.33	4.58	5.35
	Special	1.29	1.82	2.08	2.02	1.00
	Sub Total	2.79	4.91	9.91	12.14	14.75
EXPORT	General	0.35	0.61	1.29	2.44	4.80
	Bulk General	0.13	0.22	0.14	1.15	1.20
	Bulk	0.27	0.28	0.68	0.75	1.00
	Special	0.09	0.01	0.14	1.13	2.10
	Sub Total	0.84	1.12	2.24	5.47	9.10
THROUGH - PUT	General	1.48	2.25	4.30	7.36	12.50
	Bulk General	0.35	0.65	1.63	1.77	1.90
	Bulk	0.42	1.30	4.01	5.33	6.35
	Special	1.38	1.83	2.22	3.15	3.10
	Sub Total	3.63	6.03	12.15	17.61	23.85
		ENCLAVE [1]				
IMPORT	Liquid		0.39	0.90	2.49	3.50
EXPORT	and		1.42	5.96	12.10	19.90
THROUGH - PUT	Dry Bulk		1.81	6.85	14.59	23.40
		TOTALS				
IMPORT		2.79	5.30	10.81	14.63	18.25
EXPORT		0.84	2.54	8.20	17.57	29.00
THROUGH - PUT		3.63	7.84	19.00	32.20	47.25

1) Cargo which move through special non-P.S.O. facilities mostly petrochemicals.

By 1366 the gap between non-oil imports and exports values will approach being closed as can be seen in Table 2.2. and Fig. 2.2.

The forecast was discussed commodity by commodity with the Ministry of Economy who accepted the forecast for port planning purposes for 1356 and 1361. Detailed commodity by commodity forecast for 1366 is not required under the scope of work.

Figure 2.1 shows the Iran non-oil foreign trade in tons for the years 1346 - 1366. This figure is a graphic representation of Table 2.1.

Figure 2.2. shows the economic growth,.oil exports and non-oil foreign trade in values for the years 1346 - 1366. Again it should be noted that the figure is based on 1351 prices. The slopes of the curves will change as a function of recent and future oil price changes.

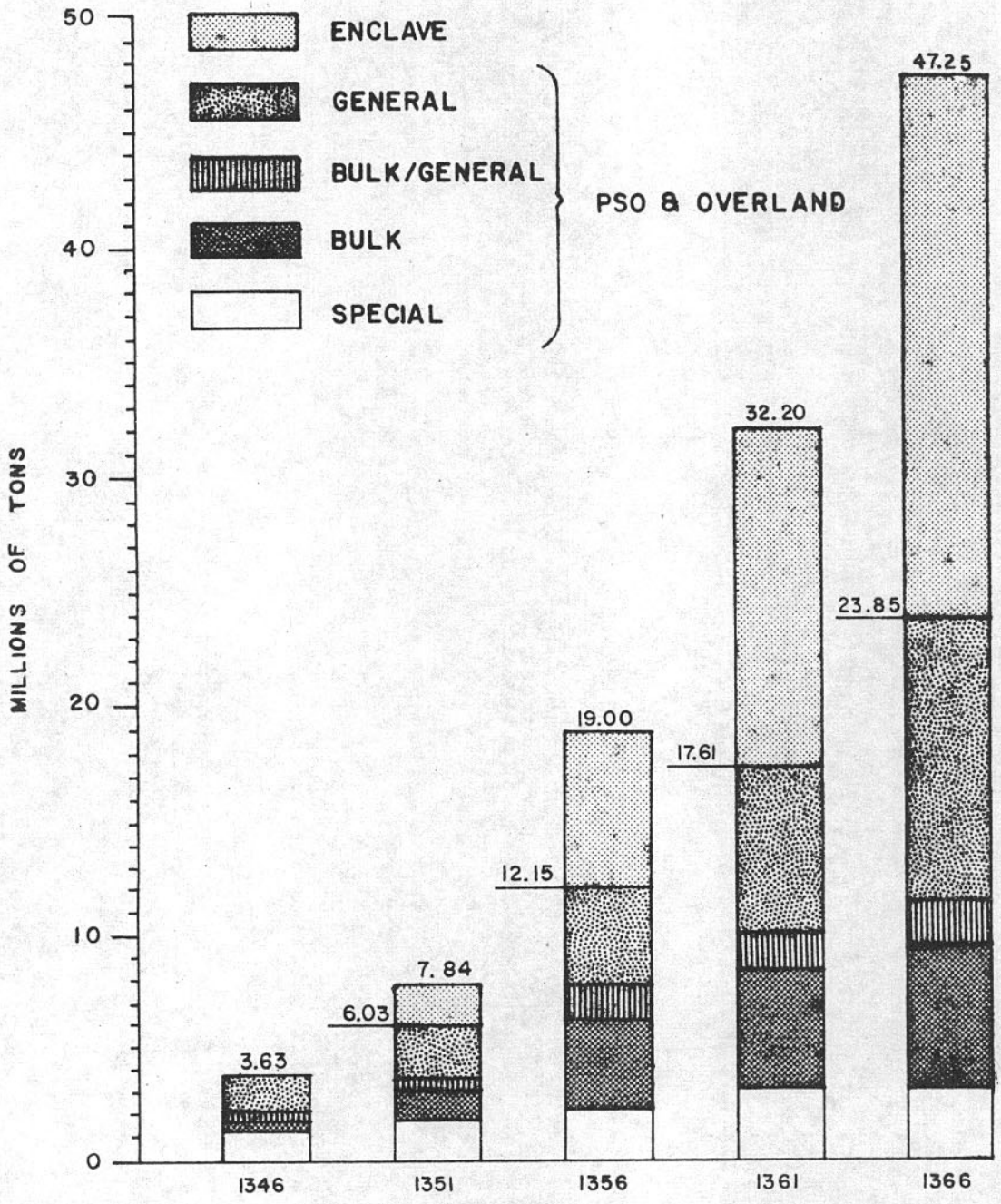
No significant transit cargo between Europe and countries east of Iran or for transhipment at a Persian Gulf port is expected. Transit cargo between a Persian Gulf port and Afghanistan is also expected to be insignificant.

Following the preparation of the trade forecast described above, the crude oil revenues have increased substantially, making additional imports, particularly for capital projects possible. This additional import has been forecasted to be 1, 1.2 and 1.5 million tons in the years 1356, 1361 and 1366 respectively. This forecast was also discussed among others with the Ministry of Economy who concurred.

FIGURE 2.1

NON OIL FOREIGN TRADE THROUGHPUT [1]

FOR THE YEARS 1346 TO 1366.

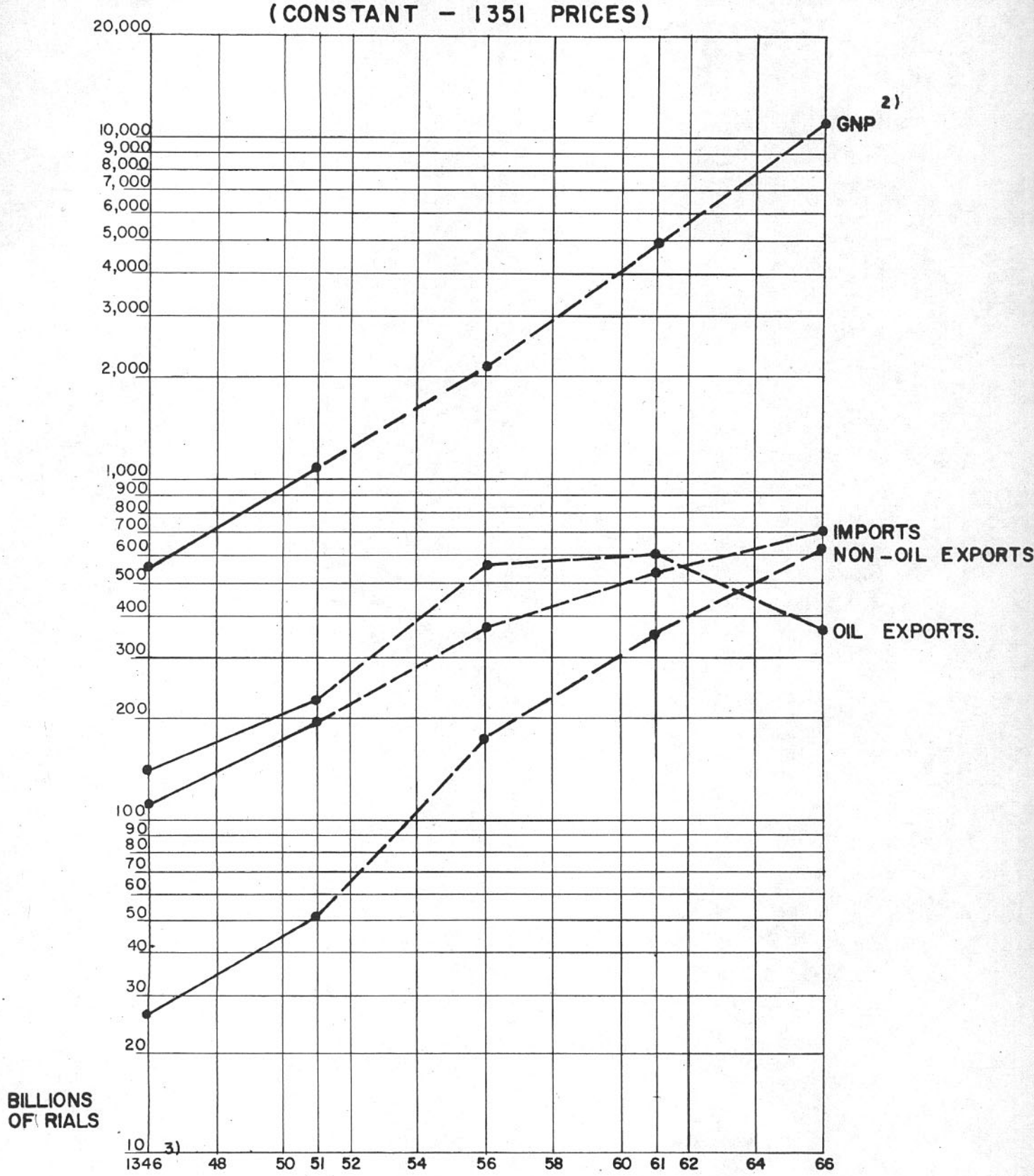


1) ADIBI HARRIS ASSOCIATES

FIGURE 2.2

ECONOMIC GROWTH, OIL EXPORTS, AND NON-OIL FOREIGN TRADE [1]

(CONSTANT - 1351 PRICES)



SEMI-LOG GRAPH

1) ADIBI HARRIS ASSOCIATES

2) TO 1356, PLAN ORGANISATION, 5th PLAN, 1356 TO 1361 AHA PROJECTIONS

3) 1346 RIALS ADJUSTED TO 1351 PRICES

SECTION 3

RESOURCES

3.1 DEMOGRAPHY

3.1.1 Population Growth

The rate of growth and pattern of distribution of Iran's future population is an important factor in defining both the impact of population growth on consumption and the domestic origins and destinations of foreign trade flows.

The basic source used for population projections was the Plan Organization's Population Projection of Iran, 1966-1991[1] According to this source, the following annual growth rates were adopted for Iran's total population:

1351 - 1356	... 2.9%
1356 - 1361	... 2.3%

Thus, Iran's 1356 and 1361 population is calculated to be 36,022,687 and 40,371,000 respectively.

In order to divide this population by regions, projections developed by the Battelle Institute[2] were used. Table 3.1 lists regional urban and rural populations for 1351, 1356 and 1361[3]

For the purpose of allocating volumes of foreign trade to urban areas,[4] urban population shown on Table 3.1 was broken down for 42 selected urban areas. Figure 3.1 illustrates the growth of these urban areas for 1351, 1356, 1361[5]

3.1.2 Private Consumption Expenditures

In the Battelle Report[6] projections were developed for private consumption per capita growth for the 5th Plan based upon guidelines established by the Plan Organization. Utilizing the afore-

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1) Statistical Center of Iran, Population Projection of Iran, 1966-1991 (Plan Organization May 1972) p.p.27,44.
2) Plan Organization, The Battelle Regional Development Project (Tehran 1973)
3) Plan Organization, The Battelle Regional Development Project (Tehran 1973), developed from p.p. 54,55a.
4) For explanation see Volume 4.
5) The detailed numbers are shown in Appendix 1.
6) Plan Organization, The Batelle Regional Development Project (Tehran 1973) p.55.

TABLE 3.1

PROJECTIONS OF REGIONAL URBAN AND RURAL POPULATION: 1351, 1356, 1361 1)

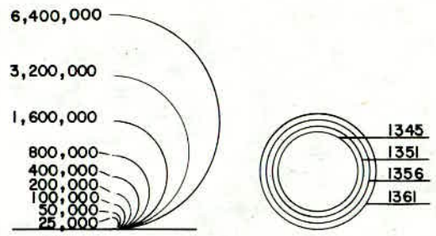
REGION			1351	1356	1361
			THOUSANDS OF INHABITANTS		
1.	Gilan	Urban	939	1,179	1,412
	Mazandaran	Rural	2,745	2,947	3,083
	Gorgan	Total	3,684	4,126	4,495
2.	E. Azarbayejan	Urban	1,349	1,961	2,286
	W. Azarbayejan	Rural	3,072	3,089	3,355
		Total	4,421	5,050	5,641
3.	Central	Urban	4,522	5,464	6,467
	Semnan	Rural	1,441	1,616	1,650
	Zanjan	Total	5,963	7,080	8,117
4.	Khuzestan	Urban	1,184	1,454	1,694
	Kuhkilluyeh	Rural	1,087	1,153	1,173
		Total	2,271	2,607	2,867
5.	Hamedan	Urban	689	885	1,065
	Lorestan	Rural	1,915	2,063	2,147
		Total	2,604	2,948	3,212
6.	Esfahan	Urban	1,596	2,174	2,699
	Yazd	Rural	1,307	1,261	1,369
		Total	2,903	3,435	4,068
7.	Fars	Urban	794	943	1,129
		Rural	1,173	1,387	1,499
		Total	1,967	2,330	2,628
8.	Kerman	Urban	364	380	484
	Sistan	Rural	1,201	1,375	1,483
	Baluchestan	Total	1,565	1,755	1,967
9.	Khorassan	Urban	1,042	1,066	1,231
		Rural	1,997	2,448	2,580
		Total	3,039	3,514	3,811
10.	Kermanshahan	Urban	501	524	622
	Kordestan	Rural	1,490	1,787	1,932
	Elam	Total	1,991	2,311	2,554
11.	Bandar Abbas	Urban	146	156	245
	Bushehr	Rural	594	705	761
		Total	740	861	1,006
	Total Urban		13,126	16,186	19,334
	Total Rural		18,022	19,831	21,032
	GRAND TOTAL		31,148	36,017	40,366

1) Plan Organization, The Battelle Regional Development Project (Tehran 1973) p.p. 54,55a.

LEGEND

IRAN BOUNDRY		CAPITAL	
OTHER BOUNDRY		300,000 – 1,000,000	
ASPHALTED HIGHWAY		100,000 – 300,000	
OTHER MAIN HIGHWAYS		30,000 – 100,000	
LESSER ROADS		10,000 – 30,000	
RAILWAYS		UNDER – 10,000	
RAILWAYS UNDER CONSTR.		LAKES	
NAVIGABLE WATER		SALT FLAT	
MAJOR PORT			
MINOR PORT			

100 50 0 100 200 300 400



1 CM^2=700,000 PEOPLE

1345 - ACTUAL FIGURES

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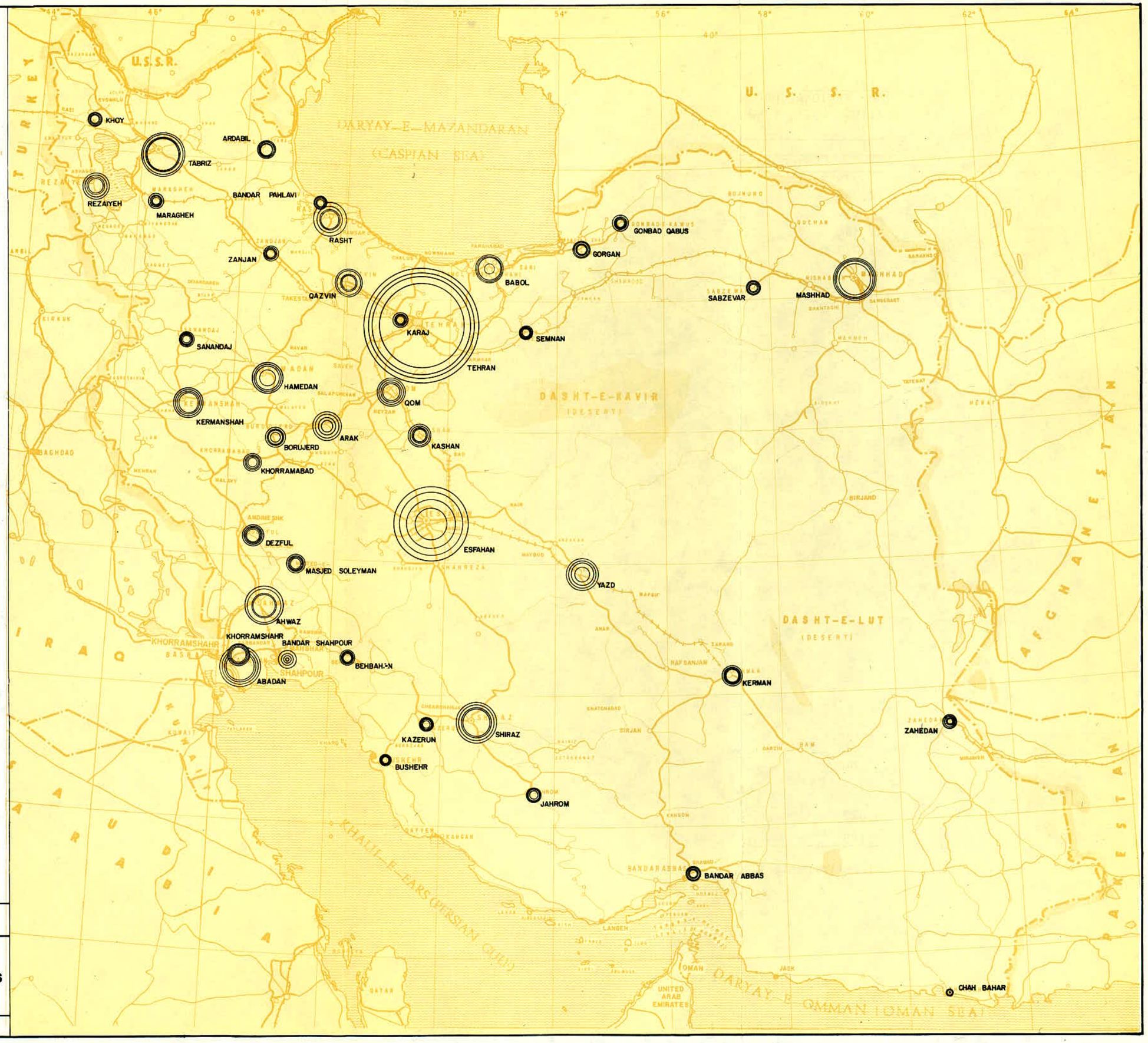
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IRAN PORTS MASTER PLAN

POPULATION OF 42 SELECTED URBAN AREAS FORECAST FOR 1350-1356-1361

SCALE GRAPHIC	DATE JAN. 1974	FIGURE 3.1



described population increases for 42 selected urban areas, total urban private consumption expenditures were developed for 1356. Projections for 1361 were linear. Figure 3.2 illustrates the growth of private consumption expenditures for the 42 selected urban areas. The numbers are in Appendix 2.

3.1.3 Employment

Employment statistics by urban area are not available after 1346. Figure 3.3 illustrates the structure of employment, for the 42 selected urban areas in 1345[1]) Utilizing the data presented graphically in Figure 3.3, coupled with the previously described population growth and projections of value added in manufacturing, (see below), employees in manufacturing for the 42 selected cities were calculated for 1350, 1356, and 1361. The results are graphically illustrated in Figure 3.4. The numbers are in Appendix 3.

3.1.4 Value Added

The Battelle Report provides detailed regional and sometimes urban projections for value added in manufacturing.[2]) Provided with two points in time, 1348 and 1356, value added was linearily interpolated for 1350 and projected to 1361. Figure 3.5 presents this information for 1350, 1356 and 1361. The numbers are in Appendix 4.

3.2 ECONOMIC GEOGRAPHY

3.2.1 Oil (and Gas)

The moving force behind the developing economy of Iran is oil. Its economic significance is discussed in detail in Section 4.

At this point oil (and gas) as a resource will be examined.

Proven recoverable reserves of oil currently amount to about 7.5 milliard tons. At the present rate of production of about 250 million tons per year, the reserves would last about 30 years. However, the production rate is to be increased to about 400 million tons per year. At the present time Iran is the world's fourth biggest crude oil producer after U.S. USSR and Saudi Arabia, in that order. When the production is increased as mentioned above, Iran will be number three unless Saudi Arabia also increases its production which is a distinct possibility. The natural gas reserves are estimated to be 6 trillion cubic meters. Only about 10 milliard cubic meters per year are currently usefully collected. At this rate, the reserves would last 500 years. This, however, is misleading because enormous quantities obtained in association with oil production are flared because there is

1) Bureau of Statistics, Report on the Results of Annual Industrial Survey in 1967 (1346) (Ministry of Economy, Tehran, 1969) pages 129, 135.

2) Plan Organization, Battelle Regional Development Project (Tehran 1973) p.71.

currently no use or market for this gas.

There are still millions of hectares of highly potential oil and gas lands to be explored.

Oil and gas therefore appears to remain an abundant resource for Iran for the foreseeable future. Figure 3.6 shows the major oil and gas fields in Iran.

3.2.2 Iron and Steel [1)]

During the last 15 years several iron ore deposits have been discovered in Iran. Most of them are located in the provinces of Kerman and Yazd. The deposits have been estimated to be more than 2 milliard tons.

At the present time Iran's only basic steel making facility is located at Isfahan. Blast furnaces there produce steel (pig iron) using ore from Chaghart mines. Later direct reduction furnaces and rolling facilities will be added.

The current rolling facilities in Iran are located at Ahwaz. These facilities use imported scrap which is remelted (in electro furnaces) and imported ingots as raw material.

Plans are now being prepared to exploit the Gole-Gohar mines in Kerman which has some of the highest quality ore in Iran, with a Fe. content of 62% to 64%.. It is planned that pellets will be prepared at the mines and initially shipped to Ahwaz to supply the facilities there with local instead of imported raw material. Later, the plans call for steel making facilities at Bandar Abbas and Esfahan ex pellets.

The timing and details of steelmaking, as furnished by the industry[1)] are as follows :

1356: Steelmaking capacity is expected to be 2.9 million tons.

Of this 1.9 million tons will be produced in Isfahan from domestic ore and scrap using blast furnaces.

1 million tons will be produced in Ahwaz from domestic scrap, 150,000 tons imported scrap and 1,125,000 tons pellets shipped from Gole-Gohar via Bandar Abbas, using both electro furnaces and direct reduction.

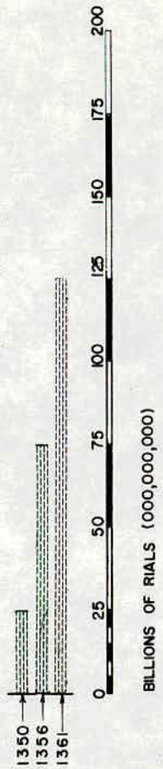
In about 1357/58 the production at Ahwaz will be increased, requiring 3,000,000 tons of pellets by coastal traffic from Bandar Abbas and corresponding scrap import.

---

1) The Steel Companies:
Iran National Steel Company
National Steel Corporation
Shahriar Industries.

LEGEND

IRAN BOUNDRY		CAPITAL	
OTHER BOUNDRY		300,000 – 1,000,000	Ⓐ
ASPHALTED HIGHWAY		100,000 – 300,000	⊡
OTHER MAIN HIGHWAYS		30,000 – 100,000	○
LESSER ROADS		10,000 – 30,000	○
RAILWAYS		UNDER 10,000	◦
RAILWAYS UNDER CONSTR.		LAKES	
NAVIGABLE WATER		SALT FLAT	
MAJOR PORT	●		
MINOR PORT	●		



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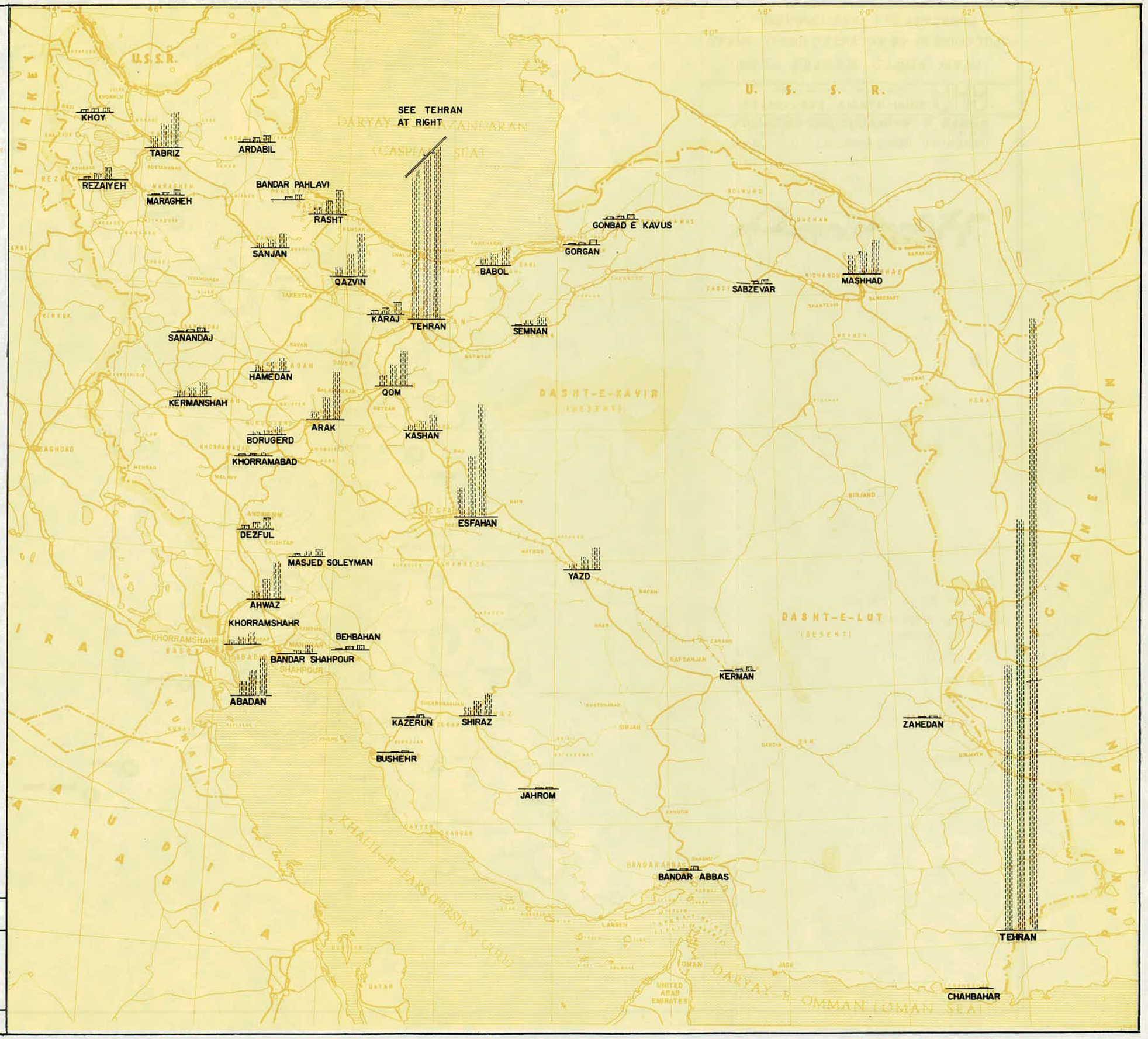
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IRAN PORTS MASTER PLAN

PRIVATE CONSUMPTION EXPENDITURES
FOR 42 SELECTED URBAN AREAS
FORECAST FOR 1350-1356-1361

SCALE GRAPHIC	DATE JAN. 1974	FIGURE 3.2



LEGEND

IRAN BOUNDRY		CAPITAL	
OTHER BOUNDRY		300,000 – 1,000,000	
ASPHALTED HIGHWAY		100,000 – 300,000	
OTHER MAIN HIGHWAYS		30,000 – 100,000	
LESSER ROADS		10,000 – 30,000	
RAILWAYS		UNDER – 10,000	
RAILWAYS UNDER CONSTR.		LAKES	
NAVIGABLE WATER		SALT FLAT	
MAJOR PORT			
MINOR PORT			

100 50 0 100 200 300 400

640,000
320,000
160,000
80,000
40,000
20,000
10,000

1 Cm^2 = 100,000 PEOPLE

MANUFACTURE AND CONSTRUCTION

AGRICULTURE AND PRODUCTION OF RAW MATERIALS

BUSINESS AND SERVICES

KHOY
TABRIZ
ARDABIL
REZAIYEH
MARAGHEH
BANDAR PAHLAVI
RASHT
ZANJAN
QAZVIN
GONBAD QABAS
GORGAN
BABOL
SABZEVAR
MASHHAD
KARAJ
TEHRAN
SEMNAN
SANANDAJ
HAMEDAN
QOM
KERMANSHAH
ARAK
BORUJERD
KASHAN
KHORRAMABAD
DEZFUL
ESFAHAN
MASJED SOLEYMAN
YAZD
AHWAZ
KHORRAMSHAHR
SHAHPUR
ABADAN
BEHBAHAN
KERMAN
KAZERUN
SHIRAZ
ZAHEDAN
BUSHEHR
JAHROM
BANDAR ABBAS
CHAHBAHAR

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IRAQ
SAUDI ARABIA
KUWAIT
QATAR
UNITED ARAB EMIRATES
OMAN
AFGHANISTAN
PAKISTAN
DARYAY-E-MAZANDARAN (CASPIAN SEA)
DASHT-E-KAVIR (DESERT)
DASHT-E-LUT (DESERT)
KHALIJ-E-FARS (PERSIAN GULF)
DARYAY-E-OMMAN (OMAN SEA)

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IRAN PORTS MASTER PLAN

STRUCTURE OF EMLOYMENT
FOR 42 SELECTED URBAN AREAS FOR 1345

SCALE GRAPHIC	DATE JAN. 1974	FIGURE 3.3

LEGEND

IRAN BOUNDRY		CAPITAL	
OTHER BOUNDRY		300,000 – 1,000,000	
ASPHALTED HIGHWAY		100,000 – 300,000	
OTHER MAIN HIGHWAYS		30,000 – 100,000	
LESSER ROADS		10,000 – 30,000	
RAILWAYS		UNDER – 10,000	
RAILWAYS UNDER CONSTR.		LAKES	
NAVIGABLE WATER		SALT FLAT	
MAJOR PORT			
MINOR PORT			

640,000
320,000
160,000
80,000
40,000
20,000
10,000

1 Cm.^{2} = 100,000 PEOPLE

U.S.S.R.

U. S. S. R.

TURKEY

IRAQ

SAUDI ARABIA

KUWAIT

QATAR

UNITED ARAB EMIRATES

OMAN

AFGHANISTAN

DARYAY-E-MAZANDARAN (CASPIAN SEA)

DASHT-E-KAVIR (DESERT)

DASHT-E-LUT (DESERT)

KHALIJ-E-FARS (PERSIAN GULF)

DARYAY-E-OMMAN (OMAN SEA)

KHOY
TABRIZ
ARDABIL
REZAIYEH
MARAGHEH
BANDAR PAHLAVI
RASHT
GONBAD QABAS
GORGAN
ZANJAN
BABOL
SABZEVAR
MASHHAD
QAZVIN
KARAJ
SEMNAN
SANANDAJ
TEHRAN
HAMEDAN
QOM
KERMANSHAH
BORUJERD
ARAK
KASHAN
KHORRAMABAD
DEZFUL
ESFAHAN
MASJED SOLEYMAN
YAZD
AHWAZ
KHORRAMSHAHR
BEHBAHAN
BANDAR SHAHPOUR
ABADAN
KERMAN
KAZERUN
SHIRAZ
ZAHEDAN
BUSHEHR
JAHROM
BANDAR ABBAS
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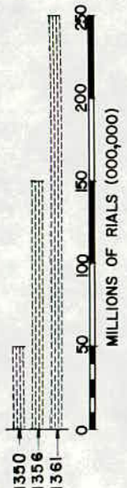
IRAN PORTS MASTER PLAN

EMPLOYEES IN MANUFACTURING FOR SELECTED URBAN AREAS FORECAST FOR 1350, 1356, 1361

SCALE GRAPHIC	DATE JAN. 1974	FIGURE 3.4

LEGEND

IRAN BOUNDRY		CAPITAL	
OTHER BOUNDRY		300,000 – 1,000,000	
ASPHALTED HIGHWAY		100,000 – 300,000	
OTHER MAIN HIGHWAYS		30,000 – 100,000	
LESSER ROADS		10,000 – 30,000	
RAILWAYS		UNDER – 10,000	
RAILWAYS UNDER CONSTR.		LAKES	
NAVIGABLE WATER		SALT FLAT	
MAJOR PORT			
MINOR PORT			



SEE TEHRAN AT RIGHT

KHOY
TABRIZ
ARDABIL
REZAIYEH
MARAGHEH
BANDAR PAHLAVI
RAST
ZANJAN
QAZVIN
KARAJ
TEHRAN
SANANDAJ
HAMEDAN
KERMANSHAH
QOM
ARAK
KASHAN
BORUJERD
KHORRAMABAD
DEZFUL
MASJED SOLEYMAN
AHWAZ
KHORRAMSHAHR
BEHBAHAN
ABADAN
BANDAR SHAHPOUR
KAZRUN
SHIRAZ
BUSHEHR
JAHROM
ESFAHAN
YAZD
GONBAD QABAS
GORGAN
BABOL
SEMNAN
SABZEVAR
MASHHAD
KERMAN
ZAHEDAN
BANDAR ABBAS
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IRAN PORTS MASTER PLAN

VALUE ADDED IN MANUFACTURING FOR 42 SELECTED URBAN AREAS, FORECAST FOR 1350, 1356, 1361.

SCALE GRAPHIC	DATE JAN. 1974	FIGURE 3.5

LEGEND

IRAN BOUNDRY		CAPITAL	
OTHER BOUNDRY		300,000 – 1,000,000	
ASPHALTED HIGHWAY		100,000 – 300,000	
OTHER MAIN HIGHWAYS		30,000 – 100,000	
LESSER ROADS		10,000 – 30,000	
RAILWAYS		UNDER – 10,000	
RAILWAYS UNDER CONSTR.		LAKES	
NAVIGABLE WATER		SALT FLAT	
MAJOR PORT			
MINOR PORT			

LEGEND

OIL FIELD

GAS FIELD

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IRAN PORTS MASTER PLAN

OIL AND GAS FIELDS
–1351–

SCALE GRAPHIC	DATE JAN. 1974	FIGURE 3.6

1361: Steelmaking capacity is expected to be 10 million tons.

Of this 4 million tons will be produced in Isfahan from domestic ore, scrap (and possibly pellets) using blast furnaces (and possible direct reduction) 2 million tons are expected to be plate.

4 million tons will be produced in Ahwaz from domestic scrap, 600,000 tons imported scrap and 6 million tons pellets carried coastal from Bandar Abbas, using both electro furnaces and direct reduction.

2 million tons will be produced at Bandar Abbas from pellets, domestic scrap and 150,000 tons imported scrap, using direct reduction.

In about 1362/63 total production capacity in Iran is expected to reach 15 million tons/year.

1366: Steelmaking capacity is expected to be 18 million tons.

Of this 10 million tons will be produced in Isfahan from domestic ore, scrap and pellets using both blast furnances and direct reduction. 5 million tons will be plate.

4 million tons will be produced in Ahwaz from domestic scrap, 600,000 tons imported scrap and 6 million tons pellets carried coastal from Bandar Abbas, using both electro furnaces and direct reduction.

4 million tons will be produced in Bandar Abbas from pellets, domestic scrap and 300,000 tons imported scrap using direct reduction.

The facilities in each general location, Isfahan, Ahwaz and Bandar Abbas may be owned by one or more companies. As shown, one or more technologies may be used at each location.

At the present time, Iran does not produce any metalurgical grade coal. According to the industry sources, however, this is because coal washing facilities are not yet installed. This is provided for in the Fifth Plan so by 1356 Iran will have metalurgical coal and coal or coke import for this purpose will not be required.

The above described manufacturing program is quite ambitous. Even so, however, it is expected that it will take a little over 10 years before the country is essentially self sufficient in steel production. Some special alloy steels will also be imported after essential self sufficiency has been reached, because it is not expected that all types of special alloys will be manufactured in Iran.

Iran's steel balance for the years 1351 (actual) and 1356, 1361 and 1366 (forecast) is shown in figures 3.7, 3.8, 3.9 and 3.10. The details of the country's overall steel balance demand/production and imports/exports are currently in a state of flux and must be watched continually for forecasting purposes.

3.2.3 Copper

Iran's past copper production was typified by small scale, handpicking operation. Presently the Iranian Army operates the country's only smelter which produces about 1,500 tons per year.[1] Due to the fact that at the time of this writing only 10% of Iran has been geologically surveyed, and far less explored for mineral deposits, copper production is presently far below probable reserves.[2]

In the early 1340's the Sar Cheshmeh copper deposits in Kerman Ostan were discovered. The average copper content is reported to be 1.2% and the size of the mine reserves are estimated to be approximately 400 million tons. If these reserves prove out, the Sar Cheshmeh mine would be the 10th largest mine in the world.[3] Water for production purposes is to come from a source near Shahre-Babak.

According to industrial sources[4], the Sar Cheshmeh mine should produce about 13 million tons of ore per year. From a smelter located near the mine annual production should be 160,000 tons of blister copper.

Figure 3.11 illustrates the development of Iran's copper production The export figures are obtained from the Trade-forecast section of this report volume.

3.2.4 Chromite

Table 3.2 shows the history of chromite mining, export and stockpiling from 1345 to 1350.

TABLE 3.2

CHROMITE MINING, EXPORT AND STOCKPILING [5]

	1345	1346	1347	1348	1349	1350
	(000's of tons)					
Mined	141	150	241	289	309	N.A.
Sold at Mine	N.A.	N.A.	203	N.A.	N.A.	N.A.
Exported	132	89	62	145	222	152
Stockpiled	9	61	141	144	86	N.A.

1) Iran Trade & Industry (Tehran, May 1972) p.7.
2) Iran Trade & Industry (Tehran, May 1972) p.8.
3) Iran Trade & Industry (Tehran, May 1972) p.9.
4) Industrial responses to A.H.A. questionaires.
5) Bureau of Statistics, Mining Statistics of Iran 1968. (Ministry of Economy, 1349). & Statistical Center of Iran Statistical Year book, 1970 (Plan Organization, 1972)

LEGEND

IRAN BOUNDRY		CAPITAL	
OTHER BOUNDRY		300,000 – 1,000,000	
ASPHALTED HIGHWAY		100,000 – 300,000	
OTHER MAIN HIGHWAYS		30,000 – 100,000	
LESSER ROADS		10,000 – 30,000	
RAILWAYS		UNDER – 10,000	
RAILWAYS UNDER CONSTR.		LAKES	
NAVIGABLE WATER		SALT FLAT	
MAJOR PORT			
MINOR PORT			

TOTAL DEMAND	1,900	
	PLATES	OTHER
PRODUCTION		200
IMPORT	600	1,100

FIGURES IN 1000 TONS

LEGEND

PROCESS COMPLEX

CONSISTING OF ONE OR MORE OF FOLLOWING FACILITIES:

ELECTRO - FURNACE

BLAST FURNACE

ROLLING MILL - SHAPES

ROLLING MILL - PIPES

OWNED BY ONE OR MORE COMPANIES

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IRAN PORTS MASTER PLAN

STEEL BALANCE

1351

SCALE NONE	DATE DEC.73	FIGURE 3.7

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U. S. S. R.

TURKEY

DARYAY-E-MAZANDARAN (CASPIAN SEA)

DASHT-E-KAVIR (DESERT)

DASHT-E-LUT (DESERT)

60

130

200

200 SCRAP

600

1353

ORE, COAL, SCRAP

1.510

TABRIZ

RASHT

TEHRAN

QAZVIN

HAMADAN

KERMANSHAH

KHORRAMSHAHR

MAHSHAHR

SHAHPOUR

SHIRAZ

BANDARABBAS

MASHHAD

ZAHEDAN

KERMAN

YAZD

ESFAHAN

KHALIJ-E-FARS (PERSIAN GULF)

DARYAY-E-OMMAN (OMAN SEA)

IRAQ

SAUDI ARABIA

KUWAIT

QATAR

UNITED ARAB EMIRATES

OMAN

AFGHANISTAN

PAKISTAN

LEGEND

IRAN BOUNDRY		CAPITAL	
OTHER BOUNDRY		300,000 – 1,000,000	
ASPHALTED HIGHWAY		100,000 – 300,000	
OTHER MAIN HIGHWAYS		30,000 – 100,000	
LESSER ROADS		10,000 – 30,000	
RAILWAYS		UNDER – 10,000	
RAILWAYS UNDER CONSTR.		LAKES	
NAVIGABLE WATER		SALT FLAT	
MAJOR PORT			
MINOR PORT			

100 50 0 100 200 300 400

TOTAL DEMAND	4,200	
	PLATES	OTHER
PRODUCTION		2,600
IMPORT	1,200	400

FIGURES IN 1000 TONS

LEGEND

PROCESS COMPLEX

CONSISTING OF ONE OR MORE OF FOLLOWING FACILITIES

ELECTRO - FURNACE

BLAST FURNACE

DIRECT REDUCTION PLANT

ROLLING MILL - SHAPES

ROLLING MILL - PIPES

OWNED BY ONE OR MORE COMPANIES

طرح جامع بنادر ایران

IMPERIAL GOVERNMENT OF IRAN
MINISTRY OF FINANCE
PORTS & SHIPPING ORGANIZATION

AHA ADIBI-HARRIS ASSOCIATES
CONSULTING ENGINEERS-TEHRAN

IRAN PORTS MASTER PLAN
STEEL BALANCE
1356

SCALE NONE	DATE DEC.73	FIGURE 3.8

U.S.S.R.

U. S. S. R.

TURKEY

DARYAY-E-MAZANDARAN (CASPIAN SEA)

DASHT-E-KAVIR (DESERT)

DASHT-E-LUT (DESERT)

IRAQ

SAUDI ARABIA

KUWAIT

AFGHANISTAN

PAKISTAN

OMAN

UNITED ARAB EMIRATES

TABRIZ

TEHRAN

MASHHAD

ESFAHAN

SHIRAZ

KERMANSHAH

KHORRAMSHAHR

BANDAR ABBAS

BUSHEHR

168

40

14

1,600

1,000

150 SCRAP

ORE, COAL SCRAP

840

274

1,125 PELLETS

150 SCRAP

MINOR PORTS 18

1,125 PELLETS

246

1,378

LEGEND

IRAN BOUNDRY		CAPITAL	
OTHER BOUNDRY		300,000 – 1,000,000	
ASPHALTED HIGHWAY		100,000 – 300,000	
OTHER MAIN HIGHWAYS		30,000 – 100,000	
LESSER ROADS		10,000 – 30,000	
RAILWAYS		UNDER – 10,000	
RAILWAYS UNDER CONSTR.		LAKES	
NAVIGABLE WATER		SALT FLAT	
MAJOR PORT			
MINOR PORT			

TOTAL DEMAND	10,500	
	PLATES	OTHER
PRODUCTION	2,000	8,000
IMPORT	1,500	
EXPORT		1,000

FIGURES IN 1000 TONS

LEGEND

PROCESS COMPLEX

CONSISTING OF ONE OR MORE OF FOLLOWING FACILITIES

ELECTRO FURNACE

BLAST FURNASE

DIRECT REDUCTION PLANT

ROLLING MILL-SHAPES

ROLLING MILL-PIPES

ROLLING MILL-PLATES

OWNED BY ONE OR MORE COMPANIES

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IRAN PORTS MASTER PLAN
STEEL BALANCE
1361

SCALE NONE	DATE DEC.73	FIGURE 3.9

U.S.S.R.

248

40

8

4,000

600 SCRAP

2,000 PLATE

2,000 OTHER

ORE, COAL, SCRAP

620

6,000 PELLETS

282

600

MINOR PORTS 24

1,000 INGOTS

9,000 PELLETS

150 SCRAP

278

150

SCRAP

1,000 INGOTS

EXPORT

1204

LEGEND

IRAN BOUNDRY		CAPITAL	
OTHER BOUNDRY		300,000 – 1,000,000	
ASPHALTED HIGHWAY		100,000 – 300,000	
OTHER MAIN HIGHWAYS		30,000 – 100,000	
LESSER ROADS		10,000 – 30,000	
RAILWAYS		UNDER – 10,000	
RAILWAYS UNDER CONSTR.		LAKES	
NAVIGABLE WATER		SALT FLAT	
MAJOR PORT			
MINOR PORT			

TOTAL DEMAND	16,400	
	PLATES	OTHER
PRODUCTION	5,000	13,000
IMPORT	400 [1]	
EXPORT		2,000

1) SPECIAL ALLOYS

FIGURES IN 1000 TONS

LEGEND

PROCESS COMPLEX

CONSISTING OF ONE OR MORE OF FOLLOWING FACILITIES

ELECTRO FURNACE

BLAST FURNACE

DIRECT REDUCTION PLANT

ROLLING MILL - SHAPES

ROLLING MILL - PIPES

ROLLING MILL - PLATES

OWNED BY ONE OR MORE COMPANIES

طرح جامع بنادر ایران

IMPERIAL GOVERNMENT OF IRAN
MINISTRY OF FINANCE
PORTS & SHIPPING ORGANIZATION

AHA ADIBI-HARRIS ASSOCIATES
CONSULTING ENGINEERS - TEHRAN

IRAN PORTS MASTER PLAN
STEEL BALANCE
1366

SCALE NONE | DATE DEC.73 | FIGURE 3.10

U.S.S.R.

U. S. S. R.

DARYAY-E-MAZANDARAN (CASPIAN SEA)

DASHT-E-KAVIR (DESERT)

DASHT-E-LUT (DESERT)

TURKEY

IRAQ

KUWAIT

SAUDI ARABIA

AFGHANISTAN

PAKISTAN

5,000 PLATE
5,000 OTHER

4,000 ORE, COAL, SCRAP

600 SCRAP

3,000 PELLETS

2,000 INGOTS

12,000 PELLETS

300 SCRAP

6,000 PELLETS

600

300 SCRAP

400

2,000 INGOTS EXPORT

LEGEND

IRAN BOUNDRY		CAPITAL	
OTHER BOUNDRY		300,000 – 1,000,000	
ASPHALTED HIGHWAY		100,000 – 300,000	
OTHER MAIN HIGHWAYS		30,000 – 100,000	
LESSER ROADS		10,000 – 30,000	
RAILWAYS		UNDER – 10,000	
RAILWAYS UNDER CONSTR.		LAKES	
NAVIGABLE WATER		SALT FLAT	
MAJOR PORT			
MINOR PORT			

100 50 0 100 200 300 400

LEGEND:

- KNOWN ORE DEPOSIT
- SMELTER
- WATER SOURCE

NOTE: PRODUCTION FOR EXPORT
1356 = 126,000 TONS
1361 = 105,000 TONS

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IMPERIAL GOVERNMENT OF IRAN
MINISTRY OF FINANCE
PORTS & SHIPPING ORGANIZATION

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IRAN PORTS MASTER PLAN

COPPER PRODUCTION AND EXPORTS 1356-1361

SCALE GRAPHIC	DATE JAN. 1974	FIGURE 3.11

U.S.S.R.

DARYAY-E-MAZANDARAN
(CASPIAN SEA)

U. S. S. R.

GHANIABAD
ORE SMELTER
1,500 TONS/YR

DASHT-E-KAVIR
(DESERT)

KNOWN ORE DEPOSIT

34,000 TONS DOMESTIC CONSUMPTION IN 1356; 55,000 TONS IN 1361

DASHT-E-LUT
(DESERT)

1356
1361

SARCHESHMEH ORE DEPOSIT

13,300,000 TONS ORE/YR =
160,000 TONS BLISTER COPPER/YR

WATER

SHAHR-E-BABAK

1361
1356

126,000 TONS BLISTER COPPER EXPORT IN 1356 - 105,000 TONS IN 1361

KHALIJ-E-FARS (PERSIAN GULF)

DARYAY-E-OMMAN (OMAN SEA)

IRAQ
KUWAIT
SAUDI ARABIA
QATAR
UNITED ARAB EMIRATES
AFGHANISTAN
PAKISTAN
TURKEY

TABRIZ
RASHT
TAKESTAN
QAZVIN
TEHRAN
HAMADAN
KERMANSHAH
BAGHDAD
KHORRAMSHAHR
ABADAN
SHAHPOUR
AHWAZ
MASJED-E-SOLEYMAN
DEZFUL
ANDIMESHK
SHUSHTAR
MEHRAN
MALMIT
BANDAR-E-SHAPUR
BUSHEHR
SHIRAZ
KAZERUN
DARYEH
KANGAN
LANGEH
BANDAR ABBAS
JASK
YAZD
ESFAHAN
KASHAN
QOM
ARAK
SARI
BABOL
AMOL
GORGAN
GONBAD-E-KAVUS
BOJNURD
GUCHAN
MASHHAD
SABZEVAR
NISHABOUR
SHAHRUD
BIRJAND
TABAS
KERMAN
RAFSANJAN
ZAHEDAN
HERAT
MIRJAVEH
ZARZIN
SIRJAN
KHATONABAD
NAIBAND
BAM
JAHROM
SEMNAN
DAMGHAN
SHAHROUD
MAHNEH
TAYEBAT
ZANJAN
MIANEH
KHOY
MARAGHEH
MAHABAD
BOKAN
SARDASHT
SANANDAJ
BIJAR
KERMANSHAH
SONQOR
KHORRAMABAD
MALAYER
BOROUJERD
NEYZAR
ANDIMESHK
DEZFUL
SHUSHTAR
MASJED-E-SOLEYMAN
BEHBAHAN
GACHSARAN
DOGONBADAN
KAZERUN
FASSA
DARAB
LAR
BANDAR-E-LENGEH
QATAR

Utilizing the figures given in Table 3.2, mined chromite tonnage has grown more than 17% over the last 5 years. During the same period exports have increased at a rate of 2.9%. As Iran currently makes no domestic use of chromite, it would appear that stock piles of ore have increased over 55 times during the 5 year period to over 400,000 tons, or 60% of the ore exported from Iran in the last 10 years. Some stockpiling takes place near Bandar Abbas. Figure 3.12 illustrates the pattern of chromite mining, stockpiling and export between 1345 and 1350.

Distributing the export flows by Ostan of origin, it appears that Fars, Kerman and Khorassan are the major producers. Table 3.3 gives the distribution of chromite mining, stockpiling and export in 1347.

Table 3.3

CHROMITE: DISTRIBUTION OF EXPORTS BY OSTAN : 1347 [1]

	O S T A N			
	FARS	KERMAN	KHORASSAN	TOTAL
	Metric tons			
To Export	3,398	57,598	1,130	62,128
To Stockpile at Port	7,739	131,303	2,582	141,448
Total Mine Production	11,137	188,901	3,712	203,576

In that year the mines of Fars supplied 5% of stockpiles and exports, Kerman 93% and Khorassan only 2%. It is assumed that the outputs of Kerman and Fars go through Bandar Abbas for export and that of Khorassan goes through Khorramshahr. Figure 3.13 illustrates the 1351 flow of chromite production based upon the above analysis. Figures 3.14 and 3.15 illustrate projections for the future. Note that by 1361 ferrochrome production is expected to commence. The export figures are obtained from the Trade-forecast section of this report volume.

Figure 3.16 summarizes the production by ostan of the previously considered iron ore, chromite, copper and adds three additional minerals: coal, lead and zinc.

1) Bureau of Statistics, Mining Statistics of Iran 1968 (Ministry of Economy, 1349). Confirmed by industry responses to A.H.A. questionaires.

3.2.5 Water

Iran is considered to be one of the most arid regions of the world. The inhabitated central plains are surrounded by high mountains which greatly inhibit rainfall. The Alborz mountains to the north and Zagross to the west prevent moisture approaching from north west from entering the central plains. Fifty-two percent of the rainfall occurs in the two mountain ranges while the mountainous area on which most rain falls accounts for only 25% surface area of the country, the central plains, 50% of the surface area receives only 28% and the remaining 20% is scattered over east and south of the country.

The average volume of the water received from rain is up to 368 billion m^3 per year. Presently the amount of water, used directly or indirectly in farming and irrigation, pastures and forests, is about 85 billion m^3, out of which 34 billion m^3 is used for the irrigation of 3,575,000 hectares. 1)

In order to compensate for the water deficit of the country, the Fifth Plan puts forward programs for the water supply of cities and industries as illustrated in Table 3.4, for agriculture as shown in Table 3.5 and finally programs for retaining the surface water by dams as illustrated on Table 3.6.

Table 3.7 gives the comparison between the previous programs and the Fifth Plan for the extension of water resources. It is appropriate to cite here that the total investment in the extension programs for water resources will increase from 46.8 billion Rials in the Fourth Plan to 110.7 million Rials during the Fifth Plan. 2)

3.3 Agriculture

3.3.1 General

Iran's agricultural production has not kept pace with its massive increases in manufacturing and mining. After assessing Iran's present relatively low level per capita consumption, the Ministry of Agriculture has adopted future targets and undertaken ambitious projects for their accomplishment.

3.3.2 Per Capita Consumption 3)

The Ministry of Agriculture adopted France's 1967 (1346) per capita consumption of agricultural products as a target for Iran's consumption in 1373. Table 3.8 gives Iran's present and target consumption of selected agricultural products.

3.3.3 Production 3)

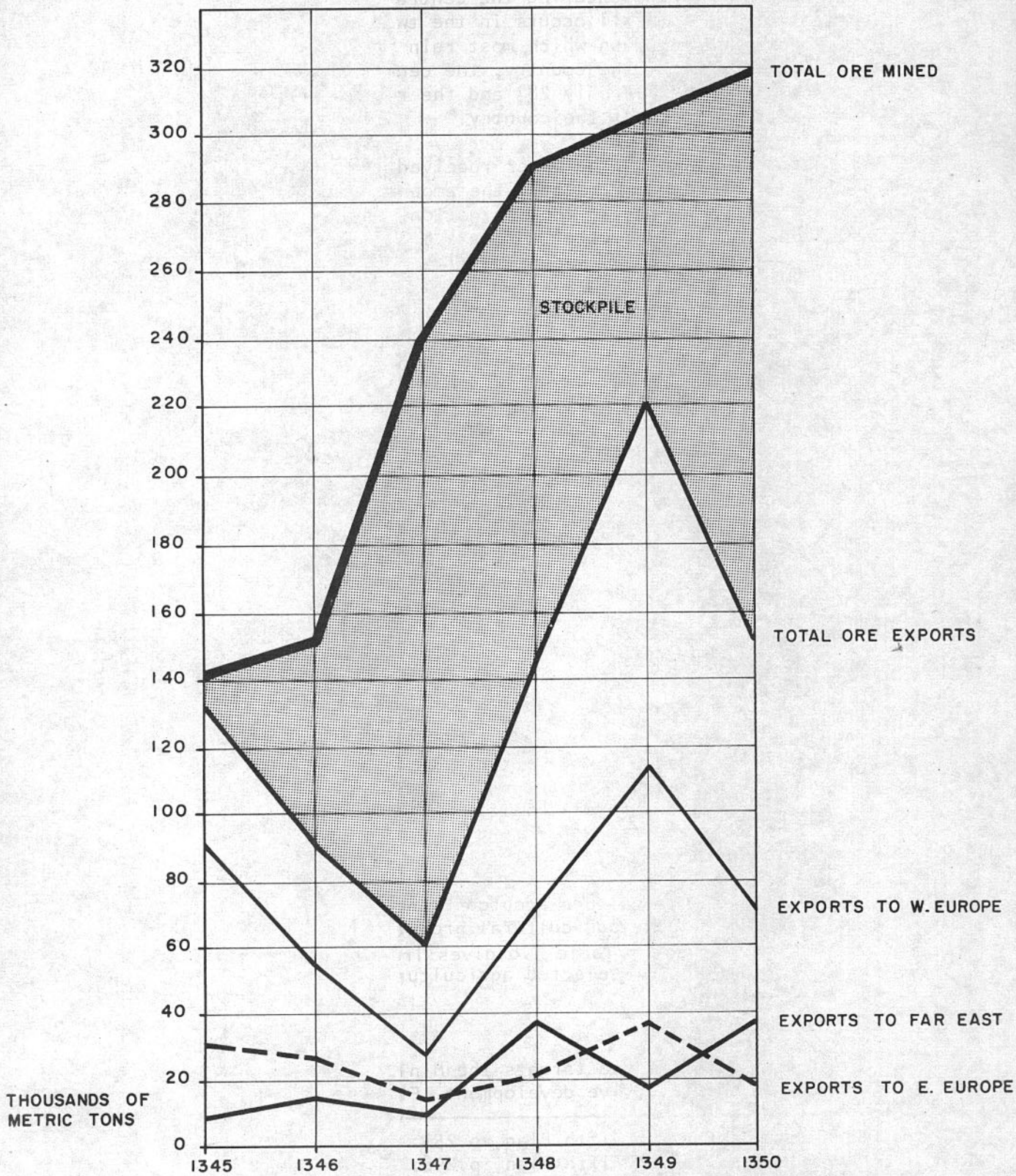
In order to attain these targets the Ministry has selected areas in Iran for the intensive development. Figure 3.17 identifies these

---

1) Plan Organization Fifth Plan, p.251.
2) Plan Organization Fifth Plan, p.298.
3) Ministry of Agriculture.

FIGURE 3.12

CHROMITE MINING, STOCKPILING AND EXPORT: 1345—1350 [1]



1) BUREAU OF STATISTICS, MINING STATISTICS FOR IRAN 1347 (MINISTRY OF ECONOMICS, 1349) & STATISTICAL CENTER OF IRAN, STATISTICAL YEARBOOK, 1970 (PLAN ORGANIZATION, 1972).

L E G E N D

IRAN BOUNDRY		CAPITAL	
OTHER BOUNDRY		300,000 – 1,000,000	
ASPHALTED HIGHWAY		100,000 – 300,000	
OTHER MAIN HIGHWAYS		30,000 – 100,000	
LESSER ROADS		10,000 – 30,000	
RAILWAYS		UNDER – 10,000	
RAILWAYS UNDER CONSTR.		LAKES	
NAVIGABLE WATER		SALT FLAT	
MAJOR PORT			
MINOR PORT			

100 30 0 100 200 300 400

100 0 200

SCALE (000) TONS

L E G E N D

CHROMITE MINE

STOCK - PILE

3,712 TONS

11,137 TONS

188,901 TONS

97,000 TONS

U.S.S.R.

U. S. S. R.

DARYAY-E-MAZANDARAN (CASPIAN SEA)

DASHT-E-KAVIR (DESERT)

DASHT-E-LUT (DESERT)

KHALIJ-E-FARS (PERSIAN GULF)

DARYAY-E-OMMAN (OMAN SEA)

TURKEY

IRAQ

KUWAIT

SAUDI ARABIA

QATAR

UNITED ARAB EMIRATES

AFGHANISTAN

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MINISTRY OF FINANCE
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CONSULTING ENGINEERS-TEHRAN

IRAN PORTS MASTER PLAN
CHROMITE
PRODUCTION AND EXPORT 1351

SCALE GRAPHIC	DATE JAN. 1974	FIGURE 3.13

LEGEND

IRAN BOUNDRY		CAPITAL	
OTHER BOUNDRY		300,000 – 1,000,000	
ASPHALTED HIGHWAY		100,000 – 300,000	
OTHER MAIN HIGHWAYS		30,000 – 100,000	
LESSER ROADS		10,000 – 30,000	
RAILWAYS		UNDER – 10,000	
RAILWAYS UNDER CONSTN.		LAKES	
NAVIGABLE WATER		SALT FLAT	
MAJOR PORT			
MINOR PORT			

100 0 200
SCALE 000 TONS

LEGEND

MINE

STOCK PILE

10,000 TONS

20,000 TONS

200,000

2,200,000 TONS

U.S.S.R.

U. S. S. R.

CASPIAN SEA

DASHT-E-KAVIR

DASHT-E-LUT

PERSIAN GULF

GULF OF OMAN

OMAN SEA

IRAQ

AFGHANISTAN

PAKISTAN

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PORTS & SHIPPING ORGANIZATION

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CONSULTING ENGINEERS-TEHRAN

IRAN PORTS MASTER PLAN

CHROMITE
PRODUCTION AND EXPORT 1356

SCALE GRAPHIC	DATE JAN. 1974	FIGURE 3.14

LEGEND

IRAN BOUNDRY	CAPITAL		
OTHER BOUNDRY	300,000 – 1,000,000		
ASPHALTED HIGHWAY	100,000 – 300,000		
OTHER MAIN HIGHWAYS	30,000 – 100,000		
LESSER ROADS	10,000 – 30,000		
RAILWAYS	UNDER – 10,000		
RAILWAYS UNDER CONSTR.	LAKES		
NAVIGABLE WATER	SALT FLAT		
MAJOR PORT			
MINOR PORT			

100 0 200
SCALE (000) TONS

L E G E N D

- MINE
- STOCK PILE
- FERROCHROME PLANT

10,000 TONS

60,000 TONS

300,000 TONS

250,000 TONS

50,000 TONS

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MINISTRY OF FINANCE
PORTS & SHIPPING ORGANIZATION

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IRAN PORTS MASTER PLAN

CHROMITE AND FERROCHROME
PRODUCTION AND EXPORT 1361

SCALE GRAPHIC	DATE JAN. 1974	FIGURE 3.15

LEGEND

IRAN BOUNDRY		CAPITAL	
OTHER BOUNDRY		300,000 – 1,000,000	
ASPHALTED HIGHWAY		100,000 – 300,000	
OTHER MAIN HIGHWAYS		30,000 – 100,000	
LESSER ROADS		10,000 – 30,000	
RAILWAYS		UNDER – 10,000	
RAILWAYS UNDER CONSTR.		LAKES	
NAVIGABLE WATER		SALT FLAT	
MAJOR PORT			
MINOR PORT			

100 50 0 100 200 300 400

TONS (000)
100 50 0 50 100

1 COAL
2 IRON
3 CHROMITE
4 COPPER
5 LEAD & ZINC

U.S.S.R.

TURKEY

IRAQ

KUWAIT

SAUDI ARABIA

AFGHANISTAN

PAKISTAN

DARYAY MAZANDARAN (CASPIAN SEA)

DASHT-E-KAVIR (DESERT)

DASHT-E-LUT (DESERT)

DARYA-E OMMAN (OMAN SEA)

E. AZARBAIJAN 4

W. AZARBAIJAN 5

KORDESTAN 6

GILAN 2

MAZANDERAN 3

KERMANSHAH 7

CENTRAL 1

ESFAHAN & YAZD 12

KHUZESTAN 8

FARS & SOUTH PORTS 9

KERMAN 10

KHORASAN 11

SISTAN & BALUCHESTAN 13

KHAWR-E-FARS (PERSIAN GULF)

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IMPERIAL GOVERNMENT OF IRAN
MINISTRY OF FINANCE
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IRAN PORTS MASTER PLAN

MINERAL PRODUCTION, 1351

SCALE GRAPHIC	DATE JAN. 1974	FIGURE 3.16

LEGEND

IRAN BOUNDRY	CAPITAL
OTHER BOUNDRY	300,000 – 1,000,000
ASPHALTED HIGHWAY	100,000 – 300,000
OTHER MAIN HIGHWAYS	30,000 – 100,000
LESSER ROADS	10,000 – 30,000
RAILWAYS	UNDER – 10,000
RAILWAYS UNDER CONSTR.	LAKES
NAVIGABLE WATER	SALT FLAT
MAJOR PORT	
MINOR PORT	

LEGEND:

1. AGRICULTURAL PRODUCTS (SOIL STUDIED)
2. AGRICULTURAL PRODUCTS (SOIL NOT STUDIED)
3. ANIMAL HUSBANDRY AREA LIMITS

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MINISTRY OF FINANCE
PORTS & SHIPPING ORGANIZATION

AHA **ADIBI-HARRIS ASSOCIATES**
CONSULTING ENGINEERS-TEHRAN

IRAN PORTS MASTER PLAN

AREAS OF INTENSIVE AGRICULTURAL DEVELOPMENT, 1356

SCALE GRAPHIC	DATE JAN. 1974	FIGURE 3.17

TABLE 3.4

THE WATER SUPPLIED BY THE PUBLIC SECTOR IN THE CITIES AND INDUSTRIES [1)]
(MILLION m^3)

REGION	TILL THE END OF 4TH PLAN	TILL THE END OF 5TH PLAN	FIFTH PLAN PERIOD
Azarbayejan	4	43	39
West	-	19	19
Khuzestan	35	120	85
Fars	45	56	11
Bandar Abbas & Kerman	4	39	35
Sistan, Baluchestan	-	4	4
Khorassan	14	29	15
North	9	26	17
Tehran	306	498	192
Esfahan	210	213	3
Total	627	1047	420
The water supplied within the city boundaries	138	192	54
Desalinization	3	16	13
Total	768	1255	487

1) Plan Organization Fifth Plan, page 279.

TABLE 3.5

THE WATER SUPPLIED BY THE PUBLIC SECTOR[1]
FOR AGRICULTURE (SURFACE + SUB SURFACE)
(MILLION m^3)

REGION[2]	TILL THE END OF 4TH PLAN	TILL THE END OF 5TH PLAN	5TH PLAN PERIOD
1. Azarbayejan	1877	2317	440
2. West	105	295	190
3. Khuzestan	4190	5044	854
4. Fars	633	673	40
5. Kerman & Bandar Abbas	60	543	483
6. Sistan and Balu chestan	793	1542	749
7. Khorassan	-	146	146
8. North	1921	2175	254
9. Tehran	478	1095	617
10. Esfahan	733	930	196
Total	10790	14760	3970

1. Plan Organization Fifth Plan, page 280
2. Area under Regional Water & Water and Power Organization

TABLE 3.6

THE ANNUAL AVERAGE AMOUNT OF WATER RETAINED BY DAMS[1]
(MILLION m^3)

REGION[2]	TILL THE END OF 4TH PLAN	TILL THE END OF 5TH PLAN	FIFTH PLAN PERIOD
1. Azarbayejan	3995	3995	-
2. West	-	50	50
3. Khuzestan	6712	15112	8400
4. Fars	635	635	-
5. Kerman & Bandar Abbas	-	530	530
6. Sistan and Baluchestan	-	649	649
7. Khorassan	-	13	13
8. North	3230	3230	-
9. Tehran	816	816	-
10. Esfahan	972	1250	278
Total	16360	26280	9920

1) Plan Organization Fifth Plan page 281

2) The area under the Regional Water and Water and Power Organizations

TABLE 3.7

THE REALIZATION OF THE PREVIOUS PROGRAMS AND THE 5TH PLAN'S FOR WATER [1]
(MILLION m^3)

	Surface Water			Sub.Surface water		Desalinization of salt water for cities & industries	Irrigation Network (1000 Hectares) Gross		City water supplying in million m^3	Power station in thousand KW.
	Agriculture water	Water for city & industry	Amount of water behind the dams	Agriculture water	Water for city & industry		Original Canals 1st & 2nd degree	Sub Canals (3rd & 4th degree)		
Till the end of 3rd plan	7390	271	10620	-	-	-	76	28	270.7	245
Till the end of 4th plan	10580	561	16360	210	204	3	263	90	356.2	792
Till the end of 5th plan	13680	726	26280	1080	513	16	1105	685[2]	839.2	1812
Fifth plan's period	3100	165	9920	870	309	13	842	595[2]	483.0	1020

1) Plan Organization Fifth plan page 872

2) In addition to 100,000 hectares improvement of the Traditional network

areas. Figure 3.18 and 3.19 indicate the production of selected agricultural commodities by ostan for 1351 and 1356. Figure 3.20 illustrates the production of fruits and vegetables by urban areas for 1350.

TABLE 3.8

PER CAPITA CONSUMPTION OF SELECTED AGRICULTURAL PRODUCTS : 1346-1373 [1]

PRODUCT	1346	1373
	Kilograms per capita	
Grains	118	111 [2]
Potatoes	3	30
Sugar	26	31
Beans	4	6
Other Vegetables	35	100
Fruits and Nuts	62	100
Meat	15	40 [3]
Milk & Dairy Products	52	100
Eggs	1	10
Fats & Oils	6	15
Total	332	583

3.4 The Fishing Industry

3.4.1 Persian Gulf Fishing

3.4.1.1 Organization

Administration, collection, storage and distribution as well as the major modern fishing effort in the Persian Gulf is controlled by a Government corporation, South Shilat Co., headquartered in Tehran, with principal facilities in Bandar Abbas.

3.4.1.2 Principal Present Fishing Ports

Bandar Abbas - South Shilat Company.

Abadan (Headquarters), private commercial fishermen - Covering the area from Arvand Rud delta to Chahbahar. In addition, fishing is conducted by local boatmen for subsistence and for sale all along the coast, and from the many islands.

1) Ministry of Agriculture response to A.H.A. questionnaire.
2) Of which 80 Kilos are wheat and 30 rice.
3) Of which 30 Kilos are beef, mutton, etc., and 10 Kilos of fish and poultry.

3.4.1.3 Future Organized Fishing Ports [1]

The fishing ports will be developed according to priorities.

- Priority 1 : Bandar Abbas, Deyyer, Jask and Chahbahar.
- Priority 2 : Queshm, Serri, Larak, Kalat, Langeh, Qosbeh, Hangam, Hormoz, Lavan, Asalu, Bushehr.

There is no significance in the sequence of listing within the priorities.

3.4.1.4 Present Equipment and Facilities

South Shilat Co. currently has a fleet as listed in Table 3.9 below.

TABLE 3.9

SOUTH SHILAT COMPANY FISHING FLEET

NUMBER OF VESSELS TYPE	ON BOARD FACILITIES
One 5700 ton mother ship (collection of fish)	60 TPD [2] Freezing tunnel 1000 ton cold storage
Seven 50 ton fishing boats	No freezing or cold storage.
Fifteen 120 ton shrimpers (Spanish design)	No freezing or cold storage.
Ten 4 ton small fishing boats	No freezing or cold storage.

In Bandar Abbas, South Shilat Company has the following facilities:

A cannery with a capacity of 3 million cases Tuna per year, and a freezing and storage 800 tons cold storage with 150 TPD freezing capacity. In Abadan/Khorramshahr 700 tons cold storage and in Isfahan 400 ton cold storage.

In addition to South Shilat Company's equipment and facilities, private interests own a collection vessel (700 DWT) with 12 TPD freezing tunnel and 140 ton cold storage (owned and operated by Matraghi).

3.4.1.5 Future Fishing Port Requirements

During the five year period of 1351 through 1356 the Government of Iran and the South Shilat Company plan the development of Fishing ports, and collection, freezing and distribution centers at the ports as mentioned in 3.4.1.3. To accommodate the needs of the fish catching and distribution industry the following services are required and planned for each port.

1) South Shilat Company.
2) TPD = Tons Per Day.

LEGEND

IRAN BOUNDRY
OTHER BOUNDRY
ASPHALTED HIGHWAY
OTHER MAIN HIGHWAYS
LESSER ROADS
RAILWAYS
RAILWAYS UNDER CONSTR.
NAVIGABLE WATER
MAJOR PORT
MINOR PORT

CAPITAL
300,000 – 1,000,000
100,000 – 300,000
30,000 – 100,000
10,000 – 30,000
UNDER – 10,000
LAKES
SALT FLAT

LEGEND

SCALE (00,000) TONS

WHEAT
BARLEY
RICE
OIL SEEDS
COTTON
SUGAR
TEA
FRUITS

U.S.S.R.
E. AZARBAIJAN 4
W. AZARBAIJAN 5
KORDESTAN 6
GILAN 2
MAZANDERAN 3
KERMANSHAH 7
CENTRAL
ESFAHAN & YAZD 12
KHUZESTAN 8
FARS & SOUTH PORTS 9
KHORASAN 11
10
SISTAN & BALUCHESTAN 13
DARYAY-E-MAZANDARAN (CASPIAN SEA)
DASHT-E-LUT
DARYAY-E-OMMAN (OMAN SEA)
IRAQ
KUWAIT
SAUDI ARABIA
AFGHANISTAN
PAKISTAN
MASHHAD
HERAT
BAGHDAD
SHAHPOUR
BANDAR ABBAS
UNITED ARAB EMIRATES

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IRAN PORTS MASTER PLAN

AGRICULTURAL PRODUCTS, 1351

SCALE GRAPHIC	DATE JAN. 1974	FIGURE 3.18

LEGEND

IRAN BOUNDRY
OTHER BOUNDRY
ASPHALTED HIGHWAY
OTHER MAIN HIGHWAYS
LESSER ROADS
RAILWAYS
RAILWAYS UNDER CONSTR.
NAVIGABLE WATER
MAJOR PORT
MINOR PORT

CAPITAL
300,000 – 1,000,000
100,000 – 300,000
30,000 – 100,000
10,000 – 30,000
UNDER – 10,000
LAKES
SALT FLAT

1 WHEAT
2 BARLEY
3 RICE
4 OIL SEEDS
5 COTTON
6 SUGAR CANE AND BEETS
7 TEA
8 FRUITS

SCALE (00,000) TONS

E. AZARBAIJAN 4
W. AZARBAIJAN 5
KORDESTAN 6
GILAN 2
MAZANDERAN 3
KERMANSHAH 7
CENTRAL 1
ESFAHAN & YAZD 12
KHUZESTAN 8
FARS & SOUTH PORTS 9
KERMAN 10
KHORASAN 11
SISTAN & BALUCHESTAN 13

U.S.S.R.
CASPIAN SEA
DARYAY-E-MAZANDARAN
DASHT-E-KAVIR
DASHT-E-LUT
PERSIAN GULF
KHALIJ-E-FARS
DARYAY-E-OMMAN (OMAN SEA)
IRAQ
SAUDI ARABIA
KUWAIT
QATAR
UNITED ARAB EMIRATES
AFGHANISTAN
PAKISTAN

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IRAN PORTS MASTER PLAN

AGRICULTURAL PRODUCTS -1356

SCALE GRAPHIC	DATE MAY 1973	FIGURE 3.19

LEGEND

IRAN BOUNDRY
OTHER BOUNDRY
ASPHALTED HIGHWAY
OTHER MAIN HIGHWAYS
LESSER ROADS
RAILWAYS
RAILWAYS UNDER CONSTR.
NAVIGABLE WATER
MAJOR PORT
MINOR PORT

CAPITAL
300,000 – 1,000,000
100,000 – 300,000
30,000 – 100,000
10,000 – 30,000
UNDER – 10,000
LAKES
SALT FLAT

SCALE (100,000) TONS
0 1 2 3 4 5 6 7 8 9 10
TONS

U.S.S.R.
TURKEY
IRAQ
SAUDI ARABIA
AFGHANISTAN
PAKISTAN
CASPIAN SEA
DARYAY-E-MAZANDARAN
DASHT-E-KAVIR
DASHT-E-LUT
KHALIJ-E-FARS (PERSIAN GULF)
DARYAY-E-OMMAN (OMAN SEA)
UNITED ARAB EMIRATES

TABRIZ
REZAIYEH
E. AZARBAIJAN
4
W. AZARBAIJAN
5
KORDESTAN
6
RASHT
GILAN
2
MAZANDERAN
3
SHAHI BABOL
TEHRAN
MASHHAD
SANANDAJ
KERMANSHAH
KERMANSHAH
7
CENTRAL
ESFAHAN
ESFAHAN & YAZD
12
AHWAZ
KHUZESTAN
8
SHIRAZ
KHORASAN
11
KERMAN
KERMAN
10
SISTAN & BALUCHESTAN
SISTAN & BALUCHESTAN
13
FARS & SOUTH PORTS
9

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IRAN PORTS MASTER PLAN

FRUITS AND VEGETABLES PRODUCTION 1351

SCALE GRAPHIC	DATE JAN. 1974	FIGURE 3.20

- Electricity

- Drinking Water

- Jetty or other berthing facility for fishing boats, suitable for truck traffic (and breakwaters, where required.)

- Fuel storage and pumping capacity.

- Cranes or derricks on jetty for handling the catch.

- Harbour maintenance and buoyage.

- Cold storage facilities (Standard 100 ton units, one or more per port).

- Ice making plants (2 per port).

- Emergency electrical generators (2 per port).

These requirements will be incorporated in the Irans Port Master Plan at the corresponding ports.

3.4.1.6 Present Annual Catch [1]

The South Shilat Company reports the following statistics on annual catch of seafood under their control and distribution programme.. Fish caught by local fisherman and consumed and distributed locally is not recorded in the annual statistics.

TABLE 3.10

ANNUAL CATCH OF SEAFOOD, SOUTH, SHILAT CO. 1351.

	CAUGHT BY SHILAT VESSELS	BY OTHERS
Shrimp	2,500 - 3,000 tons	700 - 800 tons
Fish	2,700 - 2,800 tons	4200 -4300 tons
Total	5,200 - 5,800 tons	4900 -5100 tons
Grand Total	10,100 - 10,900 tons annually.	

Of this however, only about 7000 tons reach the commercial markets. The balance is local consumption and spoilage.

3.4.1.7 Future Plans and Potential

Lack of sufficient cold storage near the fishing areas and lack of ice for preserving fish after catch by local fishermen is currently limiting the production of seafood for Iran from the Persian Gulf and Indian Ocean.

1) The South Shilat Company.

Iran is participating in the Indian Ocean Program of the Indian Ocean Fisheries Commission, a project of the Food and Agriculture Organization (FAO) of the United Nations. Under this project Iran is committed to meet a goal of annual commercial catch of fish of 10,000 tons for the current year (versus 7,000 tons present annual marketed catch), and the following year to increase to 25,000 tons. With the project follows the development of commercial fishing villages and ports participating in seafood commerce along the Southern Coast and islands.

3.4.1.8 Marketing and Distribution

The South Shilat Company collects fish from its own and other fishing craft at its Bandar Abbas canning and freezing facility. Present canning capacity is 3 million cases of tuna per year. The remaining fish is frozen immediately, stored and then distributed through 22 retail outlets located in the major cities of Iran, 9 of which are in Tehran. Delivery is by means of its own fleet of trucks. Additional outlets will be opened and the truck fleet increased. A major increase in cold storage capacity is planned for the port areas as well as the distribution areas.

The Domestic Marketing Points are : -

Tehran, Isfahan, Khorramshahr, Shiraz, Bushehr, Bandar Abbas and Kharg Island.

Shrimp is exported to the Persian Gulf Sheikdoms. The South Shilat Company also has a sales outlet in Dubai. Fish is currently not exported in significant quanitites.

3.4.2 Caspian Sea Fishing

3.4.2.1 Organization

Caspian Sea fishing administration, collection, storage and distribution as well as the major fishing effort is controlled by the comparable government corporation to South Shilat Company namely that of the Shilat Company, also headquartered in Tehran, with principal facilities in Bandar Pahlavi.

3.4.2.2 Principal Fishing Ports

The main fishing ports on the Caspian Sea are Bandar Pahlavi and Bandar Nowshahr.

Fishing regions are off shore from Pahlavi, Babolsar, Bandar Shah and Farahnaz.

3.4.2.3 Facilities and Equipment

The Shilat Company fleet is shown in Table 3.11

TABLE 3.11

THE SHILAT COMPANY FISHING FLEET [1]

NO. OF VESSELS	TYPE	ON BOARD FACILITIES
1	1100 ton Mother Ship	Freezing 12-14 TPD capacity
5	120 ton fishing ships	No freezing or cold storage
1	60 ton fishing ship	No freezing or cold storage
6	30 ton fishing ships	No freezing or cold storage
6	12 ton motor boats	(Netter) No freezing or cold storage
8	5 ton motor boats	(Netter) No freezing or cold storage

In addition there are about 700 small privately owned fishing sail boats.

Onshore storage and freezing facilities are shown in Table 3.12

TABLE 3.12

THE SHILAT COMPANY'S STORAGE AND FREEZING FACILITIES

	COLD STORAGE DESIGN CAPACITY	MAXIMUM CAPACITY
Bandar Pahlavi [2]	1200	1500
Babolsar	180	250
Bandar Shah	180	250
Farahnaz	150	180
Nowshahr	500	500

3.4.2.4 Present Annual Catch [1]

The Shilat Company reports the following annual total catch by Iranian Caspian Sea fishing fleet. This tonnage is broken down by type of fish and product as shown in Table 3.13

1) The Shilat Company.
2) Shilat Company's pier facility is located here.

TABLE 3.13

AMOUNT OF ANNUAL CATCH - CASPIAN SEA FISHERIES - 1351

METHOD	QUANTITIES
By coastal nets	4,000 tons
By small sail boats	2,500 tons
By fishing ships	4,500 tons
Total :	11,000 tons

The type of Caspian fish is shown in Table 3.14

TABLE 3.14

TYPE OF CASPIAN FISH [1]	QUANTITIES
Sturgeon	2,300 tons
(Caviar)	200 tons
Kilka (Sardine like fish)	3,000 tons
Other (Estimated)	5,500 tons
Total :	11,000 tons

3.4.2.5 Future Plans and Potential

Planning by the Shilat Company calls for an increase of 20%, to 13,000 tons between 1352 and 1356. No additional capacity is reported to be needed, but lack of sheltered areas for small craft hinders operations. Illegal catching of sturgeon remains a threat to the fish population.

3.4.2.6. Marketing and Distribution

Deficiencies in marketing service are reported to have hampered increased production of Caspian sea food. With improvements in marketing, the industry sees no difficulty in disposing of the planned 20% increase in production (catch).

Domestic distribution of the fisheries products are as follows: (by order of magnitude).

- Mazandaran and Gilan Ostans.
- Central Ostan (Tehran).
- The rest of the country (insignificant).

Exports are shipped to the below areas:

1) A.H.A. Site visit and field notes 1351 Bandar Pahlavi.

Fish - USSR and USA.

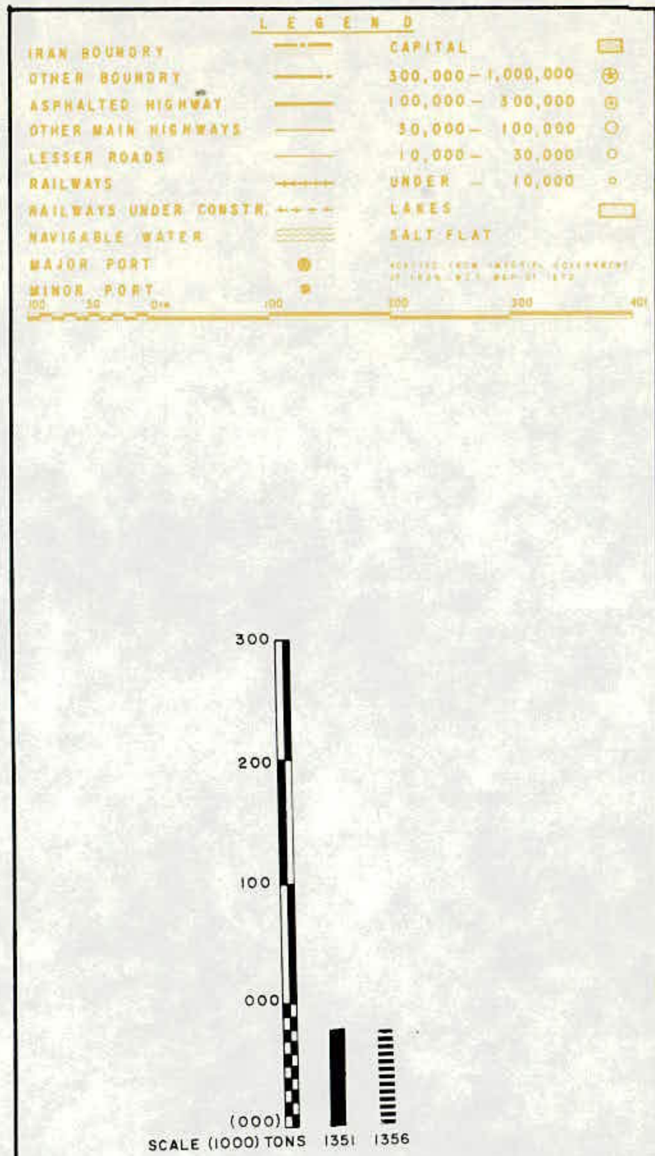
Caviar - USA, EUROPE and USSR.

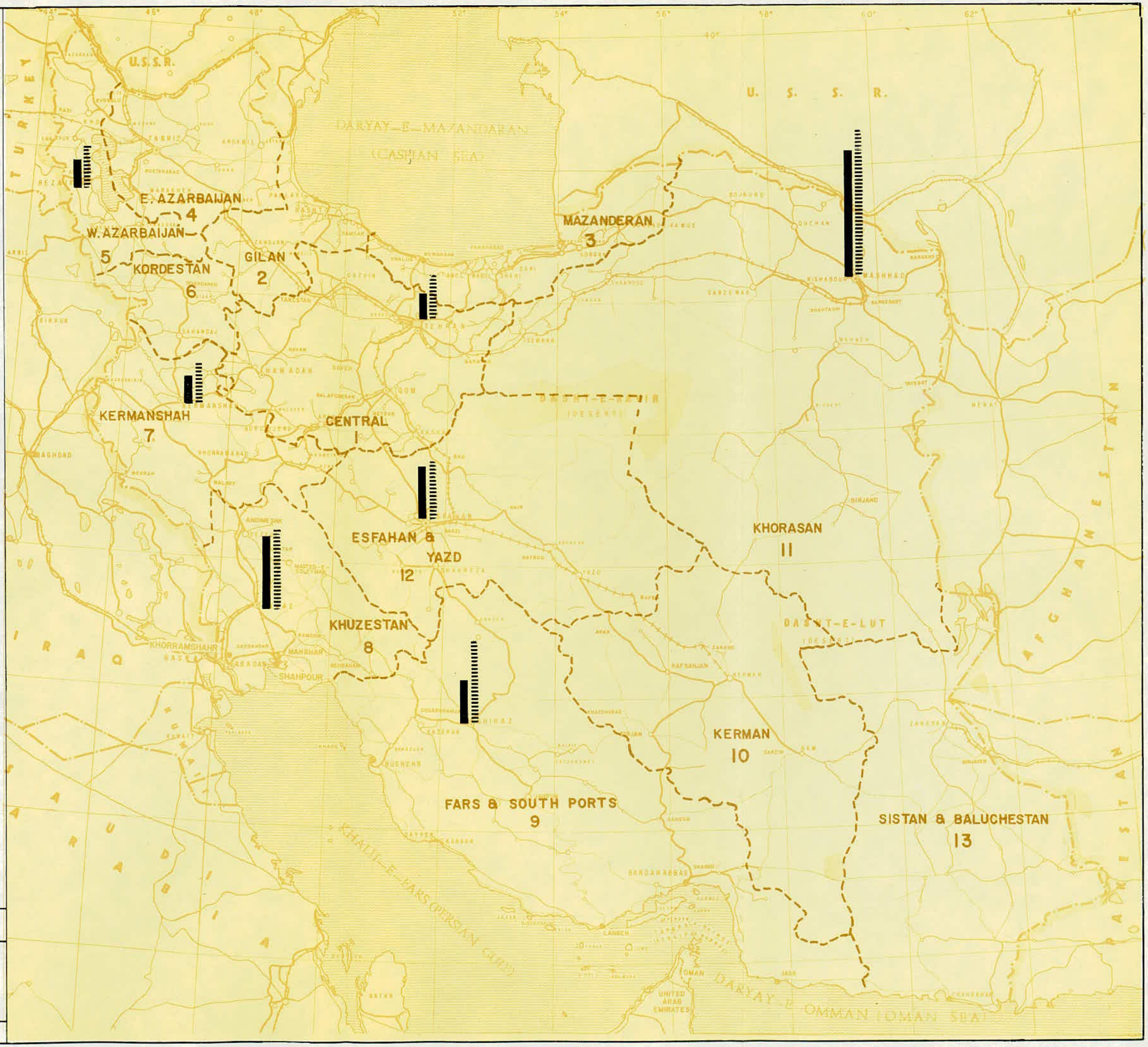
Fish is exported in frozen form only and caviar in cans.

3.5 INDUSTRY

Later in this report, the domestic origins and destinations of Iran's foreign trade flows are developed. Without going into details of the development and the significance of these origin destination points at this time, it is sufficient to note that they represent urban gravity nodes of the Iranian economy, including industries. Figures 3.21, 3.22 and 3.23 illustrate the distribution of production by these modes or urban areas for three selected commodities, sugar, paper and cement.

Although the evaluation of production for only these three commodities is graphically presented in this manner, the presentation serve as examples. The basic data have been collected and analysed for all commodities under investigation in this study. The data have been discussed in detail under each individual commodity in the Trade-forecast section of this report volume.





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IRAN PORTS MASTER PLAN

SUGAR PRODUCTION ,1351,1356

SCALE GRAPHIC	DATE JAN. 1974	FIGURE 3.21

LEGEND

IRAN BOUNDRY		CAPITAL	
OTHER BOUNDRY		300,000 – 1,000,000	
ASPHALTED HIGHWAY		100,000 – 300,000	
OTHER MAIN HIGHWAYS		30,000 – 100,000	
LESSER ROADS		10,000 – 30,000	
RAILWAYS		UNDER – 10,000	
RAILWAYS UNDER CONSTR.		LAKES	
NAVIGABLE WATER		SALT FLAT	
MAJOR PORT			
MINOR PORT			

100 50 0 100 200 300 400

TONS 400 300 200 100

51 56 61

U.S.S.R.

U. S. S. R.

CASPIAN SEA

TURKEY

IRAQ

KUWAIT

SAUDI ARABIA

AFGHANISTAN

E. AZARBAIJAN 4

W. AZARBAIJAN 5

KORDESTAN 6

GILAN 2

51 56 61 GILAN

MAZANDERAN 3

61 SARI

51 56 61 TEHRAN

KERMANSHAH 7

CENTRAL

DASHT-E-KAVIR (DESERT)

ESFAHAN & YAZD 12

KHUZESTAN 8

51 56 61 HAFT TAPPEH

KHORASAN 11

DASHT-E-LUT (DESERT)

KERMAN 10

FARS & SOUTH PORTS 9

SISTAN & BALUCHESTAN 13

KHALIJ-E-FARS (PERSIAN GULF)

DARYAY E OMMAN (OMAN SEA)

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IRAN PORTS MASTER PLAN

PAPER AND PAPER PRODUCTS
PRODUCTION, 1351, 1356, 1361.

SCALE GRAPHIC	DATE JAN. 1974	FIGURE 3.22

LEGEND

IRAN BOUNDRY		CAPITAL	
OTHER BOUNDRY		300,000 – 1,000,000	⊛
ASPHALTED HIGHWAY		100,000 – 300,000	◎
OTHER MAIN HIGHWAYS		30,000 – 100,000	○
LESSER ROADS		10,000 – 30,000	○
RAILWAYS		UNDER – 10,000	◦
RAILWAYS UNDER CONSTR.		LAKES	
NAVIGABLE WATER		SALT FLAT	
MAJOR PORT	●		
MINOR PORT	•		

100 50 0 100 200 300 401

0 3 6 9 12 15 18 21

SCALE (00,000 TONS)

U.S.S.R.

TURKEY

IRAQ

SAUDI ARABIA

KUWAIT

U. S. S. R.

DARYAY-E-MAZANDARAN (CASPIAN SEA)

DASHT-E-KAVIR (DESERT)

DASHT-E-LUT (DESERT)

KHAMI-E-FARS (PERSIAN GULF)

DARYAY-E-OMMAN (OMAN SEA)

AFGHANISTAN

PAKISTAN

TABRIZ

E. AZARBAIJAN
4

W. AZARBAIJAN
5

KORDESTAN
6

GILAN
2

MAZANDERAN
3

TEHRAN

MASHHAD

KERMANSHAH
7

BURUDJERD

CENTRAL
1

ESFAHAN

ESFAHAN & YAZD
12

KHUZESTAN
8

KHORASAN
11

KERMAN

KERMAN
10

SHIRAZ

FARS & SOUTH PORTS
9

SISTAN & BALUCHESTAN
13

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IRAN PORTS MASTER PLAN

CEMENT PRODUCTION 1351

SCALE GRAPHIC	DATE JAN. 1974	FIGURE 3.23

SECTION 4

ECONOMIC GROWTH, POLICY AND FOREIGN TRADE

4.1 GENERAL

4.1.1 Economic Forces

The volume and balance of foreign trade, as well as policy concerning its evolution, normally develop as resultants of two non-complementary economic forces. In one direction the expansion of the national economy, and its consequent export potential, move according to the tenets of modern growth theory. In the other direction, the demand for the nation's exports at internationally competitive prices moves according to the classical tenets of "comparative advantage". Knowledge of the historical interaction of these two forces over a period of time provides a firm basis for projecting future trade flow and policy. Such projections, form the foundation for any planning effort, the task of which is the improvement of the foreign trade delivery system.

4.1.2 Dualism

Analysts tend to take a dualistic attitude towards an economy like Iran's. First there is the "oil economy" which is regarded as an entity in itself. Second there is the normal internal economy - the "non-oil" sector. As artificial as this dualistic concept may be, its basis can be understood. The special nature of the oil activity has been reinforced by its technical production and distribution characteristics to form for all practical purposes a separate industrial complex with little direct impact on other sectors. Of specific pertenence to this study, this has produced for Iran what may be one of the world's most modern and effective port systems for the exports of crude and refined petroleum energy products. These facilities are under the jurisdiction of N.I.O.C. and not P.S.O. The practice of creating special foreign trade delivery facilities for oil has carried over to the off-shoots of oil production such as petrochemicals. Unlike oil, there is little technical rationale behind the development of such special port facilities for petrochemicals. In this case the potential positive impact on other foreign trade flows is physically and economically restrictive because it precludes the advantage which might be gained from combined operations in a larger port complex.

This study distinguishes between "oil trade" and "non-oil trade". "Oil trade" consists of:

- Crude oil
- Refined petroleum energy products
- Natural gas exported in pipelines
- Natural gas exported as LNG.
- NGL which is exported injected into crude.

"Non-oil trade" is all other trade not specifically shown in the "oil trade" above. "Non-oil" trade also includes commodities such as LPG, petrochemical products and refinery products other than energy products.

The "non-oil trade" is subdivided into "enclave" trade and "PSO and overland trade". Under "enclave" trade, mostly petrochemicals, is understood trade moving through private or special facilities outside PSO jurisdiction. This is the trade referred to earlier in this section as having a restrictive effect because it prevents the advantage of economics of scale in some ports.

"PSO and Overland Trade" consists of the balance of the "non-oil trade" after "enclave trade" has been substracted.

4.1.3 The Deferment Effect of Oil Revenues

In Iran the historical interaction between national development and International market forces are not apparent. Owing to the indirect economic support from revenues from oil (and here the concept of dualism fails) independent evaluation is postponed in time. Oil revenue support not only reduces the friction between national development and the international market, but also imparts "extra" energy to the national economy. In this situation the pressures of international competition are deflected from their usual harsh role of inducing productivity increases and specialization in the national economy and in particular, into the country's foreign trade delivery system.

For developing countries, the productivity increases required usually far surpass the country's ability to respond. Consequently instead of increasing prosperity the country is sent into a spiral of deflation. The oil revenues saves Iran from this complication.

4.1.4 The Context of the Ports Master Plan.

It is to the credit of the planners of Iran's development that, in spite of the luxury of their present condition, they have elected to prepare now for a time when oil revenues will stabilize or even reduce and incremental growth depends on balanced industrial growth. The execution of the Master Plan of the Ports of Iran at this time must be understood as part of this preparation.

4.2 THE GROWTH RATE

4.2.1 The Rate and Level of Iran's Economic Growth

The expansion of Iran's economy has been rapid, gaining momentum from 9.8% annual rate of growth during the Third Plan (1341-46), to 11.9% during the Fourth Plan (1346-51) and a projected 1) target average annual rate of 15.3% during the period of the Fifth Plan (1351-56). This is summarized in table 4.1. The Plan Organization of Iran, whose responsibility it is to plan and direct Iran's non-oil development, has traditionally been conservative in its projections. Table 4.2, shows the target rates of growth in GNP as published at the beginning of the 3rd and 4th Plans and actual rates for the corresponding periods.

1) The Fifth Plan (Plan Organization, Tehran, 1973) p.p. 20, 73.

TABLE 4.1

GROSS NATIONAL PRODUCT 1341 - 1356 (1962 to 1977) [1]

BILLIONS OF RIALS - CURRENT (1351) PRICES

YEAR	1341	1342	1343	1344	1345	1346	1347	1348	1349	1350	1351	1356
										(5th Plan Target)		
GNP	337.9	358.4	403.9	455.1	502.6	556.2	628.8	704.8	801.5	965.8	1149	2345

GROWTH RATE (per annum)

1341 - 1346 (Third Plan) 10.5%

1346 - 1351 (Fourth Plan) 15.4%

1351 - 1356 (Fifth Plan) 15.3%

1) The Fifth Plan (Plan Organization, Tehran, 1973) p.p.63, 73.

TABLE 4.2

TARGET AND ACTUAL GROWTH RATES OF GNP FOR THE 3RD, 4TH AND 5TH PLANS[1]

BASED ON GNP IN CONSTANT 1338 PRICES

	3RD PLAN	4TH PLAN	5TH PLAN
(Annual rate of growth, %)	1341-1346	1346-1351	1351-1356
TARGET	6	10	15.3
ACTUAL	9.8	11.9	-

4.2.2 The Fourth Plan

The balance sheet of accomplishments during the Fourth Plan is impressive. The increase in GNP raised per capita income to 36,800 Rials. Some of the increase in GNP was inflation. Inflation rate in consumer prices in 1350 was 5.5%. By 1351 the rate had risen to 6.3%. The country's balance of payments went from a deficit of 11.5 billion Rials in 1346 to a surplus of 16.0 billion Rials in 1351[2]. Due mainly to an increase in oil earnings, foreign exchange earnings rose from 80.7 billion Rials in 1346 to 236.7 billion Rials in 1351[3]. While many sectors of the economy achieved results higher than 4th Plan targets, in a number of sectors, chief among them agriculture, targets failed to be realized. The 4th Plan target for agriculture was an annual increase of 5%, but in fact the increase was about 4%. This had an effect on expanding food imports and raising food prices. in 1351 alone, food prices rose 6.4%.

Next to agriculture, construction was the most important sector that failed to achieve its target. Mainly because of over concentration of activity in Tehran and skyrocketing land prices building activity fell about 2% below the projected target.[4]

A third area where targets were not achieved was in transportation i.e. roads, railroads, and port development. Many of the projects in these areas were simply postponed for accomplishment during the 5th Plan. In the case of foreign trade delivery, this failure to complete several road and railroad links and planned port extensions resulted in exaggerated increase in freight and

1) Realization of the Third Plan, 1341-1346 (Plan Organization, 1968) p. 12; Plan Organization The Fifth Plan (Tehran 1973) p.17.
2) Plan Organization,The Fifth Plan (Tehran 1973) p. 33.
3) Plan Organization, The Fifth Plan (Tehran 1973) p.23.
4) Report, (Echo of Iran, Tehran, No. 210, FEb. 1973) p.5

handling costs. In 1351 the increase in these costs was one of the most commonly cited "handicaps" to expanding exports. [1]

4.2.3 The Effect of Population Growth

While the success of the 4th Plan increased Iran's GNP at a rapid rate, the impact of population growth took its toll. During the period of the 3rd and 4th Plan, Iran experienced a growth in population approaching 3.2% per annum. [2] During the 5th Plan, this rate is projected to drop to 2.9%.[3] Accounting for the effect of population growth on GNP, Table 4.3, shows per capita GNP and its growth rate for 1341, 1346, 1351 and 1356, i.e. the first years, of the 3rd, 4th, 5th and 6th Plans.

TABLE 4.3

PER CAPITA GNP AND ITS GROWTH RATE, 1341, 1346, 1351, 1356[4]
IN RIALS, CONSTANT (1351) PRICES AND PERCENT

	1341	1346	1351	1356
Per Capita GNP	15,085	20,754	36,800	65,139
Annual Growth %	N.A.	6.5	12.1	12.1

4.2.4 Iran, A Developing Country

Under any standards, per capita GNP growth rates of 7, 12 and 12% (3rd, 4th and 5th Plan) are admirably high. The level of GNP per capita must, however, still rank Iran as "developing". At current (1351) prices, the per capita GNP was 27449, 32194 & 36800 rials for 1349, 1350 and 1351 respectively. Table 4.4 compares the per capita GNP of Iran with that of its neighbours in the last year for which comparative statistics are available.

1) "Businessmen's comments", in Echo of Iran (Tehran, Vol.XIX, No.58, 1973) p.2.

2) Statistical Center of Iran, Population Projection of Iran 1966 -1991, (Plan Organization Tehran, May 1972) p.10.

3) Plan Organization The Fifth Plan (Tehran 1973) p.128.

4) Plan Organization The Fifth Plan (Tehran 1973), p.p. 73, 863.

TABLE 4.4

IRAN AND NEIGHBOURING COUNTRIES: 1969 (1347)
GNP PER CAPITA [1]

Current Prices U.S. Dollars

Greece	858
Turkey	380
Iran	295
Iraq	279
Jordan	263
Pakistan	140
India	84

The best definition of Iran's level and rate of economic growth is,"expanding rapidly from a low level". Rapid development from low initial levels is always suspicious. The growth, for instance, could be the result of enclave foreign interests in a single sector with little or no economic impact on other sectors. To examine this possibility it is necessary to take a look at the economy's sectorial structure.

4.3 STRUCTURE OF THE ECONOMY

4.3.1 Oil the Prime Factor

From the outset it is well known that Iran's development is spearheaded by the massive export of a primary commodity namely, oil. Table 4.5 gives oil and oil products production, consumption, and exports for 1351, 1356, 1361 and 1366.

TABLE 4.5

OIL AND OIL PRODUCTS PRODUCTION, CONSUMPTION AND EXPORTS - 1351, 1356, 1361 and 1366.

	1351	1356	1361	1366
	Millions of tons			
Production [2]	240	380	380	230
Domestic consumption [2]	11	21	33	50
Export production of oil products [3]	18	43	93	93
Crude oil exports [3]	211	316	254	87

1) Statistical Abstract of The United States, 1971, U.S.Dept. of Commerce, Washington, D.C. 1972) p.805.
2) N.I.O.C.
3) Assuming that one 25 million ton per year export refinery is completed during the 5th Plan and two during the 6th Plan.

It is known that this export flow of oil requires an infrastructure uniquely irrelevant to the direct promotion of other exports. As Iran now has taken over from the Consortium, investment in the capital intensive oil industry will weigh relatively heavily on the shares available to other sectors.

4.3.2 Sector Shares

Table 4.6 shows sector shares in Gross Domestic Product accounted for by oil, agriculture, industry and mining, and services.

TABLE 4.6

PERCENTAGE SHARES OF THE COMPONENTS OF GROSS DOMESTIC PRODUCT : 1346, 1351 AND 1356 [1]
(Based on 1351 Constant Prices)

	1346	1351	1356
	Percentage shares		
Oil	24.0	25.4	26.3
Agriculture	21.0	16.6	12.5
Industry and Mining	20.0	20.0	23.2
Services	35.0	38.0	38.0

Note that next to services, oil is the largest single component of GDP. According to the 5th Plan, as shown on Table 4.6 oil is forecast to strengthen its relative position by 1356. Although industry and mining's share has remained steady for the last 10 years, 5th Plan forecasts its increase to 23.2%, at which time it would fall only 3 percentage points behind oil. Industry's gain seems to be at the cost of agriculture, a pattern rather typical for the past performance of the economy. The picture thus revealed underscores oil's domination of the economy today, while at the same time forecasting an improvement for industry and mining in the future.

4.3.3 Investment Pattern

The strengthening of industry and mining is important as it signifies an increase in the non-oil export potential. Although the picture was far from clear in this regard as concerns the structure of the economy, perhaps the pattern of investments will shed more light. Table 4.7 gives percentage shares for investments in oil, industry and mining, agriculture, water and electricity and other in the 3rd, 4th and 5th Plan periods.

The rather large increase in oil investments called for in the 5th Plan, after experiencing a drop in the 4th Plan, reflects the transfer of the future investment burden from the Consortium to the National Iranian Oil Company. While oil investments are

1) Plan Organization, The Fifth Plan, (Tehran 1973) p.88.

increasing nearly 5 times between the 4th and 5th Plans, investments in industry and mining are increasing 2½ times, down from an increase of nearly 3 times between the earlier planning periods. While the share of industry and mining decreases relatively, its absolute size is second only to the category "other". "Other" consists of certain infrastructure items such as roads, ports, railroads, etc. together with housing, education, health and welfare programs. Adding these items to the sector titled "water and electricity" gives an approximation of the nation's investment in infrastructure.

TABLE 4.7

SHARE OF OIL INVESTMENTS IN GROSS DOMESTIC INVESTMENTS
(Constant 1351 Prices)

	3rd Plan 1341-1346 1)		4th Plan 1346-1351 2)		5th Plan 1351-1356 3)	
	Billions of Rials	%	Billions of Rials	%	Billions of Rials	%
Investment in Oil	55	13	95	13	462	19
Industry & Mining	70	16	207	25	552	22
Agriculture	N.A.	-	66	8	152	6
Water & Electricity	N.A.	-	100	13	232	9
Other	N.A.	-	343	42	1062	44
Total	433	100	810	100	2460	100

4.3.4 Non-oil future

From the pattern described above, the emergence of the non-oil exporting sectors is clear. The question remains, however, how durable is the pattern? To what extent is this major expansion of industry and mining plus the infrastructure to serve it, self propelling, i.e. evidence of the "take-off" of Iran's non-oil economy? To determine the extent to which these sectors are self-propelling, the source and allocation of revenues must be examined.

4.4 REVENUE SOURCE AND ALLOCATION

4.4.1 Revenue Sources

While Government supplies most investment for development, most revenue used by government for investment is not recycled from

1) Plan Organization The Third Plan, (Tehran 1962) p.43.
2) Plan Organization The Fourth Plan, (Tehran 1967) p.82.
3) Plan Organization The Fifth Plan, (Tehran 1973) p.16.

industrial earnings but instead, comes from oil. Fig. 4.1 shows the importance of revenue sources to the Government of Iran. By the end of the 4th Plan, 1351, oil supplied 55% of Government's revenue as compared to 45% from all other sources. Five years from now, at the end of the 5th Plan, it is forecast that oil's share will have grown to 66% of the total. (1351 constant prices).

4.4.2 Investment Sources

Fig.4.2, illustrates the investment sources in gross domestic investment. In 1341 the private sector provided 64% of total investments. By the end of the 3rd Plan, Government had nearly closed the gap with the private sector with percentage shares of 49% and 51% respectively. By the end of the 4th Plan in 1351 the roles of Government and the private sector had been reversed with Government then supplying 60% and private sector 40%. By the end of the 5th Plan in 1356 it is forecast that Government will have strengthened its position to 65% of the total. Note that during the period from 1341 to 1356 in which Government's share increased from 36% to 65%, gross investments increased from 47.4 to 645 billion rials a 14-fold increase.

4.4.3 Allocation of Government's Investment

With oil as its major source of revenue, how does the Iranian Goverment invest its revenue? Fig.4.3 indicates that the lion's share goes to investment in sectors other than oil, mostly into industry and mining and infrastructure. Most of the Government's investments in new industry and mining are allocated by the Plan Organization, and in the past, oil revenues supplied 80% of the Plan Organization's budget.

4.4.4 Iran's Growth Theory

Returning to the statement made earlier in this section, that the historical interaction of the forces of economic development and the international market is not apparent, it is now clear why. Growth of the non-oil economy is progressing rapidly from a low initial point, but it cannot necessarily be said that it is doing so under its own impetus. In the final analysis this conclusion follows on the steps of Iran's wide scale utilization of modern growth theory.

The version of the growth theory practiced by Iran's planners is concerned with interdependence over time among producers, consumers, and investors in interlinked sectors of the economy. With the exception of oil production, it would appear that comparative advantage is considered only in its dynamic aspects, such as the stimulus that an increase in exports provides to the development of related sectors or the function of imports as a carrier of new products and advanced technology. Springing from this view, suggested investment criteria are quite contradictory to those that would be derived from considerations of present comparative advantage.

The following four basic assumptions would explain the use of these investment criteria:

- Factor prices do not necessary reflect opportunity costs with any accuracy.

- The quantity and quality of factors of production may change substantially over time, in part as a result of the production process itself.

- Economies of scale relative to size of existing markets are important in a number of sectors of production.

- Commodities in both producer and consumer demand are complimentary.

Implications which follow on the above assumptions lead to a concept of balanced growth in the non-oil economy, i.e., the simultaneous expansion of a number of sectors of production.

Assuming an elastic supply of capital (from oil and foreign credits), the concept is that investment will be more profitable in related sectors, such as, petrochemicals, manufactured fertilizers, and agriculture, because of horizontal and vertical interdependence, than in the same sectors considered separately. Thus market forces will not necessarily lead to optimal investment decisions because present prices do not reflect the cost and demand conditions that will exist in the future. The effect of investment in one sector on the profitability of investment in another sector, by way of increased demand and /or reduced costs, is called "dynamic external economy". [1]

By imputing these economies in advance to the originating sectors, the concept of comparative advantage is seriously affected. It is thus rational for a flow of foreign trade to be generated by future cost and demand conditions, if the basic assumption holds true, i.e., the supply of capital remains elastic over time. The liklihood that this assumption will hold is examined later in this section.

4.5 FOREIGN TRADE POLICY

4.5.1 Policy and Development Success

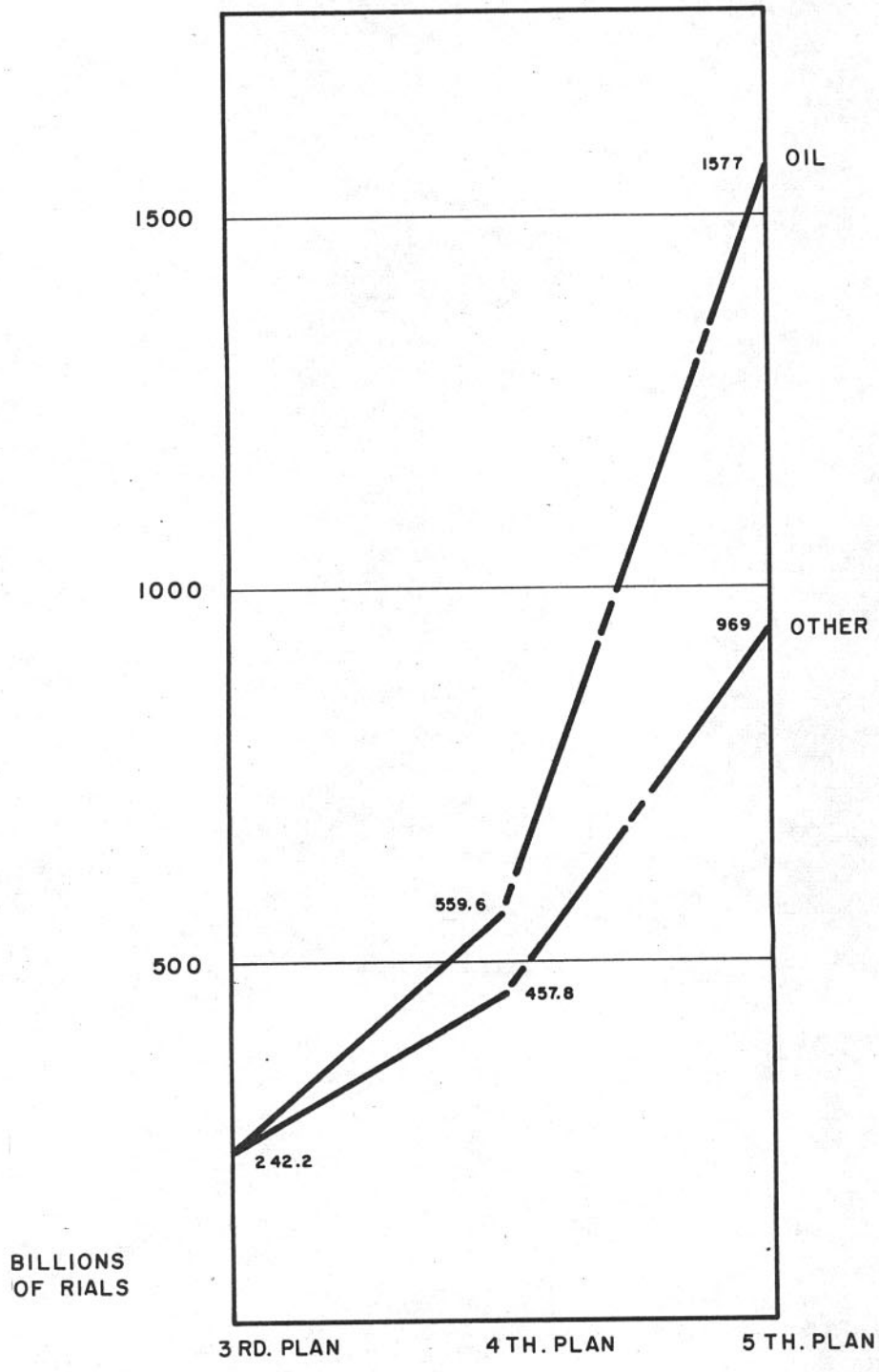
Iran's foreign trade policy has and will continue to be closely linked the country's success in implementing its development plans. Throughout the years of the 4th Plan, 1346-1351, a policy aimed at protecting newly established industries and stimulating the development of others was in force. Generally speaking, the policy was designed to protect industry and mining in the Government sector and to stimulate private investment in construction and agriculture.

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1) T. Scitovsky, "Two Concepts of External Economies", Journal of Political Economics. (April 1954) p.62.

FIGURE 4.1

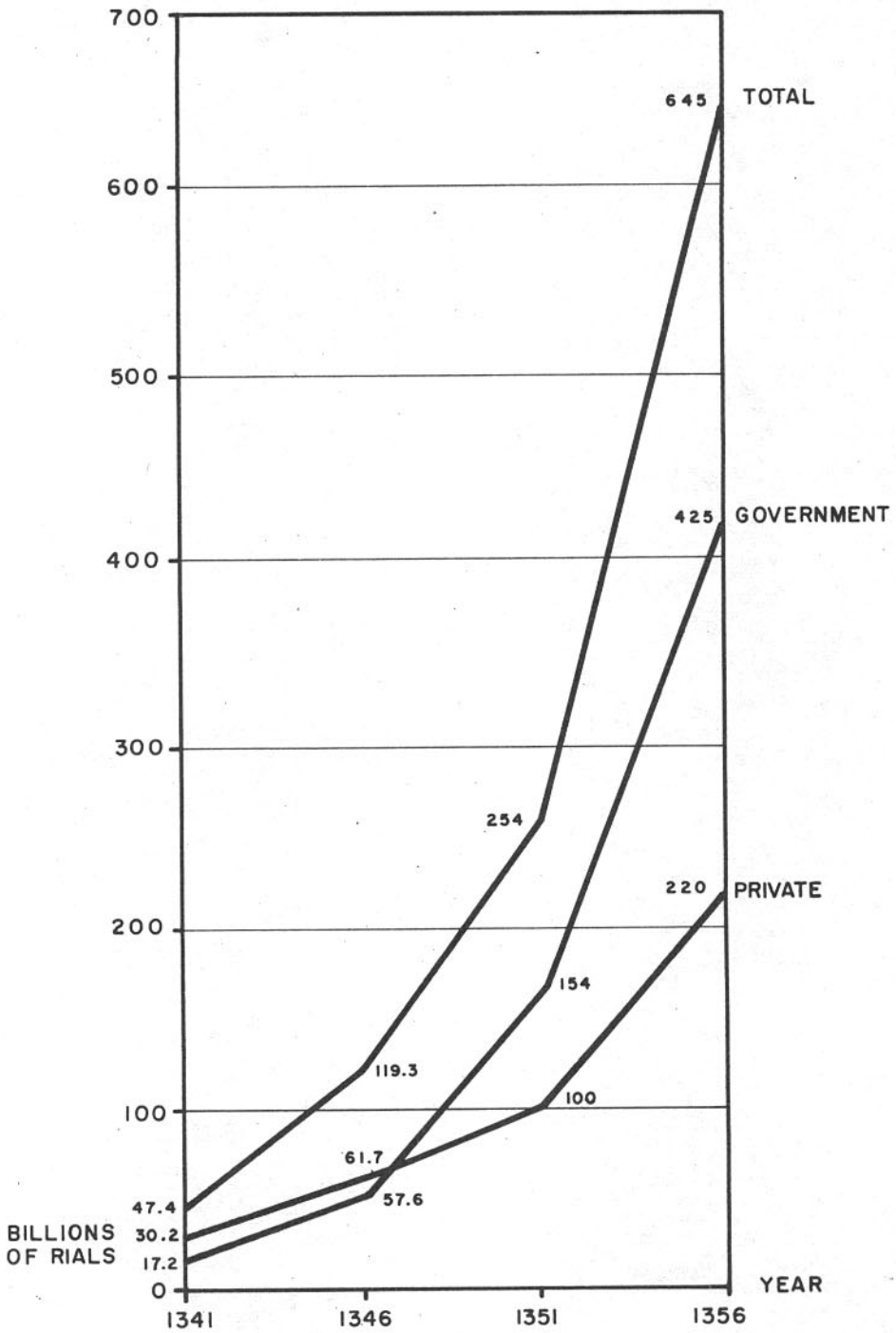
SOURCES OF GOVERMENT REVENUES [1]



1) PLAN ORGANISATION, THE THIRD PLAN (TEHRAN, 1962), P.101
PLAN ORGANISATION, THE FIFTH PLAN (TEHRAN, 973), P.P. 92,96

FIGURE 4.2

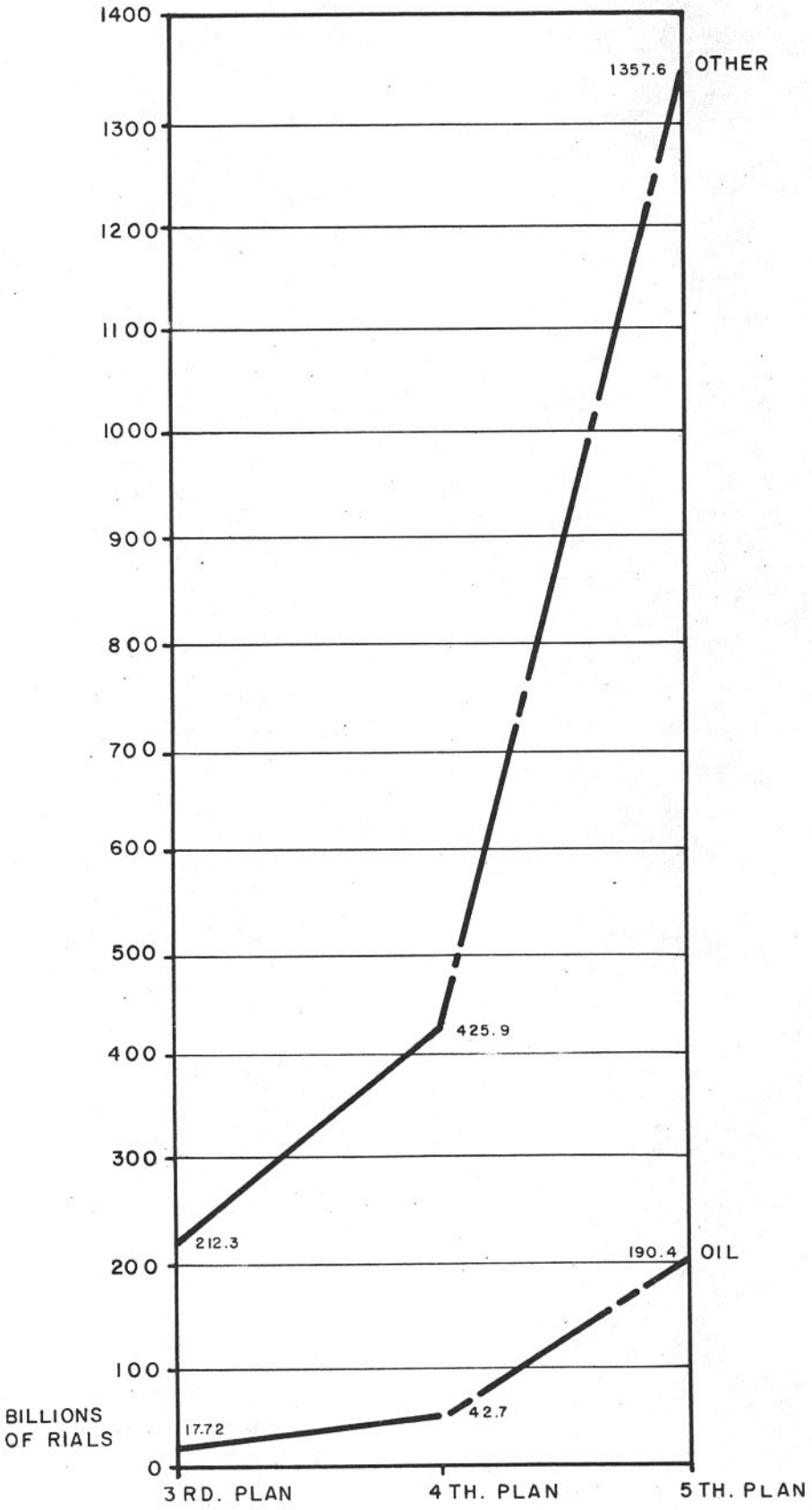
INVESTMENT SOURCES IN GROSS DOMESTIC INVESTMENT [1]



1) PLAN ORGANISATION, THE THIRD PLAN (TEHRAN, 1962), P. 30
PLAN ORGANISATION, THE FOURTH PLAN (TEHRAN, 1967), P. 47
PLAN ORGANISATION, THE FIFTH PLAN (TEHRAN, 1973), P. 20

FIGURE 4.3

ALLOCATION OF GOVERNMENT INVESTMENT [1]



1) PLAN ORGANISATION, THE THIRD PLAN (TEHRAN, 1962), P. 31
PLAN ORGANISATION, THE FOURTH PLAN (TEHRAN, 1967), P. 48
PLAN ORGANISATION, THE FIFTH PLAN (TEHRAN, 1973), P. 91

4.5.2 Import - Export Regulations

The 1352 import-export regulations reveal a more selective policy as regards protection than was in force in the past. Protection of local industry will be subject to the following considerations:

- Protection should be extended to export oriented industries using Iranian raw materials.

- Greater protection should be given to industries producing essential goods needed by the public.

- Review is to be made of the exemptions given for imported machinery and plants. The extent of exemption should be directly linked to the equipments export producing potential or the need of the general public for their products. [1]

Owing to a lack of success in stimulating domestic agriculture, consumer goods, and construction materials production, protection in these areas will be selectively decreased in the coming years. On the other hand, the import duty on a number of industrial raw materials and components has been lowered to enable local manufacturers to offer their products to consumers at lower prices and thus expand their domestic market base. In this way it is hoped that manufacturers will be able to increase production and embark on exports. [2]

The across-the-board requirement for "import registration" has also been selectively relaxed. Import registration is a restrictive measure requiring importers to deposit in advance all or part of the import value and is designed to increase the cost of import financing. It is thereby intended to slowdown imports and protect domestic manufacturers.

Iran also has its own "buy Iranian" policy. Government institutions and state owned corporations are required to make all their purchases of heavy machinery and capital goods from local industries if available. Article 22 of the 1352 Export-Import Regulations states that, where possible Government department and institutions should buy Iranian made goods. [3]

Although changes have been made in the foreign trade policy of Iran between the 4th and the beginning of the 5th Plan, they reflect more the short falls of the 4th Plan than the growing strength of the non-oil economy.

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1) "Future Import-Export Regulations", in Echo of Iran (Tehran Vol, XIX No.58, 1973) p.3.
2) "The year of the Banana", in Iran Trade and Industry, (Tehran, April 1973), p.p. 7.8
3) "The 1352 Export-Import Regulations", in Echo of Iran (Tehran, Vol. XIX. No.64 through 75) p.4. No.68,

4.6 FOREIGN TRADE FLOWS - IMPORT - EXPORT TRENDS

Table 4.8 shows the foreign trade flows of Iran for 1341, 1346 and 1351, and projected trade flows for 1356, 1361 and 1366. The projected figures for the non-oil trade are taken from the Trade Forecast Section later in this Report Volume. They are shown here and utilized to make figure 27 to illustrate the subject and policies presently under discussion. The figures presented on this table omit two important goods flows. Firstly, Iran's growing export of natural gas is not reported. Secondly, and perhaps more significantly, the large volume of imports of military equipment, conceivably amounting to as much as 5% of the value of total imports in 1356, are not shown. Given these caveats, total foreign trade is projected to increase its rate of growth in the 5th Plan (1356) period over the 4th Plan (1351) period from 15% per year to 18.5%.The yearly rates of growth are projected to drop-off in 1361, owing to the stabilization of oil exports, to 5.3% per annum.

But by far the most interesting trend is the growing share of non-oil foreign trade, and within this growth the increasing share of exports. Table 4.9 shows these trends for 1346, 1351, 1356, 1361 and 1366.

TABLE 4.9

FOREIGN TRADE TRENDS [1]

	1346	1351	1356	1361	1366
	percentage, by value				
Share of Non-oil Foreign Trade in Total Foreign Trade	44	50	49	59	78
Share of non-oil Exports in Total Non-oil Foreign Trade	13	21	31	40	46

In each case, the impact of Iran's economic growth policy on non-oil foreign trade is seen. Note that according to Consultant projections, 15 years hence or at the end of the 7th Plan, Iran will have nearly balanced its non-oil exports and imports.

1) Adibi Harris Associates.

TABLE 4.8

TOTAL FOREIGN TRADE

	1341[5]			1346[6]			1351[7]		
	WEIGHT[1]	VALUE[2]	%[3]	WEIGHT	VALUE	%	WEIGHT	VALUE	%
Total throughput[4]	59.36	111.35	-	139.36	237.53	16	236.85	491.32	15.0
Imports	1.42	41.91	-	2.78	90.45	17	5.30	195.98	16.7
Exports	57.94	69.44	-	136.58	147.08	16	231.55	295.34	15.0
Oil Exports	57.35	60.84	-	135.72	133.16	17	229.00	244.52	12.9
Non-oil Exports	0.59	8.60	-	0.86	13.92	10.2	2.55	50.82	29.0
Net throughput (non-oil)	2.01	50.51	-	3.64	104.37	15	7.85	246.80	18.5

	1356[8]			1361[8]			1366[8]		
	WEIGHT[1]	VALUE[2]	%[3]	WEIGHT	VALUE	%	WEIGHT	VALUE	%
Total throughput	378.01	1140.08	18.5	379.20	1478.80	5.3	227.25	1663.09	2.4
Imports	10.81	383.76	14.4	14.63	519.67	6.3	18.25	696.37	6.0
Exports	367.20	756.32	20.6	364.57	959.13	4.9	209.00	966.72	0.1
Oil Exports	359.00	581.50	19.0	347.00	613.50	1.1	180.00	363.00	-11.1
Non-oil Exports	8.20	174.82	28.0	17.57	345.63	14.6	29.00	603.72	11.8
Net throughput (non-oil)	19.01	558.58	17.7	32.20	865.30	9.2	47.25	1300.09	8.5

NOTES TO TABLE 4.8

1) Weight in millions of metric tons.

2) Value in billions of Rials. For 1341 and 1346 in actual prices. For 1351 and later in constant 1351 prices.

3) Growth rate in % by value.

4) Total throughput equals total exports plus imports.

5) Past History Year Book, Foreign Trade Statistics of Iran 1341.

6) Past History Year Book, Foreign Trade Statistics of Iran 1346.

7) Past History Year Book, Foreign Trade Statistics of Iran 1351. Published by Ministry of Finance, Tehran 1342, 1347 and 1352 respectively.

8) Projections: Adibi Harris Associates.

4.7 THE TIME FACTOR

4.7.1 Capital Availability

Throughout this section the implicit question has been upon what does the growth in foreign trade depend? It has been shown that this growth depends little upon international comparative advantage. Instead, given an elastic source of capital, non-oil foreign trade will grow at rate defined by investment and domestic demand. But suppose that the availability of capital does not remain elastic? The major determinate of capital availability has been shown to be the growth of oil exports. An approximation of the intensity of capital availability over time would be the projected growth of oil exports. Comparing the curve of the growth of oil exports to that of GNP, imports and non-oil exports will begin to provide a preview of the effect of changes in the supply of capital. Figure 4.4 provides this preview.

4.7.2 Deflationary Forces

Examining Figure 4.4 it can be seen that after 1356 the increase in the value of oil exports is projected to level off until 1361 when a decrease commences. In 1361 Iran's GNP is forecast to be approximately 5000 billion rials and the value of imports and non-oil exports 520 billion and 346 billion rials respectively. According to this approximation, after 1356 incremental increases in GNP accounted for by foreign trade will be increasingly shifted from oil to the products of other sectors and by 1361 the shift will become absolute. From 1361 on, the interaction of national development and the international market becomes real. If, for instance, Iran's non-oil economy has not become competitive at the international market's terms, then automatically deflationary forces will begin to be felt in the economy.

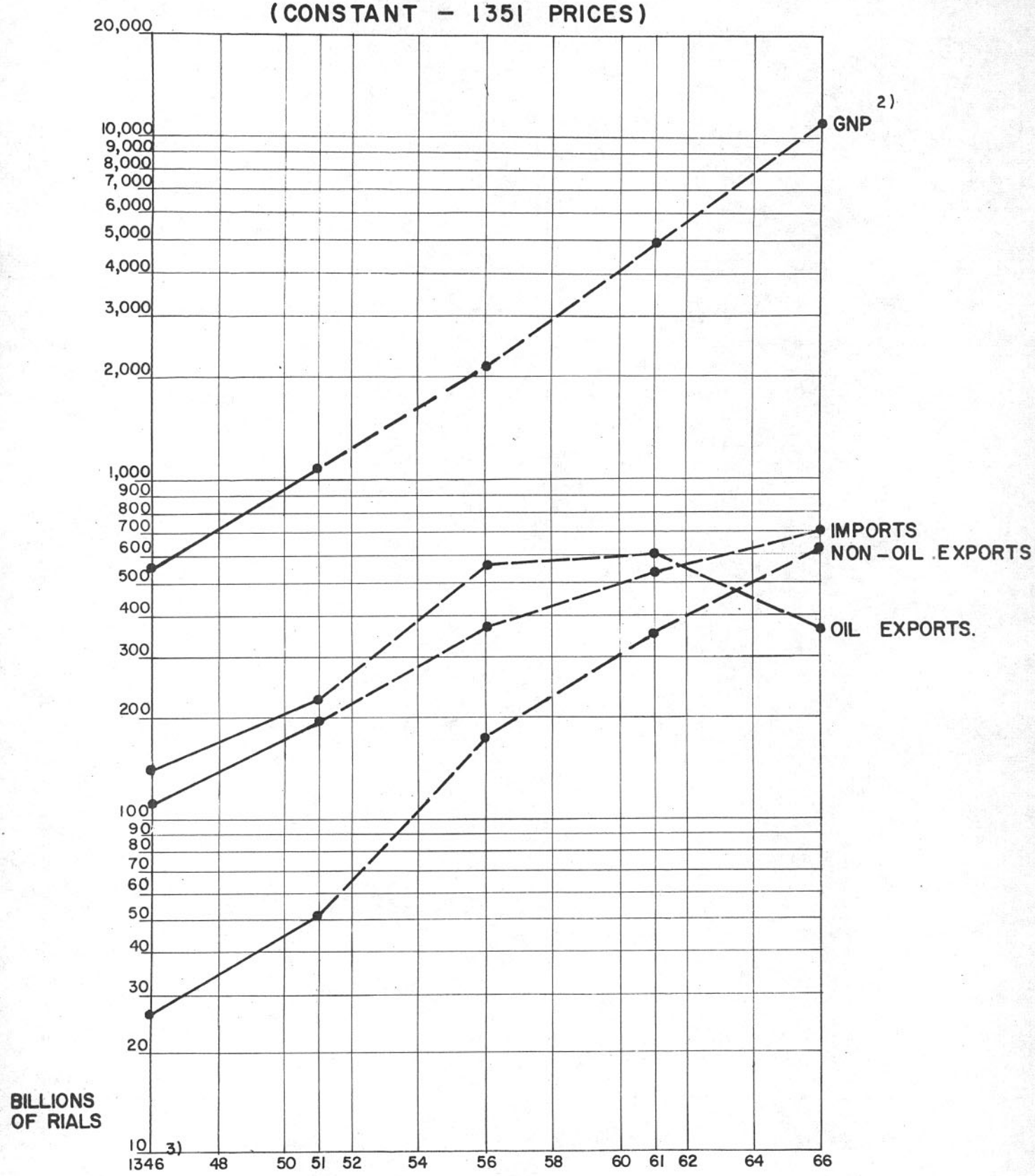
4.7.3 Significance for the ports of Iran.

The significance for the Master Plan of the Ports of Iran is obvious. Ports are major elements of the foreign trade delivery system. Cost reductions in the handling of cargo passing through the ports, and in the transportation of cargo to conveniently located points, has a major effect on the cost of Iranian goods, i.e., their international competitiveness. Thus savings to the cost of foreign trade goods resulting from the implementation of the optimum foreign trade delivery systems must be felt by 1361. At that time the task at hand will be nearly four times greater than today. Today's (1351) foreign trade throughput (non-oil exports and imports) is 8 million tons in 1361 this volume will have reached 32 million tons. This then is the time frame and the size of the task at hand: define the optimal foreign trade delivery system (in terms of incremental savings in costs to goods related to investment in new facilities) for nearly four times the present total tonnage moved, to be implemented by 1361.

FIGURE 4.4

ECONOMIC GROWTH, OIL EXPORTS, AND NON-OIL FOREIGN TRADE [1]

(CONSTANT - 1351 PRICES)



SEMI-LOG GRAPH

1) ADIBI HARRIS ASSOCIATES

2) TO 1356, PLAN ORGANISATION, 5th PLAN, 1356 TO 1361 AHA PROJECTIONS

3) 1346 RIALS ADJUSTED TO 1351 PRICES

SECTION 5

COMMODITY FLOW

5.1 STATISTICS

The only complete data source on Iran's trade flows is to be found in the Ministry of Finance's document series entitled: Foreign Trade Statistics of Iran. The data in these documents is based on the import carrier's or exporter's manifests, adjusted for unclaimed, missing, or otherwise rejected items. Because of the time required to execute customs inspections and required adjustments, and importers trade policies, a delay is usually incurred in clearing the commodities. Direct investigation by the Consultant indicates there is an average delay of 45 to 50 days between the date the commodity is received and cleared by customs. Commodities are registered as having been imported or exported only after they have been cleared. As this study is concerned with the service performed by ports, the above-mentioned delay represents a slack, or error, at the beginning and end of the period in question of 45 to 50 days. Statistical analysis, however, has shown that over the 5 year time increments utilized in this study, the error is not significant. The Consultants have utilized the Foreign Trade Statistics of Iran throughput as the basic statistical source for yearly flows. It should also be mentioned that since 1346 Ministry of Finance data is recorded on computer tapes and is available for research purposes.

5.2 COMMODITY CLASSIFICATION

The commodity classification nomenclature used up to 1352 for the Foreign Trade Statistics of Iran is a hybrid of the Standard International Tariff Classification (Geneva). In 1352 the Brussels Tariff Nomenclature was introduced. The former Iranian version consists of 21 sections, 86 chapters, and 991 commodities. For instance, Persian carpets are classified as commodity number 511.1--entitled "carpets, wool, handwoven--- chapter 47, wool, soft wool, animal hair; section 11, textile materials and textile goods". This nomenclature, like others of this type, provides a standard taxanomy by classes of commodities according to their common name, composite materials and manner of production.

Opposite this nomenclature the volume in kilograms and value in Rials is recorded in the statistics. This classification provides a system by which government can identify and thereby control the flow of goods across its borders. But a system designed for the purposes of controlling the flow fails to provide sufficient information as to the physical nature of the flow.

5.3 FLOW CATEGORIES

The characteristics of ports, like those of other facilities related to the delivery of commodities, i.e. roads, railways, vehicles, aircraft, storage and break-bulk areas, are not defined simply by the commodity and its yearly ton or value rate. More importantly they are defined by the volume, handling and storage characteristics of the cargo unit in the flow. Returning to the example of Persian carpets, in 1350 Iran exported roughly 400,000 carpets at average value of 12,000 Rials per carpet. This 13,000 tons of carpet did not move as carpets but in cargo units of 20 or more carpets carefully packed in wooden crates. It is the wooden crate that flows and thus exerts a critical influence on the design of service facilities. Crates of carpets are lifted by hand or forklift trucks onto the various modes of transport to the port, or as may happen for European destinations, for delivery directly to the foreign destination. Each time the crate changes its mode of transport it does so as a unit. If it stops enroute, the crate must be stored in a secured, covered warehouse to protect its valuable contents. The fact that carpets flow as crates defines them as general cargo commodities. For the same reasons the general cargo category fits such different commodities as fruits or nuts, moved in containers or bags; or paper and paper materials, moved in rolls or cartons.

The cargo under consideration are all Iran's international "non-oil" cargo (imports and exports). "Non-oil" cargo is defined as all cargo after exclusion of the following commodities:

- Crude Oil
- Refined petroleum energy products
- Natural gas exported in pipelines
- Natural gas exported as LNG
- NGL which is exported injected into crude oil.

Commodities such as LPG and refinery products other than energy products are included in the "non-oil" cargoes.

For purposes of port planning it is necessary to classify commodities into categories possessing similar flow characteristics. General cargo is one of four such categories, the others are: bulk general, special and bulk. These four categories can be defined as follows:

5.3.1 General Cargo

Cargoes generally requiring handling in small units, by hand or by forklift truck and usually moving in small lots and utilizing covered storage. Under this heading, containerization is also treated, but requirements established separately.

5.3.2 Bulk General Cargo

Commodities which may move either in bulk or in bags, drums or bales, dependent upon volume and handling characteristics, such

as cement, fertilizer, vegetable oils and vegetable meals.

5.3.3 Special Cargo

Commodities which cannot be handled in bulk, but which may move in large volume and benefit from special facilities and equipment, such as iron and steel, copper blister or ingot, vehicles, lumber etc.

5.3.4 Bulk Cargo

Commodities moving in large volumes lots requiring specialized handling equipment, such as ores and grain.

5.4 PORT PLANNING NOMENCLATURE

In order to group the foreign trade commodities into the four flow categories, it was necessary to reclassify and consolidate all commodities into reasonable homogenous groups which then could be assigned to one of the flow categories. Initially for the Interim Report Trade Forecast the commodities were consolidated in 60 groups. When these were arranged in descending order it was found that 43 of these groups covered 95% of all Iranian port traffic. By coincidence, it was also found that the smallest of the 43 groups represented trade of more than 10,000 tons per year. The balance of the 60 groups were all less than 3,000 tons per year and none of them represented trade that in the foreseeable future would exceed 10,000 tons per year. These groups, therefore, which were all in the general cargo cateogry were consolidated into one commodity title of "other general cargo". This commodity title includes optical, photo, cinema and miscellaneous related manufactures; surgical instruments, hospital medical equipment and X-ray machines; small boats, aircrafts, pearls and precious stones, works of arts, and footwear and head gear. For forecasting purposes, it was assumed that this commodity groups would grow proportionally to the growth of the sum of the other commodities (19) which made up the general cargo category.

These 44 commodity groups were used for forecasting purposes and for cargo distribution between ports (and other modes) in the Interim Report.

When starting the preparation of the draft Final Report, particularly the refinements of the cargo distribution model, it was found that the number of commodities had to be increased. In the Interim Report average tariffs for each of the four commodity flow categories had been used in the cargo distribution model with a note to the effect that in the draft Final Report , tariffs for each individual commodity group would be used, because of too much variation in tariffs between commodity groups within a flow category.

When establishing the tariffs of each commodity group it was

found that in some cases there was also too much variation in tariffs between commodities within a commodity group. For example, the group "electrical equipment" included electrical equipment as well as electrical cable. It was found that the tariff for electrical equipment was so different from the tariff for electrical cable that it was not possible to establish a tariff which was representative for the original commodity group. The original commodity group was split in two, electrial equipment being one, and electrical cable being the other. Similar tariff consideration affected other commodity groups so that in all 8 new groups had to be established. In addition, footwear was broken out of other general cargo because it was found that this item may exceed 10,000 tons of trade in the future.

Under special cargo two new commodity groups, military cargo and live animals were introduced so that the total new number of commodity groups is 55. The resulting commodity groups hereinafter called the Port Planning Nomenclature is listed in the following pages and cross referenced to the Iranian classification used in 1351 and earlier . When the Iranian classification is completely reclassified to the BTN classification, a work which is now in progress - the Port Planning Nomenclature should also be re-cross referenced to this new classification for future updating work of the Trade Forecast .

In the final report no changes have been made from the draft final report with respect to commodity classification and grouping.

The detailed items under each port planning commodity classification are shown in Appendix 5.

PORT PLANNING COMMODITY CLASSIFICATION

COMM. NO.	DESCRIPTION	IRANIAN CLASSIFICATION COMMODITY NUMBER
1	General Cargo	
1.01	Chemical Products	(212 thru 341)-(217_{12}, 217_{13}, 221_4 226,229,270_{B2}, 272_3, 273_{B1}, 274_{B6}, 277 thru 280, 285_{B2})
1.02	Mechanical Equipment	820 thru 858
1.03	Electrical Equipment	(859 thru 878)-(873_A, 873_{B1}, 873_{B2})
1.04	Paper and Paper Materials	(415 thru 440)-(417 thru 418, 419_{B2}, 419_{B3}, 424_1, 424_2, 425_A, 425_{B1}, 425_{B2}, 425_{B3}, 426_{A3}, 426_{A4}, 426_B, 426_C, 435_A)
1.05	Plastics and Rubber	270_{B2}, 272_3, 274_{B6}, 277 thru 280, 285_{B2}, 369 thru 379
1.06	Iron & Steel Manufactures	(696 thru 755)-(All listed under 4.01 Iron & Steel,: Special, 3.05 Scrap: bulk)
1.07	Sugar & Confectionary Sugar, boxed	(122 thru 126)-(122_{B1} thru 122_{B3})
1.08	Mineral Products	176_1, 176_2, 177_{A1}, 177_{A2}, 177_{B1}, 177_{B2}, 177_{B3}, 178_1, 178_2, 178_3, 179_1, 179_2, 180_1, 180_2, 181_2, 183_1, 183_2, 184_1, 184_2, 186, 188, 190_1, 199_2, 191, 194_1, 194_2, 194_3, 194_4, 194_5, 194_8, 194_9, 194_{12}, 202, 203

COMM. NO.	DESCRIPTION	IRANIAN CLASSIFICATION COMMODITY NUMBER
1.09	Non-Ferrous Metal Mfgs.	(756 thru 819)-(756A, 758, 771_{B1}, 771_{B2}, 776 thru 777, 791_{B2}, 791_{B3}, 801_{B})
1.10	Articles of glass, plaster, cement etc.	628 thru 681
1.11	Animal Products	(01 thru 39)-(1 thru 12_{B2}, 19_{2})
1.12	Textiles	(441 thru 599)-(459_{2}, 489_{2}, 511_{1}, 511_{2}, 511_{3}, 518_{A}, 518_{B}, 534, 556_{1})
1.13	Cotton	518_{A}, 518_{B}
1.14	Wood & Wood Articles	380 thru 414
1.15	Prepared food Stuffs	116 thru 121, 127 thru 161, 171 thru 172
1.16	Edible fruits & Nuts	54 thru 62
1.17	Vegetable Products	(40 thru 53, 63 thru 67, 75 thru 99) -(83_{B10}, 90,91), 167
1.18	Raw Hides & Skins (Dried)	(348 thru 368)-(366_{A2}, 366_{F})
1.19	Petroleum Products	205 thru 211
1.20	Other General Cargo	(173_{C2}, 181_{1}, 181_{3}, 193, 194_{6}, 194_{7}, 194_{10}, 194_{11}, 196, 198, 600 thru 627, 682 thru 695, 900 thru 991) -(600 thru 606)

COMM. NO.	DESCRIPTION	IRANIAN CLASSIFICATION COMMODITY NUMBER
1.33	Electrical Cables & Wires	873_A, 873_{B1}, 873_{B2}
1.34	Paper Board (Craft Board & Craft liner)	417 thru 418, 419_{B2}, 419_{B3}, 424_1, 424_2, 425_A, 425_{B1}, 425_{B2}, 425_{B3}, 426_{A3}, 426_{A4}, 426_B, 426_C, 435_A
1.39	Non-Ferrous Metals, Semi-Manufactures (Sheets)	758, 771_{B1}, 771_{B2}, 776 thru 777, 791_{B2}, 791_{B3}, 801_B
1.42	Floor Covering & Carpets	459_2, 489_2, 511_1, 511_2, 511_3, 534, 556_1
1.48	Raw Hides & Skins (Wet)	366_{A2}, 366_F
1.50	Footwear	600 thru 606
2	BULK-GENERAL CARGO	
2.01	Cement	192_A, 192_B
2.02	Manufactured Fertilizers	346_1, 346_2 347
2.03	Meals & Feeds	90, 91, 162_1, 162_2, 163, 164, 165, 166, 168, 169, 170
2.04	Animal & Vegetable Fats Oils	100 thru 115.
2.05	Quarry Stone	182, 184_3, 185, 187
2.06	Gypsum	189_A, 189_B
2.07	Bagged Sugar	122_{B1} thru 122_{B3}

COMM. NO.	DESCRIPTION	IRANIAN CLASSIFICATION COMMODITY NUMBER
3	BULK CARGO	
3.01	Cereals	68 thru 74
3.02	Soya Beans	83_{B10}
3.03	Fertilizer Materials	221_4, 342_1, 342_2, 343, 344, 345
3.04	Sulphur	174_A, 174_B, 175
3.05	Iron & Steel Scrap	698_1, 698_2
3.06	Coal	199_1, 199_2, 200, 204
3.07	Iron Ore- Pellets & Sponge	195_1
3.08	Chromite Ore- Concentrate	195_5
3.09	Ferro Chrome	-
3.10	Lead-Zinc ore & Concentrate	195_6 thru 195_7
3.11	Alumina & Bauxite	195_3, 229
3.12	Salt	173_A, 173_B, 173_{C1}
3.13	Other Ores	195_4, 195_8, 195_9, 195_{10}, 197
3.36	Coke	201_1, 201_2

COMM. NO.	DESCRIPTION	IRANIAN CLASSIFICATION COMMODITY NUMBER
4.	SPECIAL CARGO	
4.01	Iron and Steel	696, 699, 700, 701_1, 701_2, 701_3, 701_4, 701_5, 701_6, 701_7, 701_8, 701_9, 702_A, 702_B, 703, 704_A, 704_{B1}, 704_{B2}, 704_C, 704_D, 705, 706, 707_A, 707_B, 707_C, 707_D, 707_E, 707_F, 708_A, 709_1, 709_2, 710_A, 710_B, 710_{C1}, 710_{C2}, 710_{C3}, 710_D, 711_{A1}, 711_{B1}, 711_{C1}, 713, 714, 716, 717, 719_1, 719_2, 720_1, 720_2, 721_1.
4.02	Copper Blister, Ingot	195_2, 756_A.
4.03	Vehicles	879 thru 899.
4.04	Liquified Petroleum gases	217_{12}, 217_{13}.
4.05	Ammonia	226
4.06	Solvents	273_{B1}.
4.07	Military Cargo	
4.11	Live animals	1 thru 12_{B2}, 19_2.

SECTION 6

FOREIGN TRADE PROJECTIONS

6.1 GENERAL

The most important data needed for the master planning of a foreign trade delivery system is information concerning the projected demand for such delivery service, i.e., the volumes of merchandise exports and imports projected into the future. This section supplies this information by port planning nomenclature commodities for the years 1351, 1356 and 1361. Certain global data such as the total volume of trade and the totals for the cargo handling categories, are projected to 1366.

In order of their occurrence, this section will consider:

Part 6.2 Commodity classification and compatibility;
Part 6.3 The effect of time on projections;
Part 6.4 The sources of data used;
Part 6.5 The methods used for projection;
Part 6.6 Commodity by commodity projections for imports and exports.

6.2 COMMODITY CLASSIFICATION AND COMPATIBILITY

6.2.1 Port Planning Nomenclature

Section 5 has already considered in detail the nomenclature used in this study. It is sufficient here to recall that the port planning nomenclature is designed to identify the physical flow characteristics of commodities. It classifies commodities into four basic categories, each with individual flow characteristics, i.e., general, bulk-general, bulk and special cargo.

6.2.2 Compatibility

In the previous section the port planning nomenclature was cross-referenced with the Iranian Tariff Nomenclature. This cross-reference makes possible the convenient translation of past flows as reported by Customs into port planning nomenclature commodities.

When the perspective is shifted from the past to the future the problem of classification compatibility becomes more difficult. Typically, projections by others of future economic growth are directed at "sectors" or "activities", not commodities. The Plan Organization, for instance, uses a classification of 11 activities in its publications. Table 6.1, gives this classification cross-referenced, to the extent possible, to port planning nomenclature commodities. While most Ministries of the Iranian

TABLE 6.1

PORT PLANNING NOMENCLATURE AND THE
IRANIAN ACTIVITY CLASSIFICATION

PORT PLANNING NOMENCLATURE COMMODITY NUMBERS	ACTIVITY CLASSIFICATION [1]
1.07, 1.11, 1.15, 1.16, 1.17, 2.04, 2.07, 3.01, 3.02, 4.11	(Food manufacturing industries (Beverage industries (Tobacco industries
1.12, 1.13, 1.42	(Manufacture of textiles, carpets, (and gelims (Manufacture of apparel and other (textile goods
1.04, 1.14, 1.34	(Wood and furniture industries (Paper and cardboard industries (Printing and allied industries
1.18, 1.48, 1.50	Leather industries
1.01, 1.05, 3.03, 3.04, 4.04, 4.05, 4.06	Chemicals and Petrochemicals
1.19, 3.06, 3.36	(Petroleum and coal industries and (their products
1.08, 1.10, 2.01, 2.05, 2.06, 3.12	Non-metallic mineral industries
1.06, 1.09, 1.39, 3.05, 3.07, 3.08, 3.09, 3.10, 3.11, 3.13, 4.01, 4.02	(Basic metal industries and their (products (
1.02	(Manufacture of machinery (Non-elec- (trical)
1.03, 1.33	(Manufacture of machinery and elec- (trical equipment
4.03	Transportation equipment
2.03	Miscellaneous industries

1) The Fifth Plan (Plan Organization Tehran, 1973) p. 882.

Government utilize this classification, there seems to be little agreement on precisely which commodities are produced by which activities. For this reason the Consultants have met with some difficulty in comparing the results based upon port planning nomenclature with those from official sources.

6.2.3 Enclave Cargo

The enclave cargo was defined in Section 4 of this Report. It consists of cargo, mostly petrochemicals that move through private or special port facilities outside P.S.O. jurisdiction. Growth in the flows of these cargoes are assumed as having no effect on the effectiveness or over-all master planning of the foreign trade delivery system. After such enclave merchandise is subtracted from the total, the result represents the total flow of merchandise available to be allocated to all modes of transportation. This has been called "P.S.O. and Overland Cargo".

Table 6.2 lists the enclave cargoes which either in total or part are movedthrough non-P.S.O. port facilities.

TABLE 6.2

COMMODITIES WHICH ARE EXPORTED OR IMPORTED BY SHIP OVER NON-P.S.O. FACILITIES[1)]

COMMODITIES		SUB-CLASSIFICATION OF COMMODITY WHICH MOVE OUTSIDE P.S.O. FACILITIES
1.01	Chemical Products	Liquid and Solid Caustic Soda, EDC, VCM, LDPE, NDPE
1.05	Plastics and Rubber	Styrene Monomer, SBR, Butadiene, Propylene, DOP, Caprolactam, DMT, Polystyrene, Polypropylene, Isoprene, Polyisoprene, Achrylonitrile, Methylmethachrylite.
2.02	Manufactured Fertilizer	Entire Commodity
3.03	Fertilizer Materials	Entire Commodity
3.04	Sulphur	Entire Commodity
4.04	Liquified Petroleum Gases	Entire Commodity
4.05	Ammonia	Entire Commodity
4.06	Solvents	Entire Commodity

1) National Petrochemical Company

6.3 THE EFFECT OF TIME ON PROJECTIONS

6.3.1 Commodity and Category Projections

Contractual requirements relating to this study necessitated that full commodity projections be carried out for 1356 and 1361. Only broad category, that is, general, bulk-general, etc., projections were required for 1366 fifteen years from the start of the study. These requirements have been followed by the Consultants. The projection years of 1356, 1361 and 1366 coincide with the final years of the 5th 6th and 7th Plans for Iran. As such, projections for these specific years represent the culmination of a comprehensive development program. Without fail, in the final year of past plan periods, the Government has adjusted its targets upwards, extended "Supplementary Budgets" and thus imparted above average growth to the last year of the Plan. To this extent, the utilization of the final year of a Plan period means that actual growth from the preceding year may well have been greater than that of an average of the 4 other years. This study, however, lists as growth rates the average annual rate from the 1st to the 5th year.

6.3.2 Terminal Years

Terminal dates of the Plans may not correspond to dates of critical economic behaviour in the economy. It will be remembered that earlier in this Volume the year 1361 was defined as the threshold when the non-oil economy would begin to test its strength in the international market. It should be remembered that in interpolating inter-period volumes and growth rates from the projected base year, consideration should be given to the point previously made, namely, terminal years of Plan periods are not representative of inter-periods.

6.3.3 1366 Projections

A final point should be made as concerns projections for 1366. The dynamic nature of economy at this period very nearly invalidates any numbers for 1366. Most commodity exports exhibited strong increases particularly in the 1351 to 1356 period. Nine out of the 55 commodities exhibited greater than 30% per year growth in export volume. Table 6.3 lists these commodities. (The detailed projections are presented in part 6.6 of this Report. Some of the results are used here for illustration purposes of the subject under discussion). Similar growths of import/exports of other commodities may happen in the future as well. For this reason the figures for 1366 should only be considered as trend indicators. In fact, the figures used in this Report for the period involved are mere linear projections except for certain commodities for which it is known that the linear projections are not applicable, such as for agricultural commodities.

TABLE 6.3

COMMODITY EXPORTS EXHIBITING GREATER THAN 30% ANNUAL GROWTH BY 1351-1356 [1]

	COMMODITY	EXPORT 1351	EXPORT 1356
		thousand of metric tons	
1.01	Chemical Products	98	655
1.05	Plastics and Rubber	1.5	347
1.06	Iron and Steel Manufactures	0.7	20
1.09	Non-Ferrous Metals and Manufactures	3.5	27
1.33	Electrical Cables and Wires	-	20
2.02	Manufactured Fertilizers	-	981
3.06	Coal	-	200
4.02	Copper Ingots and Blister	0.6	126
4.03	Vehicles	0.8	6

1) Adibi Harris Associates

6.4 THE SOURCES OF DATA USED

6.4.1 Uncovering Actual Plans

From the outset the Consultants realized that wide-scale utilization of traditional projection techniques would not simulate the dynamic nature of the Iranian economy. For this reason, wherever possible an attempt was made to uncover the actual industrial development plans for specific industries in either the Government or Private Sectors. Table 6.4, identifies organizations interviewed and/or from which requested data were received. It should be mentioned that in the case of critical commodities numerous meetings, interviews, and questionnaires were completed. On iron and steel alone over 20 meetings with various representatives of the Private Sector and Government Ministries and Organizations were held. Beyond this other sources were exhausted, such as the commercial sections of the embassies of Iran's major trading partners, the Technical Assistance Unit of the United Nations Office in Tehran, plus numerous meetings with the representatives of the major shipping lines.

6.4.2 Projections by Others

The Plan Organization and the Ministry of Economy carry out projections of foreign trade for all sectors of the Iranian economy. The Consultants have examined in detail the series produced by both. The Plan Organization's projections are published in the Fifth Plan. For each of the previously described activities, certain commodities are broken out and described in terms of exports and imports. Where applicable, the Plan Organization's projected values of future commodity foreign trade are reported in Section 6.6 of this Report Volume.

The Ministry of Economy also publishes a list of foreign trade projections. Perhaps the most consistent and reliable Government source of by activity projections can be found in the Ministry of Economy's booklet on the "Iranian Input-Output Table for 1356"[1)]

Careful examination of data series from both sources revealed little common agreement. Instead, the figures usually adopted for the purposes of this study were the results of independent research. It is important to note that while the Consultant's projections differ in some respects from those of other sources, the overall volumes, values, and growth rates show great similarity.

6.5 THE METHODS USED FOR PROJECTIONS

6.5.1 Commodity by Commodity

The projections utilized in this study were developed on a commodity

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1) Ministry of Economy, Iranian Input-Output Table for 1356 (Tehran 1973).

TABLE 6.4

ORGANIZATIONS AND/OR FROM WHICH REQUESTED DATA WERE RECEIVED [1)]

Commodities	Private Industry	Export-Import Agents. Ship Lines	Plan Organization	Ports & Shipping Organization	Chamber of Commerce, Industry & Mines	Ministry of Agriculture	Ministry of Finance	Ministry of Economy	Export Promotion Center	N.P.C.	N.I.O.C.
1.01 Chemical Products		x	x				x	x	x	x	x
1.02 Mechanical Equipment		x	x				x	x	x		
1.03 Electrical Equipment		x	x				x	x	x		
1.04 Paper & Paper Materials		x	x			x	x	x	x		
1.05 Plastics & Rubber	x	x	x				x	x	x	x	x
1.06 Iron & Steel Manufactures	x	x	x	x	x		x	x	x		
1.07 Sugar & Confectionary Sugar, Boxed		x	x			x	x	x	x		
1.08 Mineral Products	x	x	x	x	x		x	x	x		

TABLE 6.4 CONTINUED

Commodities	Private Industry	Export-Import Agents, Ship Lines	Plan Organization	Ports & Shipping Organization	Chamber of Commerce, Industry & Mines	Ministry of Agriculture	Ministry of Finance	Ministry of Economy	Export Promotion Center	N.P.C.	N.I.O.C.
1.09 Non - Ferrous Metals & Manufactures	x	x	x	x	x		x	x	x		
1.10 Articles of Glass Cement, Plaster, etc.		x	x		x		x	x	x		
1.11 Animal Products		x	x			x	x	x	x		
1.12 Textiles		x	x				x	x	x		
1.13 Cotton		x	x	x		x	x	x	x		
1.14 Wood & Wood Articles		x	x			x	x	x	x		
1.15 Prepared Food Stuffs		x	x			x	x	x	x		

TABLE 6.4 CONTINUED

Commodities	Private Industry	Export-Import Agents. Ship Lines	Plan Organization	Ports & Shipping Organization	Chamber of Commerce, Industry & Mines	Ministry of Agriculture	Ministry of Finance	Ministry of Economy	Export Promotion Center	N.P.C.	N.I.O.C.
1.16 Edible Fruits & Nuts		x	x			x	x	x	x		
1.17 Vegetable Products		x	x			x	x	x	x		
1.18 Raw Hides & Skins (Dried)		x	x			x	x	x	x		
1.19 Petroleum Products		x	x				x	x	x		x
1.20 Other General Cargo		x	x	x			x	x	x		
1.33 Electrical Cables & Wires		x	x				x	x	x		
1.34 Paper Board (Craft Board & Craft Liner)		x	x				x	x	x		

TABLE 6.4 CONTINUED

Commodities	Private Industry	Export-Import Agents. Ship Lines	Plan Organization	Ports & Shipping Organization	Chamber of Commerce, Industry & Mines	Ministry of Agriculture	Ministry of Finance	Ministry of Economy	Export Promotion Center	N.P.C.	N.I.O.C.
1.39 Non - Ferrous Metals & Semi Manufactures (Sheet)		x	x				x	x	x		
1.42 Floor Coverings & Carpets		x	x				x	x	x		
1.48 Raw Hides & Skins (wet)		x	x			x	x	x	x		
1.50 Footwear		x	x				x	x	x		
2.01 Cement		x	x	x	x		x	x	x		
2.02 Manufactured Fertilizers		x	x			x	x	x	x	x	x
2.03 Meals & Feeds		x	x			x	x	x	x		

TABLE 6.4 CONTINUED

Commodities	Private Industry	Export-Import Agents. Ship Lines	Plan Organization	Ports & Shipping Organization	Chamber of Commerce, Industry & Mines	Ministry of Agriculture	Ministry of Finance	Ministry of Economy	Export Promotion Center	N.P.C.	N.I.O.C.
2.04 Animal & Vegetable Fats & Oils		x	x			x	x	x	x		
2.05 Quarry Stone		x	x		x		x	x	x		
2.06 Gypsum		x	x		x		x	x	x		
2.07 Bagged Sugar		x	x			x	x	x	x		
3.01 Cereals		x	x			x	x	x	x		
3.02 Soya Beans		x	x			x	x	x	x		
3.03 Fertilizer Materials		x	x			x	x	x	x	x	x
3.04 Sulphur		x	x				x	x	x	x	
3.05 Iron & Steel Scrap		x	x		x		x	x	x		
3.06 Coal		x	x		x		x	x	x		

TABLE 6.4 CONTINUED

Commodities	Private Industry	Export-Import Agents, Ship Lines	Plan Organization	Ports & Shipping Organization	Chamber of Commerce, Industry & Mines	Ministry of Agriculture	Ministry of Finance	Ministry of Economy	Export Promotion Center	N.P.C.	N.I.O.C.
3.07 Iron Ore Pellets & Sponge	x	x	x		x		x	x	x		
3.08 Chromite Ore - Concentrate	x	x	x		x		x	x	x		
3.09 Ferro-Chrome	x	x	x		x		x	x	x		
3.10 Lead-Zinc Ore & Concentrate	x	x	x		x		x	x	x		
3.11 Alumina & Bauxite		x	x	x			x	x	x		
3.12 Salt		x	x				x	x	x		
3.13 Other Ores		x	x		x		x	x	x		
3.36 Coke	x	x	x		x		x	x	x		
4.01 Iron & Steel	x	x	x		x		x	x	x		

TABLE 6.4 CONTINUED

Commodities	Private Industry	Export-Import Agents. Ship Lines	Plan Organization	Ports & Shipping Organization	Chamber of Commerce, Industry & Mines	Ministry of Agriculture	Ministry of Finance	Ministry of Economy	Export Promotion Center	N.P.C.	N.I.O.C.
4.02 Copper Blister, Ingot	x	x	x		x		x	x	x		
4.03 Vehicles	x	x	x				x	x	x		
4.04 Liquified Petroleum Gases		x	x				x	x	x	x	x
4.05 Ammonia		x	x				x	x	x	x	x
4.06 Solvents		x	x				x	x	x	x	x
4.07 Military Cargo		x	x	x			x	x	x		
4.11 Live Animals		x	x	x		x	x	x	x		

1) Adibi Harris Associates

by commodity basis. The Consultants made no use of a single across-the-board simulation model for commodity projections. Justification for this has been discussed earlier in the report.

As Iran is a "developing" economy which has recently moved rapidly away from a low base, it possesses very little in past trends of significance for the future. Therefore, while past trends for exports and imports for each commodity were calculated from 1346 on, they provided few clues concerning expected performance. Not being able to lean on Iran's past experience, those of other countries were explored in search of a model for Iran's future.

6.5.2 No Model Of Relevance

In fact, the unique features of Iran's economy, its dependence on oil, its potentially large domestic market, and its geographical position rule out the broad application of any other country's experience. As one example, in all probability Iran will have the same per capita income in 1356 as Venezuela had in 1348. Venezuela, like Iran, is an oil-based economy. Venezuela, however, had a domestic market of a little more than 8 million people in 1348 as compared to Iran's 36 million forecast for 1356. With such a market, given an intensification of the positive trends in its domestic policy, Iran will, by 1356, have a domestic market of sufficient size to warrant the investment of large scale production units in most sectors. This fact gives Iran an independence from the vicissitudes of the international market which Venezuela can hardly possess. Venezuela, therefore, is no model for Iran.

6.5.3 The Method

The method adopted for the purposes of this study consisted of the following steps:

- Whenever possible, actual industrial development plans, both in the private and public sectors were utilized. When specific information was unavailable, the following factors were considered:

  - Projection of domestic consumption of each commodity based on evolution in population, income growth, and unit consumption;
  - Projection of domestic production of each commodity based on production plans, budget allocations, capital output ratios and forecasted trends for the value added in manufactures;
  - Projections of industrial internal demand based on input-output coefficients and known production plans;
  - Interpretation, where applicable, of the impact of possible policy changes in imports substitution or value added to the mix of imports or exports;
  - Comparison with foreign trade targets published by others;
  - Comparison with published trade agreements; and
  - Correlation of total flow figures with published projections of Gross Domestic Product.

The projections were done directly in tons whenever possible. This applied generally, (but not always) when data were obtained from industries and the Ministry of Agriculture. Average 1351 prices were applied to the tonnage projection to obtain values. When tonnage projections were not possible, projections were done in values (Rials) as functions of the economic indicators. The values were then converted to weights by changing the weights of the base year 1351 proportional to the projected change in values (assuming 1351 constant prices). Appendix 6 lists values of Iran's foreign trade for 1351, 1356 and 1361.

Finally it should be noted that no international comparative advantage analysis was undertaken. It was assumed that markets will exist for Iranian exportable surplus goods.

6.6 COMMODITY BY COMMODITY PROJECTIONS FOR IMPORTS AND EXPORTS

6.6.1 Chemical Products (Commodity 1.01)

In 1351 Iran imported 258,000 tons of this commodity, up about 16% from the previous year. A major portion of the imported chemicals were chemical elements and compounds i.e. industrial chemicals used as raw materials. These chemicals are currently not known to be available nor currently planned to be made in Iran. It may therefore be assumed that the import of these chemicals will grow with the general industrial growth of Iran which means approximately doubling the import every 5 years. Imports have therefore been forecast to be 500,000 tons and 1,000,000 tons in the years 1356 and 1361 respectively.

In 1351 Iran exported 98,000 tons of this commodity classification, up almost four times from the previous year. According to the industry[1], the export in 1356 is expected to be 555,000 tons, based on maximum exportable surpluses as listed in Table 6.5.

TABLE 6.5

CHEMICAL PRODUCT EXPORT, 1356 (TONS)

Liquid Caustic	178,000
Solid Caustic	26,000
EDC	151,000
VCM	110,000
LDPE	50,000
HDPE	40,000
	555,000

It is expected that Government policy will continue to stress export. Iran is unique in its geographical region, in the sense that in many product lines it possesses raw materials, and both the mix and technology to produce goods potentially comptetitive at international standards. It has therefore been assumed that the export of these commodities will follow the general industrial development and double during the sixth plan to 1,100,000 tons. These exports are all enclave cargo and do not pass through PSO facilities.

1) NPC estimated production and export schedule dated 7/10/73.

In addition Iran also produces and exports detergents.

Detergents are produced in bulk and in packages designed for both hand and machine use. Present per capita consumption of detergents in Iran is 1.7 kilograms per year and is expected to increase to 2.8 kilograms by 1356 due to relative price stability accompanied by increasing consumption expenditures. Total consumption of detergents went from 11,300 tons in 1346 to 52,000 tons in 1351 and is forecasted to increase to over 100 thousand tons by 1356.[1)]

Production, on the other hand, has increased at an average annual rate of nearly 50% per year between 1346 and 1350, reaching 88,000 tons by 1350. Production is forecasted to increase at a rate of 20% during the 5th Plan and 15% during the 6th Plan.[2)]

It is forecasted that Iran's detergent industry will have an export potential of nearly 100,000 tons in 1356 and 180,000 tons in 1361. Although detergents are expected to grow absolutely, their share in chemical product exports is expected to be reduced to 20% in 1356 and less than 20% in 1361.

6.6.2 Mechanical Equipment (Commodity 1.02)

Iran is now and is forecasted to remain during the study period a net importer of mechanical equipment. In 1351 the value of Iran domestic production of mechanical equipment reached a value of 6.3 billion Rials.[3)] The consumption in that same year reached a value of 50.3 billion Rials.[3)] By 1356, domestic production is projected to reach 31.6 billion Rials [3)]for a growth rate of 38% and consumption 114.3 billion Rials, thus requiring imports for 82.7 billion Rials. In constant 1351 prices this corresponds to 425,000 tons. For 1361, consumption has been estimated to be the equivalent of 225 billion Rials. Assuming that domestic production will increase at rate of 25% during the sixth plan, 125 billion Rials or 640,000 tons will need to be imported in 1361.

Export of mechanical equipment is expected to increase. The type is primarily oil field related equipment which will be exported to the Persian Gulf Oil states. Export targets are 10,000 tons and 100,000 tons for the year 1356 and 1361 respectively.[4)]

6.6.3 Electrical Equipment (Commodity 1.03)

The 1351 value of Iran's domestic production of electrical equipment was 19 billion Rials.[5)] In that same year total industrial consumption attained a value of 38.3 billion Rials.[6)] By 1356

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1) Plan Organization, The Fifth Plan for Iran (Tehran 1973) p.335.
2) Growth rates adjusted to Port Planning Nomenclature by Adibi Harris Associates from value added in manufacturing increases during same periods.
3) Plan Organisation, The Fifth Plan (Tehran 1973) p.898.
4) Ministry of Economy.
5) Plan Organization, The Fifth Plan (Tehran 1973) p.900. Adjusted to Port Planning Nomenclature commodities by Adibi Harris Associates.
6) Ministry of Economy, (Input Output Program for Iran 1356 (Tehran 1973) p.3 adjusted to Port Planning Nomenclature by Adibi Harris Associates.

domestic production is forecasted to reach 47 billion Rials and consumption 82 billion Rials,[1] leaving a gap of 35 billion Rials to be filled by imports. Assuming a 10% growth in domestic production, based upon a continuation of present investment policies in this area, domestic production should reach 75 billion Rials in 1361, but consumption is expected to reach the value of about 125 billion Rials. In volume terms imports of electrical equipment should reach 120,000 tons and 182,000 tons in the year 1356 and 1361 respectively. Exports of electrical equipment is expected to increase but at a slower rate than mechanical equipment. Export targets are 5,000 tons and 40,000 tons for the years 1356 and 1361 respectively.[2]

6.6.4 Paper and Paper Materials (Commodity 1.04 and 1.34)

These two commodities are considered together as far as consumption is concerned. They are split apart later for cargo distribution purpose only because the tariffs vary significantly.

Iran's growth in per capita consumption of paper has matched the rapidity of its industrialization. In 1346, per capita consumption of paper was 6.11 kilos and by 1350 this figure had reached 10.16 kilos. Projected on the basis of the growth rate in private consumption expenditure[3] per capita consumption of paper is expected to reach 19.4 kilos in 1356 and 36.8 kilos in 1361.[4] According to the population growth expected in the coming years, total consumption is expected to surpass 700,000 tons in 1356 and 1,485,000 tons in 1361.

In value terms, consumption of paper and paper products in 1346 was 6.5 billion Rials and in 1351 it was 15.9 billion Rials.[5] According to the above projections of per capita consumption, adjusting for the value of printing and binding, the value of consumption in 1356 is 53.4 billion Rials and in 1361, 102.4 billion Rials.

In an effort to close the gap between production and consumption, the 5th Plan [6] calls for an increase in investments of over 60 billion Rials. Tentative plans indicate that two large scale production units will be added each with a production capacity of 150,000 tons per year. Assuming that these investment plans are realized and similar programs are carried out in the 6th Plan period, domestic production can be expected to reach 41.6 billion Rials in 1356 and 75.3 billion Rials in 1361, requiring imports for 11.8 and 27.1 billion rials respectively. In volume terms this amounts to imports of 546,000 tons and 1,240,000 tons in the years 1356 and 1361 respectively.

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1) Ministry of Economy, (Input Output Program for Iran 1356) (Tehran 1973) p.3 adjusted to Port Planning Nomenclature by Adibi Harris Associates.
2) Ministry of Economy.
3) For description of the trends in private consumption and population indicators see Section 3.
4) Plan Organization, The Fifth Plan (Tehran 1973) p.332.
5) Plan Organization, The Fifth Plan (Tehran 1973) p.890.
6) Plan Organization, The Fifth Plan (Tehran 1973) p.333.

Exports are small.

6.6.5 Plastics and Rubber (Commodity 1.05)

In 1351 Iran imported 157,000 tons of this commodity. Of this about 56,000 tons were rubber and tires for the vehicle industry. This component is expected to reach 120,000 tons and 240,000 tons in the years 1356 and 1361 respectively.[1] The plastic component in 1351 was 101,000 tons which is expected to reduce to 86,000 tons and 60,000 tons in the years 1356 and 1361 respectively due to import substitution.

Iran has started a very ambitious domestic production program. According to industry sources[2] the production and export program in 1356 is planned as shown in Table 6.6.

TABLE 6.6

PLASTIC EXPORTS 1356

Material	Production (Tons)	Export (Tons)
Propylene	120,000	90,000
Styrene Monomer	100,000	75,000
SBR	40,000	16,000
Butadiene	30,000	-
DOP	40,000	10,000
Caprolactam	70,000	40,000
DMT	60,000	30,000
Polystyrene	25,000	-
Polypropylene	30,000	16,000
Isoprene & Polyisoprene	60,000	50,000
Acrylonitrile	30,000	20,000
Methylmethacrylite	13,000	-
		347,000

From the above, it can be seen that the industry forecast an export of 347,000 tons in 1356. Discussions with industry spokesmen indicate that the export will reach 500,000 tons by 1361. None of this material is exported via PSO facilities.

6.6.6 Iron and Steel Manufactures (Commodity 1.06)

Domestic consumption, based upon the growth rate of value added in manufactures, is expected to increase at a rate of 12.5% per year between 1351 and 1356 and drop-off in the next 5 year period to annual average rate of 7.5%. In value terms, consumption should reach 43.4 billion Rials in 1356 and 62.3 billion Rials by 1361.

1) Industry sources and the Ministry of Economy.
2) NPC.

Domestic production, on the other hand, is projected to grow at an annual rate of 24% between the years of 1351 and 1356 and will then level off between 1356 and 1361 to a rate of 8.1% for production rates worth 33.1 billion and 57.9 billion Rials respectively. Some of this is expected to be exported to neighbouring countries. The Consultants have estimated this export to be worth 0.6 billion and 1.2 billion Rials in 1356 and 1361 respectively. This leaves 10.9 and 5.6 billion Rials in 1356 and 1361 respectively to be imported. In volume terms this amounts to 130,000 and 67,000 tons.

6.6.7 Sugar and Confectionary Sugar (Commodities 1.07 and 2.07)

For forecasting purposes these two commodities are combined. (The reason for the split in two commodities, boxed and bagged is the freight differential).

Iran is presently experiencing a rapid growth in sugar consumption. While in the past demand has been satisfied by imports, it is expected that Government policy will dictate that future demand increases be satisfied by new domestic production.

The Fifth Plan indicates that the Government will back up its import substitution policy with an investment of 15 billion Rials in production facilities.[1] Assuming that Government's investments will yield expected results, it is projected that demand for sugar will increase at the rate of increase in private consumption expenditures during the 1351 to 1356, 10.8% and level off to the rate of population growth in the 1356 to 1361 of 3.1%. Production, on the other hand, is expected to increase at a rate of 8.1% per year between 1351 and 1361.

By 1361 production and consumption is expected to reach nearly equal values of 23 and 26.9 billions of Rials respectively.

Assuming that Iran will continue its policy of exporting small volumes of sugar to neighbouring countries, the resulting export demand for sugar and confectionary sugar is forecasted to be 0.071 billion Rials in 1356 and 0.092 billion Rials in 1361.

In volume terms the import of sugar for the years 1356 and 1361 is expected to be 15,000 tons and 36,000 tons boxed and 200,000 tons and 225,000 tons bagged respectively. Export, is expected to be 30,000 tons and 40,000 tons for 1356 and 1361 respectively.

6.6.8 Mineral Products (Commodity 1.08)

This commodity is highly heterogeneous consisting of items such as sand, clay, quartz, drilling mud, limestone, mica and "earth". It is both imported and exported (in 1350 Iran imported 1,734 tons of sand[2]) a relatively insignificant quantity.

In volume terms, it is expected that Iran's imports will increase between 1351 and 1356 to 155,000 tons out of which about 100,000 tons are drilling mud.[3] Exports during the same period are expected to grow at 21% per year to a volume of 100,000 tons.

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1) Plan Organization, The Fifth Plan (Tehran 1973) p.319.
2) Ministry of Finance, Foreign Trade Statistics of Iran, 1350 (Tehran 1351) p. 176.
3) Industry Statement

By 1361 imports are forecasted to reach 175,000 tons and exports 150,000 tons.[1)]

6.6.9 Non-ferrous Metals and Manufactures (Commodity 1.09 and 1.39)

For forecasting purposes these two commodities are combined. The product mix of this commodity consists of such items as aluminium sheets and bars, copper wire and sheets, tin ingots, nickel, magnesium, etc. In 1350 aluminium and copper composed the major portion of both import and export flows as shown in Table 6.7.

TABLE 6.7

COMPONENTS OF NON-FERROUS METALS AND MANUFACTURES 1350

	IMPORTS[2)]	EXPORTS[2)]
Copper Manufactures	1.8%	34.2%
Aluminium Manufactures	87.0%	38.1%
Other non-ferrous metals	11.2%	17.7%
Total non-ferrous metals	100.0%	100.0%

Taken as a composite group, both domestic production and exports are projected to grow faster but not surpass, domestic consumption and imports.

While non-ferrous metals manufactures exports are expected to increase over 27 times between 1351 and 1361, imports are projected to increase 6% due to import substitution. In 1356, the value of exports is projected to reach 1.8 billion Rials and in 1361, 5.5 billion Rials. Imports, on the other hand are projected to reach a value in 1356 of 5.3 billion Rials and in 1361 reach 7.1 billion Rials.

The definite tendency towards balance exhibited by future imports and exports is seen also in domestic consumption and production.

In 1361 consumption will reach 50 billion Rials as compared to the value of production in that year of 43.8 billion Rials.[3)]

6.6.10 Articles of Glass, Plaster, Cement, etc. (Commodity 1.10)

The foreign trade flows generated by this commodity are not significant in the total. In 1351 total imports amounted to 55,000 tons and total exports only 11,000 tons.

Although relatively insignificant, Iran possesses several product lines that may well enjoy considerable trade in the future. For instance, statistics recently released show that during 1351 mosaics and similar building materials exports increased 55% over the previous

1) Projections based upon Ministry of Economics, Input Output Table for Iran 1356 (Tehran 1973), adjusted to Port Planning Nomenclature by Adibi Harris Associates.
2) Ministry of Finance, Foreign Trade Statistics of Iran, 1350 (Tehran 1351) p.89.
3) Plan Organization, The Fifth Plan (Tehran 1973) developed from p. 896.

year. Exports of chinaware and glazed tile were reported to have increased at a rate of 53% in 1351.[1)]

Based on projections by the 5th Plan [2)], consumption is projected to increase at a rate of 20% per year in the period 1351-1361. Production in the same period is projected to increase by a rate of 22% per year. While imports are expected to nearly stabilize in the 1351-1361 period, exports are expected to grow at rate of about 30%. By 1361 the value of imports is projected to be 2.3 billion Rials and exports to be 3.2 billion Rials.

6.6.11 Animal Products (Commodity 1.11) and Live Animals (Commodity 4.11)

For forecasting purposes, these commodities are combined since they both represent food for humans. They are, however, split apart for handling purposes. The 5th Plan[3)] definitely commits Iran to a major effort in increasing both per capita consumption and domestic production of meat and dairy products. Large scale investments, production and distribution reorganization, stock breed improvement, lower cost meals and feeds, coupled with an intensive program of producer education is designed to ease the present per capita consumption deficit. Iran is not now nor is it forecasted to become a major exporter of animals or animal products.

In Section 3 table 3.8 of this report volume Iran's target in increasing per capita consumption of animal product was stated. The increase is from 68 Kg./capita in 1346 to 150 Kg./capita in 1373. A straight line interpolation results in 98. Kg./capita in 1356 and 113 Kg./capita in 1361 corresponding to a total consumption of 3,574,000 tons and 4,520,000 tons for the years 1356 and 1361 respectively.

The production in animal products is forecast to be as shown in table below.[4)]

TABLE 6.8

ANIMAL PRODUCTS PRODUCTION 1356.

Red meat	500,000	tons
Poultry	98,000	tons
Eggs	123,000	tons
Dairy Products	2,750,000	tons
Total	3,471,000	tons

This would require an import of 103,000 tons of animal products in 1356.

1) Economist: (Vol.13, Feb. 10, 1973) p.31.
2) Plan Organization, the Fifth Plan (Tehran 1973), p. 894, adjusted to Port Planning Nomenclature by Adibi Harris Associates.
3) Plan Organization, The Fifth Plan (Tehran 1973) p.214
4) Ministry of Agriculture, Planning Dept., Sept. 1973.

In 1350 the component products of these two commodities, imports consisted of the products shown in Table 6.9.[1)]

TABLE 6.9

COMPONENT OF ANIMAL PRODUCTS IMPORTS, 1350

Live Animals	40.2%
Meat	19.3%
Dairy Products	39.3%
Other	2.2%
Total	100.0%

Assuming the same distribution, about 40,000 tons would be imported as live animals (commodity 4.11) in 1356 and about 63,000 tons as animal products (commodity 1.11). In order to obtain 40,000 tons of product from live animals, about 80,000 tons need to be imported. In 1361 the imports are forecast to be 90,000 tons animal products and 120,000 tons live animals. The export is small.

6.6.12 Textiles (Commodity (1.12) and Floor Coverings & Carpets Commodity (1.42)

These commodities have been combined for forecasting purpose. They are separated later because of tariff differential between the commodities.

The component products of these commodities represent the main output of Iran's traditional manufacturing. In 1350 more than 50% of Iran's labor force was employed in this field.[2)] The value added by the production lines composing this commodity represented over 30% of the total industry value added in the past.[2)] The major products are cotton textiles, woollen textiles, knitware, carpets and silk thread. The Persian Carpet, accounted for one quarter of the value of total non-oil exports in 1350.

Inspite of the importance of Iran's production of this commodity to its total export foreign trade, in 1351 Iran was still a net importer of the commodity. In 1346 import value of textiles was nearly double that of exports of textiles and carpets combined. By 1351 the value of imports and exports were 15.8 and 9.05 billion rials respectively With consumption increasing at an average annual rate of 11.8% and production 13% over the coming 10 years, it is expected that the value of Iran's exports of this commodity will be more than twice that of imports.

By 1356 the total export commodity value is projected to equal 37.2 billion Rials[3)] and by 1361 the value is expected to be about 70 billion Rials. Imports on the other hand, are expected to reach 19.9 billion Rials in 1356[3)] and 31.7 billion Rials in 1361.

1) Ministry of Finance, Foreign Trade Statistics of Iran 1350, (Tehran 1972) p.p. 70 - 73.
2) Plan Organization, The Fifth Plan (Tehran 1973) p.324.
3) Plan Organization, The Fifth Plan (Tehran 1973) p.888.

While Iran is allocating great resources to the development of non-traditional manufactures , it cannot be said that it is neglecting the products in which its comparative advantage is a historic fact.

6.6.13 Cotton(Commodity 1.13)

Cotton is one of Iran's major agricultural exports. In 1350 over 300,000 hectares of land were under cotton cultivation, yielding a total of 459,000 tons annually.[1] According to the 5th Plan[2], cotton production is expected to increase at a rate of 2.9% between 1350 and 1356 to a value of 27 billion Rials. During this same period domestic consumption is projected to decrease from a value of 17 to 16 billion Rials, due to the impact of increased supplies of synthetic fibres. Owing to the increasing gap between production and consumption, exportable surpluses are expected to grow in value at an annual average rate of 12.9% from 1351 to 1356 and at a rate of 9.9% from 1356 to 1361. By 1361 the volume of cotton exports is projected to reach 378,000 tons.[3]

6.6.14 Wood and Wood Articles (Commodity 1.14)

The commodity wood and wood articles is essentially an import. Although exports are forecasted to enjoy favourable rates of growth in the future, they most likely will never during the period in question exceed 8,000 tons per year.

Imports, on the other hand are expected to increase at rapid rate between 1351 and 1361, at about 15% throughout the period. By 1356 Iran will import about 180,000 tons of wood at a value of 2.3 billion Rials and by 1361 imports should reach 360,000 tons at a value of 4.7 billion Rials. This increase will be destined, in the main, to construction (60%), furniture production (25%) and private consumption (5%) [4].

6.6.15 Prepared Food Stuffs (Commodity 1.15)

One of the most clearly stated goals of the 5th Plan[5] is for Iran to become self sufficient in the area of prepared foodstuffs, i.e. in production of canned food stuffs, beverages, and tobacco products. Beyond increasing the nutrient level of the Iranian population, this goal is designed to stimulate the development of small private industry and consequently increase employment in areas outside the present large urban complexes. The pattern and volume of investment called for in the 5th Plan also indicate that Iran intends to become a major exporter of this commodity.[5]

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1) Ministry of Agriculture.
2) Plan Organization, The Fifth Plan (Tehran 1973) developed from p.208.
3) Plan Organization, The Fifth Plan (Tehran 1973) adjusted in accordance with guidelines supplied by Ministry of Agriculture in response to questionnaire.
4) Ministry of Economy, Input Output Table for Iran, 1356 (Tehran 1973).
5) Plan Organization, The Fifth Plan (Tehran 1973) p.886.

According to Plan Organization [1] sources, investments in the production of canned food stuffs, "conserves", are to reach 800 million Rials during the coming 5 year period. Investments in the production and bottling of alcholic beverages, wine and beer, are to reach 500 million Rials. Finally, it is indicated that investments in the production of tobacco and related products are to reach 2,000 million Rials.

Taking the commodity as whole, it is projected[2] that consumption will grow from 56 billion Rials in 1350 to 81.4 billion Rials in 1356, an average annual increase of 7.8%. By 1356 consumption growth will begin to level off and is expected to attain a value of 96.7 billion Rials, a rate of 3.4%. Production is projected to attain equal rates of growth. By 1356 production should reach 81.4 billion Rials and by 1361 97.6 billion Rials.

Between 1346 and 1350, during the 4th Plan, imports increased at a rate of 24%. It is projected the rate of growth of imports will drop-off to 18.5% per year during the 5th Plan and be reduced to 7.3% during the period of 6th Plan. By 1361, imports are forecasted to attain a value of 2.9 billion Rials.

Exportable surpluses of prepared food stuffs are projected to increase at an average annual rate of 5.9% during the 5th Plan and 8.5%.during the 6th Plan. In 1356 the value of exports is projected to be 1.1 billion Rials and in 1361 1.6 billion Rials.

6.6.16 Edible Fruits and Nuts (Commodity 1.16)

Fruits and nuts, particularly dried fruits and specified types of nuts (pistachios) are successful traditional exports of Iran. Iran's experience in the production of citrus fruit and apples, however is not great. In order to supply the massive increases required to attain targets set for prepared food stuffs, commodity 1.15, increased production in this latter area will be necessary. For this reason, in contrast to the figures called for by the 5th Plan[3] projections by the Consultants do not foresee a total substitution of imports.

Assuming reasonable increases in consumption expenditures and price stability, consumption of edible fruits and nuts are projected to increase at 4.3% per annum during the 5th Plan and 3.6% during the 6th Plan[4]. By 1361 the value of domestic consumption should approximate 36,810 million Rials. Production, on the other hand, is estimated to attain a growth rate of 4.8% during the 5th Plan and 4.3% during the 6th Plan.[4] Exportable surpluses are expected to increase at 9.8% during the 5th Plan, and 7.8% during the 6th Plan. By 1356 exports should reach 6.3 billion Rials and by 1361, 9.2 billion Rials.

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1) Plan Organization, The Fifth Plan (Tehran 1973) p.886.
2) Adibi Harris Associates projections based on previously described private consumption expenditures indicator.
3) Plan Organization, The Fifth Plan (Tehran 1973) p.207.
4) Guidelines established by Ministry of Agriculture, Statistical Center, Response to questionnaire.

Imports are expected to increase during the 5th Plan period at a rate of 12.6% to a value of 1.3 billion Rials in 1356. During the 6th Plan period edible fruits and nuts imports will most likely drop-off to a 1.7% rate of growth and value in 1361 of only 1.4 billion Rials.

6.6.17 Vegetable Products (Commodity 1.17)

This commodity consists of vegetables, such as potatoes, onions, tomatoes, etc., and oil seeds other than soya beans. Soya beans, commodity 3.02 and cereals, commodity 3.01 are considered elsewhere.

Iran has in the past marked-up an excellent record of consumption increases coupled with increases in domestic production and exportable surpluses. There is no reason to assume that this trend will change.

In the 1350's Iran's consumption of vegetable products was valued at 69.7 billion Rials and its production 69.7 billion Rials. In 1351 imports were worth 2.2 billion Rials, and exports about the same. By 1356, production is expected to out distance consumption. In that same year exports are expected to attain a historic high value of 4.4 billion Rials but imports may be expected to grow to as high as 6.3 billion Rials.

By 1361, exports should reach a value of 7.0 billion Rials and imports remain at 6.3 billion Rials.

6.6.18 Raw Hides & Skins (Dried) (Commodity 1.18)

The private sector's quick response to increased demand of this commodity has been impressive. With excellent skilled labor available for leather working and processing, relatively low material costs and elastic supply, Iran's future progress in the commodity seem assured. Iran's production increased at a rate of 9.6% per year for 1346 to 1350.[1] After an average annual growth rate of over 12.6% between 1350 and 1361, the value of production is forecasted to be 16.4 billion Rials.

During the 5th and 6th Plan periods, export value is projected to increase at a rate of 4.6% and 14.9% per annum to a total value of over 5.0 billion Rials in 1361. Imports in the same period are expected to increase at a rate of 14.9% annually to a value of 1.4 billion Rials in 1361.

6.6.19 Lubricating Oil (Commodity 1.19)

The commodity covers the small quantity of oil imports, mostly special lubricating oils. For the future, its trend is projected as a continuation of the past, i.e. to decrease. By 1356 the value of imports is expected to be 225 million Rials increasing to 206 million Rials, by 1361.

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1) Plan Organization, The Fifth Plan (Tehran 1973) p.883.

6.6.20 Other General Cargo (Commodity 1.20)

The formation of the "catch-all" commodity 1.20 of numerous small quantity items is described earlier.

Imports are expected to increase by 15% per annum to 55,000 tons in 1356 and then dropback to 50,000 tons in 1361 due to import substitution. Exports are expected to increase by 15% per annum to 220,000 tons in 1356 and by 20% per annum after 1356 to 450,000 tons in 1361 due to increasingly sophisticated industrialization.

Under this commodity has also been included a "development" commodity.. This development commodity is defined as consisting of exportable commodities of unknown types currently not made in Iran, but one day, although still unknown, may be made in Iran. The export quantities have been assumed to be 100,000 tons and 200,000 in the years 1356 and 1361 respectively. The commodity may also be called a 'contingency' commodity.

6.6.21 Electrical Cables & Wires (Commodity 1.33)

In 1351 Iran consumed about 33,000 tons of electrical cables and wires. Domestic production amounted to about 9,000 tons.[1] Consumption is expected to reach 71,000 tons and 134,000 tons in the years 1356 and 1361 respectively. A new production unit with a capacity of 75,000 tons is expected to be complete by 1356,[2] providing a domestic capacity of 84,000 tons. It is however expected that about 7,000 tons of special cables that will not be produced domestically still will need to be imported. This leaves an exportable surplus for 1356 of 20,000 tons. It has been assumed that an additional unit of 75,000 tons capacity will go on stream by 1361. Capacity will then be 159,000 tons. Some 10,000 tons special cables are expected to be imported for a exportable surplus of 35,000 tons.

6.6.22 Footwear (Commodity 1.50)

Present consumption in Iran is about 70 million pairs of shoes or, 2.2 pairs per capita. By 1356 per capita consumption is targeted at 3.5 pairs[3] or 126 million pairs.

There are now three major shoe producers in Tehran and many smaller companies in the provinces. All these companies have ambitious development programs. In 1351, the Iranian shoe industry produced nearly 100 million pairs, of which nearly one quarter came from village production, Production increased between 1350 and 1351 by over 20%.

Assisted by an aggressive export promotion policy, the products of Iran's shoe industry are being sold on an increasingly wide scale in the U.S.S.R., Eastern Europe and the E.E.C. countries.[4]

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1) IRAN BYKA, IKO.
2) Ministry of Economy.
3) Plan Organization, The Fifth Plan (Tehran 1973) p.329.
4) Echo of Iran, July 1972, page 2.

In 1351 Iran exported footwear valued at 982 million Rials. This is expected to increase at 14% per annum to 1.9 billion in 1356. After that time, it is expected that the export growth rate will stabilize at about 9.9% for a value of 3 billion Rials. Imports are negligible.

6.6.23 Cement (Commodity 2.01)

Cement production and consumption at the time of writing is in a state of flux. Accompanying the announcement of targeted self-sufficiency in the production of cement have come notices of massive import orders from Iran's neighbouring countries. While the 5th Plan calls for sizeable increases in investments in this area, demand has increased well ahead of projected targets. Consequently, prices increased and, when the Government fixed the price, a black market immediately developed.

The problem in this area is Iran's dynamic growth, both in the traditional centers of population and newly created cities and towns. While Iran has the resources and is making available the investments, production has simply not caught up with consumption.

Instead of self-sufficiency, projections adopted by the Consultants call for import requirements in 1356 of 1 million tons[1] with next to no exports in that year. It is considered that by 1361, the industry will have straightened itself out. Thus by 1361 imports will no longer be needed and a exportable surplus of 1 million[1] will be available.

6.6.24 Manufactured Fertilizers (Commodity 2.02)

This commodity consists mainly of DAP, MAP and Urea. According to industry sources[2] the facilities at Shahpour in 1356 will have a production and export schedule as shown in Table 6-10.

TABLE 6.10

SHAHPOUR CHEMICAL FERTILIZER PRODUCTION AND EXPORT 1356

Product	Production (Tons)	Export (Tons)
DAP	264,000	--
MAP	131,000	131,000
UREA	700,000	350,000
		481,000

In addition, the consultants have been advised[3] that a 500,000 tons per year export unit will be built near Mashad for utilization of the newly discovered gas fields there, bringing the 1356 exports to 981,000 tons, all moving outside PSO facilities.

1) Ministry of Economy.
2) NPC
3) Ministry of Economy.

For 1361, the consultants have assumed that during the 6th Plan, export facilities similar to those of the 5th plan will be completed, bringing the exports in that year to about 2 million tons.

Imports are negligible, the country basically being self-sufficient in this commodity.

6.6.25 Meals and Feeds (Commodity 2.03)

Iran at the present time is importing high grade meals and feeds (oil seed meal, fish meal) and exporting low grades (straw and pulp waste) Progress in the production of this commodity is a pre-requisite to the successful development of Iran's meat and dairy industry. The plan organization seems to subscribe to the position that consumption is restricted due to the lack of suitable vegetable and pulp wastes. Thus the 5th Plan allocates an investment of 2 billion Rials for the development of required stable sources.[1] This would upgrade the pulp waste now being exported to be used in connection with meals and feeds made from imported material. The development of the foreign trade in meals and feeds must therefore be considered in connection with the trade in Animal and Vegetable Fats and Oils (Commodity 2.04) and Soya beans (Commodity 3.02). The Consultants have been advised in writing[2] that at the end of the Fifth Plan it is foreseen that 200,000 tons of soya bean oil or 1,200,000 tons soya beans will be imported, or a mixture of both, depending upon market conditions beyond Irans control. Upgraded pulp waste will supplement this oil use. Export of the pulp waste based meals and feeds is therefore expected to disappear, and only export of the lowest grade straw based meals and feeds are expected to continue. It is forecast that this export will stabilize at 20,000 tons per year for the year 1356 and 1361. Import of specialized meals and feeds, particularly fish meal is expected to continue into 1356, with the oil based portion replaced by import substitution. An import of 35,000 tons is forecast for 1356, being reduced to 27,000 tons in 1361 by the effect of development of Persian Gulf and Oman Sea fishing industries and fish meal production.

6.6.26 Animal Vegetable Fats and Oils (Commodity 2.04)

Domestic consumption of this commodity is presently valued at 12 billion Rials, of which 7.6 billion Rials are from domestic production and 4.4.billion Rials are from import.[3] Domestic production for exports is at present time about 0.5 billion Rials of vegetable fats and oils.

The future of this commodity must be seen in connection with Iran's overall animal feed policy, particularly the Meals and Feeds commodity and Soya beans.

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1) Plan Organization, The Fifth Plan (Tehran 1973) p.887.
2) Ministry of Agriculture, copy of letter No.21674/6328510 dated 26.6.1352 to PSO.
3) Ministry of Agriculture.

According to official sources[1] Iran expects to import 200,000 tons of soya bean oil or the equivalent in soya beans. Since market conditions are unknown, the port planners must prepare for handling both, since one year only oil and in another only beans may be obtainable in the international market with very limited sources, essentially North America only. In addition to the soya bean oil there is an estimated 56,000 tons of animal fats and oils that need to be imported, bringing the 1356 import of this commodity to 256,000 tons. For 1361 the consultants have assumed a 50% total increase during the Sixth plan, based on discussion with officials on food consumption targets. The declared import targets of soya bean oil (or beans) results in an exportable surplus of about 70,000 tons in 1356 and about 77,000 tons in 1361. These projections, however, need to be watched carefully from year to year because local crop successes or failures may significantly change the picture.

6.6.27 Quarry Stone (Commodity 2.05)

No analysis was carried out on the future foreign trade of this commodity. Projections are based on past trends.

In 1351 the value of Quarry Stone imports and exports were 9 million Rials and 49 million Rials respectively. Imports are projected to decrease to "zero" in 1356 and 1361. Exports are expected also to exhibit a negative growth, levelling out at about 35-40 million Rials.

6.6.28 Gypsum (Commodity 2.06)

Owing to negligible foreign trade, this commodity received no analysis. Based on past trends, imports of (high grade) gypsum are expected to remain at the current level of 8 million Rials. Export in the past was limited by capacity limitation. In the future, an export of 10,000 tons is expected.[2]

6.6.29 Cereals (Commodity 3.01)

Cereals, mainly wheat, is an import commodity. In 1351 about 1 million tons were imported to satisfy domestic consumption. In order to meet target consumption and close domestic production deficiencies, the Consultant have been advised[3] that by the end of the Fifth Plan the cereals imports will be as shown in Table 6.11.

TABLE 6.11

CEREAL IMPORTS 1356

Wheat	1,000,000 tons
Barley	300,000 tons
Rice	238,000 tons
Other	350,000 tons
Total	1,888,000 tons

1) Ministry of Agriculture, as mentioned in 6.6.25.
2) Ministry of Economy.
3) Ministry of Agriculture.

Because of slightly improved domestic production in the Sixth Plan, the Consultants have assumed that imports will level off at 1356 levels.

6.6.30 Soya Beans (Commodity 3.02)

Soya Beans are also an import commodity. Presently, essentially nothing is imported. Under Iran's import of animal food policy' either 200,000 tons of soya bean oil or 1,200,000 tons of soya beans will be imported in 1356.[1] As mentioned under paragraph 6.6.26 for port planning purposes, the country must be able to receive this food in either form, i.e. plan capacity for both. They have entirely different handling characteristics, one being liquid, the other granular. The former is handled in pipes and tanks, the latter by conveyors and in silos. For 1361, a 50% total increase during the Sixth Plan has been assumed as for the soya bean oil, since one replaces the other, depending upon market conditions.

6.6.31 Fertilizer Materials (Commodity 3.03)

Presently the only flow of fertilizer materials is the import of phosphate rock. In 1351 the import amounted to 380,000 tons.[2] This will increase to 900,000 tons in 1356.[2] The Consultants have assumed that units increasing the capacity by 150% will be completed during the Sixth Plan based on analysis of Government policies and discussion with industry in this field. Imports would then reach about 2.5 million tons in 1361. The industry[2] has also stated that 45,000 tons of phosphoric acid will be exported in 1356. The Consultants have assumed that this level will be retained rather than increased in 1361 with the higher production rates due to internal demand. None of these commodities move presently through PSO facilities or are scheduled to.

6.6.32 Sulphur (Commodity 3.04)

In 1351, 489,000 tons of sulphur was exported from Shahpour Chemical[3] at Shahpour. Production and exportable surplus at Kharg Island was stock piled. By 1356 Shahpour Chemical will utilize their own production at Shahpour.[3]

However, Kharg Chemical is expected to export 462,000 tons.[3] In addition, 500,000 tons is expected from the new large export refinery to be built during the Fifth Plan, for a total of 962,000 tons export in 1356.[4]

During the 6th Plan two more export refineries are expected to be completed bringing exportable sulphur surplus to 2,000,000 tons in 1361.[4]

No imports of this commodity is expected.

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1) Ministry of Agriculture.
2) N.P.C.
3) N.P.C.
4) Ministry of Economy.

The commodity does not move through PSO facilities.

6.6.33 Iron and Steel Scrap (Commodity 3.05)

Scrap is solely an import and its volume is fully a function of the needs of the steel industry. The steel industry has been described in Section 3 of this report volume. According to industry sources, the scrap imports will be 150,000 tons in 1356 and 750,000 tons in 1361[1].

6.6.34 Coal (Commodity 3.06)

Industry sources[1] forecast an export of coal of 200,000 tons in 1356 and 260,000 tons in 1361.

6.6.35 Iron Ore, Pellets and Sponge (Commodity 3.07)

Basically, Iran is self-sufficient in Iron ore. In fact, exportable surpluses will be available. The industry[2], however, does not plan export of ore, but intends to export steel. This was discussed in Section 3.2.2 and shown in the steel balance figures in that Section. In 1356, the industry[2] intends to have a direct reduction furnace in operation in Ahwaz. It is possible that the pellet plant at the Gole Gohar mines will not be ready for the direct reduction furnace. It is therefore possible that for one to three years the pellets will be imported.

6.6.36 Chromite Ore and Concentrate (Commodity 3.08) and Ferrochrome (Commodity 3.09).

In 1351 Iran exported more than 100,000 tons of Chromite. Domestic consumption appears to be nil.[3] It is forecasted that the export will grow rapidly at a rate of 17.7% during the Fifth Plan to 230,000 tons annually due to rapidly increasing world demand. During the sixth plan it is forecast that a ferrochrome plant will be built[4], with a capacity of 50,000 tons per year, mainly for export. The export of chromite is forecast to level off at about 260,000 tons per year in 1361, partially because of capacity - the smaller, uneconomical mines being closed down.

6.6.37 Lead, Zinc Ore, Concentrate and Metal (Commodity 3.10)

In 1351 Iran exported 162,000 tons of Lead Zinc Ore. The export is forecast to grow slowly, at a rate of 4.3% annually to reach 200,000 tons by 1356, valued 1.44 billion Rials which is considered a practical capacity of the mines. During the sixth plan it is expected that a smelter will be established[4], probably located at Arak.[5] This location will make possible the accumulation

1) Iran National Steel Company, National Steel Corporation, Shahriar Industries
2) National Steel Corporation.
3) Mining Statistics of Iran, Iran Metal and Mining Input and Output Matrix (Ministry of Economy, Tehran 1968) p.47.
4) Ministry of Economy.
5) Response to Adibi Harris Associates questionnaire.

of ores at a point central to ore beds near Zanjan (Angourass Mine), near Yazd (Koushke Mine) and other scattered beds in the Ostans of Esfahan, Central and Khorassan.

On the basis of this prognosis, it is expected that the export of this commodity will undergo a value added transfer. By 1361 it is projected that the volume of exports will drop to 70,000 tons of metal, not ore or concentrate, while the value will increase 20% to 1.73 billion Rials. Any increase in production which may take place during the 1356 to 1361 period is expected to be destined to domestic consumption. Consequently exports for the year of 1361 are expected to remain at 70,000 tons.

6.6.38 Alumina and Bauxite (Commodity 3.11)

As an import, development of this commodity is a function of Iran's aluminium industry. It is forecasted that by 1356 imports of alumina will reach 90,000 tons (606 million Rials) and will increase to 135,000 tons by 1361.

Iran's aluminium industry is located at Arak. Hydroelectric energy for the production process is transmitted 300 kilometers to Arak from the Dez Dam. The plant was developed as a joint venture between Iran, Pakistan and the U.S. at an investment of $50 million. Iran holds 70% of the shares, while Pakistan and America hold 5% and 25% respectively.[1)]

Iran has contracted to import its alumina, (no bauxite will be used) from Australia. In the first phase of production the plant is scheduled to produce 45,000 tons of aluminium ingots of which 18,000 tons will go to export and 27,000 tons to domestic consumption. It is expected that by 1361 production will have been nearly doubled. In that year exports are expected to reach 36,000 tons and domestic consumption 54,000 tons.[2)]

The future prospects of the aluminium industry presents an interesting case of the type of problem facing Iran as its products are forced increasingly to meet international price standards. If the index value of a ton of aluminium ingots on the international market is 100, Iran's present cost for the production of an equal ton is 318 ex factory. With the addition of transport and port handling costs the actual cost of the ton at the port has an index value of 322. Iran's development task in aluminium over the coming years is precisely to reduce the extra index of 222 to zero.

6.6.39 Salt (Commodity 3.12)

Foreign Trade in salt is insignificant. It is expected to stabilize itself at a value of 5 million Rials per year in export. Import is practically nil.

6.6.40 Other Ores (Commodity 3.13)

No analysis was carried out on the component products of "other ores". Based on past trends export of other ores are expected to reach a value of 73 million Rials in 1356 and 181 million Rials in 1361. Imports are projected to reach 40 million Rials in 1356 and 80 million Rials in 1361.

1) Arak Aluminium Industry, Iran Trade & Industry (Tehran April 1972) p. 26.
2) Industry response to Adibi Harris Associates questionnaire.

6.6.41 Iron and Steel (Commodity 4.01)

This commodity includes, bars, shapes, plates, billets and slabs, but does not include manufactured items and mechanical equipment which are described under other commodities.

Iran's steel balance including import/export is shown in detail in Section 3.2.2.

6.6.42 Copper, Blister, Ingot (Commodity 4.02)

With discovery of the Sar Cheshmeh copper ore deposit in the early 1340's Iran's role as a copper producer was initiated. Figure 3.11 illustrates the schematic development of the copper industry in Iran.

Projections for the future foreign trade of this industry are based solely upon industry information[1]. According to industrial sources, production will level at 160,000 tons per year and exports of copper in blister form will equal 126,000 tons by 1356. By 1361 exports will have reduced to 105,000 tons. Domestic consumption of the output of the copper refinery to be located at Sar Cheshmeh is reported to be 34,000 tons in 1356 and 55,000 tons in 1361. The only other source of copper, in ingot form is the Ghaniabad Refinery near Tehran. This plant produces approximately 1,500 tons per year.

6.6.43 Vehicles (Commodity 4.03)

This commodity consists of tractors, bicycles, motorcycles, automobiles, etc. Automobiles, however are by far the most important item.

Owing to rapid increase in domestic demand and a restriction of imports, production of automobiles between 1346 and 1351 increased at a rate of 42% per annum. By 1351 the industry was producing 48,000 units or 91% of domestic consumption. The 5th Plan projects that by 1356 the Iranian auto industry will supply 93% of domestic consumption, producing nearly 100,000 units annually.[2] This target, however, has already been achieved and new targets have

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1) Response to Adibi Harris Associates, questionnaire.
2) Plan Organization, The Fifth Plan (Tehran 1973), p.352.

been set[1]. The new target is 250,000 vehicles by 1356 and double this during the Sixth Plan.[1] Practically all weight components of automobiles are imported and will continue to be imported through the Fifth Plan, reaching 400,000 tons in 1356. During the Sixth Plan, the domestic weight component is expected to reach 50%. With doubled production, however, the import will still be 400,000 tons in 1361.

6.6.44 Liquified Petroleum Gases (Commodity 4.04) Ammonia (Commodity 4.05) Solvents (Commodity 4.06)

According to the industry[2] the export of these commodities in 1356 will be as shown in Table 6.12

TABLE 6.12

LIQUID CHEMICAL EXPORTS 1356

LPG	2,450,000 tons
Ammonia	227,000 tons
Solvents	390,000 tons

For 1361, the Consultants have assumed the quantities would approximately be doubled, based on conversations with the industry. Imports will essentially be nil. None of the commodities currently move through PSO facilities.

6.6.45 Military Cargo (Commodity 4.07)

No estimates have been obtained from the military for security reasons. Berth space however, will be assigned for the military in the major Persian Gulf Ports.

Table 6.13 summarizes the projections undertaken.

Table 6.14 shows the projected tonnages in terms of general, bulk/general, bulk, special and enclave cargoes for the time 1346 to 1366.

Table 6.15 shows the value of Irans foreign trade in terms of imports and exports for the same period of time.

Figure 6.1 shows the non-oil foreign trade throughput 1346-1366.

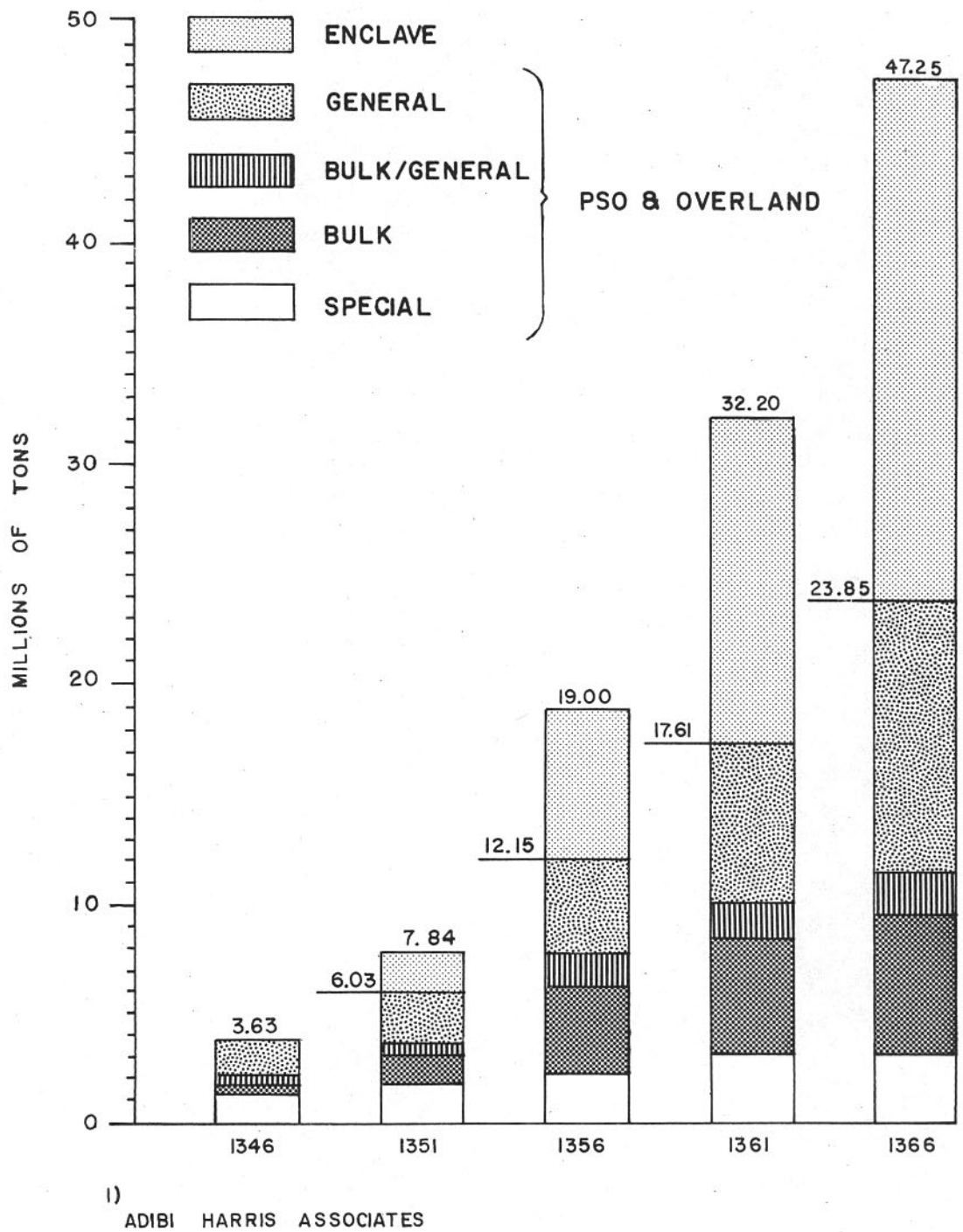
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1) Ministry of Economy
2) NPC.

FIGURE 6.1

NON OIL FOREIGN TRADE THROUGHPUT [1]

FOR THE YEARS 1346 TO 1366.



1) ADIBI HARRIS ASSOCIATES

TABLE 6.13

FOREIGN TRADE FLOWS [1]
GENERAL CARGO IMPORTS - 1351

	COMMODITIES	GROWTH RATE[2] % per annum	WEIGHT 000's tons	VALUE[3] Billion Rials
1.01	Chemical Products	13.0	258	14.516
1.02	Mechanical Equipment	11.7	235	45.807
1.03	Electrical Equipment	12.4	56	16.555
1.04	Paper & Paper Materials.	21.0	179	4.017
1.05	Plastics & Rubber	16.0	157	7.694
1.06	Iron & Steel Manufactures	12.9	66	5.538
1.07	Sugar & Confectionary Sugar, boxed	-5.2	7	.093
1.08	Mineral Products	18.5	49	.619
1.09	Non-ferrous Metals & Manufactures	8.2	43	4.069
1.10	Articles of Glass, Plaster, Cement etc.	3.2	55	2.436
1.11	Animal Products	20.0	24	2.133
1.12	Textiles	11.0	150	15.783
1.13	Cotton	-	-	-
1.14	Wood & Wood Articles	6.7	92	1.201
1.15	Prepared Food Stuffs	24.0	6	.871
1.16	Edible Fruits & Nuts	5.8x	58	.723
1.17	Vegetable Products	27.5	60	2.170
1.18	Raw Hides & Skins (Dried)	-10.8	3	.356
1.19	Petroleum Products	23.5	37	.705
1.20	Other General Cargo	12.4	27	9.078
1.33	Electric Cables & Wires	23.5	33	2.915
1.34	Paper Board (Craft Board & Craft Liner)	22.5	32	.874
1.39	Non-ferrous Metals, Semi-Manufactures (Sheets)	12.3	9	.824

TABLE 6. 13 (CONT'D...)

GENERAL CARGO IMPORTS - 1351

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
1.42	Floor Coverings & Carpets	-	-	.012
1.48	Raw Hides & Skins (Wet)	-	-	-
1.50	Footwear	-	-	.007
	TOTAL GENERAL CARGO	14.5	1636	138.996

1) Foreign Trade Statistics of Iran, Ministry of Finance.

2) Since begin of Plan ending the stated year.

3) In constant 1351 Rials.

x = Times.

TABLE 6 .13(CONT'D...)

GENERAL CARGO EXPORTS - 1351

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
1.01	Chemical Products	16.3x	98	5.762
1.02	Mechanical Equipment	-	4	.201
1.03	Electrical Equipment	-	1	.043
1.04	Paper & Paper Materials	-	-	.016
1.05	Plastics & Rubber	-	2	.126
1.06	Iron & Steel Manufactures	-	1	.030
1.07	Sugar & Confectionary Sugar, boxed	9.5	22	.052
1.08	Mineral Products	24.5	45	.224
1.09	Non-ferrous Metals & Manufactures	-	3	.205
1.10	Articles of Glass, Plaster, Cement etc.	5.5x	11	.236
1.11	Animal Products	-9.1	6	.667
1.12	Textiles	12.3	9	3.256
1.13	Cotton	9.6	128	5.998
1.14	Wood & Wood Articles	-20.0	2	.020
1.15	Prepared Food Stuffs	9.1	3	.806
1.16	Edible Fruits & Nuts	10.7x	107	3.987
1.17	Vegetable Products	-5.8	62	1.688
1.18	Raw Hides & Skins (Dried)	14.8	24	2.098
1.19	Petroleum Products	-	-	-
1.20	Other General Cargo	4.58x	110	13.10
1.33	Electrical Cables & Wires	-	-	.001
1.34	Paper Board (Craft Board & Craft Liner)	-	-	.002
1.39	Non-ferrous Metals, Semi-Manufactures (Sheets)	-	-	-

TABLE 6. 13(CONT'D...)

GENERAL CARGO EXPORTS - 1351

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
1.42	Floor Coverings & Carpets	9.1	15	6.824
1.48	Raw Hides & Skins (Wet)	-	-	.023
1.50	Footwear	6.5x	13	.982
	TOTAL GENERAL CARGO	13.2	666	46.347

TABLE 6 · 13 (CONT'D...)

BULK-GENERAL CARGO IMPORTS - 1351

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
2.01	Cement	7.6	58	.141
2.02	Manufactured Fertilizers	-51.0	1	.010
2.03	Meals & Feeds	23.5	38	.752
2.04	Animal & Vegetable Fats & Oils	9.0	173	4.432
2.05	Quarry Stone	-	1	.009
2.06	Gypsum	-	1	.008
2.07	Bagged Sugar	-4.7	155	1.944
	TOTAL BULK GENERAL CARGO	0.6	427	7.296

BULK-GENERAL CARGO EXPORTS - 1351

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
2.01	Cement	18.5	24	.035
2.02	Manufactured Fertilizers	-	-	-
2.03	Meals & Feeds	8.9x	125	.589
2.04	Animal & Vegetable Fats & Oils	9.9	16	.523
2.05	Quarry Stone	4.6	55	.049
2.06	Gypsum	-8.4	2	.001
2.07	Bagged Sugar	-	-	-
	TOTAL BULK GENERAL CARGO	10.6	-222	1.197

TABLE6 . 13(CONT'D...)

BULK CARGO IMPORTS - 1351

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
3.01	Cereals	11.8x	957	6.843
3.02	Soya Beans	-	-	-
3.03	Fertilizer Materials	6.2x	380	.417
3.04	Sulphur	-	-	.008
3.05	Iron & Steel Scrap	23.5	13	.036
3.06	Coal	-	1	.003
3.07	Iron Ore Pellets & Sponge	-	-	-
3.08	Chromite Ore - Concen	-	-	-
3.09	Ferrochrome	-	-	-
3.10	Lead-Zinc Ore & Concen	-	-	-
3.11	Alumina & Bauxite	-	48	.320
3.12	Salt	-	-	-
3.13	Other Ores	-	1	.020
3.36	Coke	-	1	.010
	TOTAL BULK CARGO	9.5x	1401	7.657

TABLE 6.13 (CONT'D...)

BULK CARGO EXPORTS - 1351

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
3.01	Cereals	-46.0	2	.020
3.02	Soya Beans	-	-	-
3.03	Fertilizer Materials	-	47	.219
3.04	Sulphur	-	489	.721
3.05	Iron & Steel Scrap	-	-	.003
3.06	Coal	-	-	-
3.07	Iron Ore Pellets & Sponge	-	-	-
3.08	Chromite Ore - Concen.	2.6	101	.263
3.09	Ferrochrome	-	-	-
3.10	Lead-Zinc Ore & Concen.	13.0	162	1.161
3.11	Alumina & Bauxite	-	-	-
3.12	Salt	-8.5	2	.003
3.13	Other Ores	-2.0	10	.017
3.36	Coke	-	-	-
	TOTAL BULK CARGO	22.5	813	2.407

TABLE 6 .13(CONT'D...)

SPECIAL CARGO IMPORTS - 1351

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
4.01	Iron & Steel	5.8	1698	24.981
4.02	Copper Blister, Ingot	-5.0x	1	.074
4.03	Vehicles	5.7	99	15.852
4.04	Liquified Petroleum gases	-	-	.003
4.05	Ammonia	-	-	.004
4.06	Solvents	5.0x	5	.123
4.07	Military Cargo	-	-	.025
4.11	Live Animals	8.3x	25	.964
	TOTAL SPECIAL CARGO	6.0	1828	42.026
	TOTAL IMPORTS	13.9	5292	195.975

TABLE 6 - 13 (CONT'D...)

SPECIAL CARGO EXPORTS - 1351

		GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
4.01	Iron & Steel	-	2	.063
4.02	Copper Blister, Ingot	-	1	.074
4.03	Vehicles	-	1	.153
4.04	Liquified Petroleum gases	-	663	.084
4.05	Ammonia	-	90	.717
4.06	Solvents	-0.2	86	.214
4.07	Military Cargo	-	-	-
4.11	Live Animals	-8.4	4	.113
	TOTAL SPECIAL CARGO	8.5x	847	.872
	TOTAL EXPORTS	24.0	2548	50.823

TABLE 6.13 (CONT'D.)

FOREIGN TRADE FLOWS
GENERAL CARGO IMPORTS - 1356

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
1.01	Chemical Products	14.1	500	28.108
1.02	Mechanical Equipment	12.6	425	82.705
1.03	Electrical Equipment	16.5	120	35.241
1.04	Paper & Paper Materials.	24.0	526	11.787
1.05	Plastics & Rubber	4.9	200	9.804
1.06	Iron & Steel Manufactures	14.6	130	10.907
1.07	Sugar & Confectionary Sugar, boxed	16.0	15	.195
1.08	Mineral Products	26.0	155	1.968
1.09	Non-ferrous Metals & Manufactures	5.4	56	5.333
1.10	Articles of Glass, Plaster, Cement etc.	-2.0	50	2.227
1.11	Animal Products	21.2	63	5.647
1.12	Textiles	4.9	190	20.027
1.13	Cotton	-	-	-
1.14	Wood & Wood Articles	14.4	180	2.336
1.15	Prepared Food Stuffs	18.5	14	2.032
1.16	Edible Fruits & Nuts	12.6	105	1.303
1.17	Vegetable Products	23.8	175	6.297
1.18	Raw Hides & Skins (Dried)	14.9	6	.712
1.19	Petroleum Products	-25.0	12	.225
1.20	Other General Cargo	15.0	55	18.492
1.33	Electric Cables & Wires	-4.7x	7	.613
1.34	Paper Board (Craft Board & Craft Liner)	8.8	21	.570
1.39	Non-ferrous Metals, Semi-Manufactures (Sheets)	2.3	8	.732

TABLE 6 . 13 (CONT'D...)

GENERAL CARGO IMPORTS - 1356

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
1.42	Floor Coverings & Carpets	-	-	.082
1.48	Raw Hides & Skins (Wet)	-	-	-
1.50	Footwear	-	-	-
	TOTAL GENERAL CARGO	13.1	3013	247.343

TABLE6 . 13(CONT'D...)

GENERAL CARGO EXPORTS - 1356

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
1.01	Chemical Products	6.7 x	655	38.511
1.02	Mechanical Equipment	20.0	10	.503
1.03	Electrical Equipment	5.0x	5	.215
1.04	Paper & Paper Materials	10.5x	5	.168
1.05	Plastics & Rubber	173.5x	347	21.861
1.06	Iron & Steel Manufactures	20.0x	20	.600
1.07	Sugar & Confectionary Sugar, boxed	6.4	30	.071
1.08	Mineral Products	17.2	100	.495
1.09	Non-ferrous Metals & Manufactures	9.0x	27	1.845
1.10	Articles of Glass, Plaster, Cement etc.	4.5x	50	1.074
1.11	Animal Products	3.0	7	.778
1.12	Textiles	14.9	18	6.512
1.13	Cotton	12.9	235	11.023
1.14	Wood & Wood Articles	14.9	4	.040
1.15	Prepared Food Stuffs	5.9	4	1.075
1.16	Edible Fruits & Nuts	9.8	171	6.333
1.17	Vegetable Products	20.6	159	4.367
1.18	Raw Hides & Skins (Dried)	4.6	30	2.662
1.19	Petroleum Products	-	-	-
1.20	Other General Cargo	14.9	220	26.208
1.33	Electrical Cables & Wires	1)	20	.952
1.34	Paper Board (Craft Board & Craft Liner)	-	-	-
1.39	Non-ferrous Metals, Semi-Manufactures (Sheets)	-	-	-

TABLE 6.13 (CONT'D...)

GENERAL CARGO EXPORTS - 1356

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
1.42	Floor Coverings & Carpets	25.0	46	20.927
1.48	Raw Hides & Skins (Wet)	-	-	-
1.50	Footwear	14.0	25	1.888
	TOTAL GENERAL CARGO	26.8	2188	148.108

TABLE 6.13 (CONT'D...)

BULK-GENERAL CARGO IMPORTS - 1356

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
2.01	Cement	17.2x	1000	2.432
2.02	Manufactured Fertilizers	-	-	-
2.03	Meals & Feeds	-1.7	35	.691
2.04	Animal & Vegetable Fats & Oils	8.2	256	6.559
2.05	Quarry Stone	-	-	-
2.06	Gypsum	-	1	.008
2.07	Bagged Sugar	5.3	200	2.500
	TOTAL BULK GENERAL CARGO	28.0	1492	12.190

BULK-GENERAL CARGO EXPORTS -

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
2.01	Cement	-1)	-	-
2.02	Manufactured Fertilizers	1)	981	7.704
2.03	Meals & Feeds	-6.2x	20	.094
2.04	Animal & Vegetable Fats & Oils	4.3x	70	2.254
2.05	Quarry Stone	-6.6	40	.035
2.06	Gypsum	5.0x	10	.005
2.07	Bagged Sugar	-	-	-
	TOTAL BULK GENERAL CARGO	5x	1121	10.092

TABLE 6.13 (CONT'D...)

BULK CARGO IMPORTS - 1356

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
3.01	Cereals	14.6	1888	13.501
3.02	Soya Beans	1)	1200	18.000
3.03	Fertilizer Materials	18.5	900	.988
3.04	Sulphur	-	-	-
3.05	Iron & Steel Scrap	11.5x	150	.420
3.06	Coal	-	-	-
3.07	Iron Ore Pellets & Sponge	-	-	-
3.08	Chromite Ore - Concen	-	-	-
3.09	Ferrochrome	-	-	-
3.10	Lead-Zinc Ore & Concen	-	-	-
3.11	Alumina & Bauxite	13.4	90	.606
3.12	Salt	-	-	-
3.13	Other Ores	14.9	2	.040
3.36	Coke	-	-	-
	TOTAL BULK CARGO	16.0	4230	33.555

TABLE 6 . 13(CONT'D...)

BULK CARGO EXPORTS - 1356

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
3.01	Cereals	-1)	-	-
3.02	Soya Beans	-	-	-
3.03	Fertilizer Materials	-0.8	45	.209
3.04	Sulphur	14.4	962	1.418
3.05	Iron & Steel Scrap	-	-	-
3.06	Coal	1)	200	.695
3.07	Iron Ore Pellets & Sponge	-	-	-
3.08	Chromite Ore - Concen.	17.7	230	.598
3.09	Ferrochrome	-	-	-
3.10	Lead-Zinc Ore & Concen.	4.3	200	1.432
3.11	Alumina & Bauxite	-	-	-
3.12	Salt	14.9	4	.006
3.13	Other Ores	4.4x	44	.073
3.36	Coke	-	-	-
	TOTAL BULK CARGO	15.5	1685	4.431

TABLE 6 .13(CONT'D...)

SPECIAL CARGO IMPORTS - 1356

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
4.01	Iron & Steel	-1.2	1600	23.534
4.02	Copper Blister, Ingot	-1)	-	-
4.03	Vehicles	4.0x	400	64.048
4.04	Liquified Petroleum gases	-	-	-
4.05	Ammonia	-	-	-
4.06	Solvents	-1)	-	-
4.07	Military Cargo	-1)	-	-
4.11	Live Animals	26.2	80	3.085
	TOTAL SPECIAL CARGO	2.6	2080	90.667
	TOTAL IMPORTS	15.0	10815	383.755

TABLE 6.13 (CONT'D...)

SPECIAL CARGO EXPORTS - 1356

		GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
4.01	Iron & Steel	-1)	-	-
4.02	Copper Blister, Ingot	126.0x	126	9.356
4.03	Vehicles	6.0x	6	.918
4.04	Liquified Petroleum gases	30.0	2450	.310
4.05	Ammonia	21.0	227	.431
4.06	Solvents	4.5x	390	.975
4.07	Military Cargo	-	-	-
4.11	Live Animals	11.9	7	.198
	TOTAL SPECIAL CARGO	32.0	3206	12.188
	TOTAL EXPORTS	26.3	8200	174.819

TABLE 6.13 (CONT'D..)

FOREIGN TRADE FLOWS 1361
GENERAL CARGO IMPORTS

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
1.01	Chemical Products	14.9	1000	56.216
1.02	Mechanical Equipment	8.5	640	124.544
1.03	Electrical Equipment	8.7	182	53.448
1.04	Paper & Paper Materials.	17.8	1209	27.110
1.05	Plastics & Rubber	8.5	300	14.706
1.06	Iron & Steel Manufactures	-8.3	67	5.620
1.07	Sugar & Confectionary Sugar, boxed	19.0	36	.468
1.08	Mineral Products	2.4	175	2.222
1.09	Non-ferrous Metals & Manufactures	5.9	75	7.088
1.10	Articles of Glass, Plaster, Cement etc.	0.4	51	2.271
1.11	Animal Products	7.4	90	8.066
1.12	Textiles	9.5	300	31.634
1.13	Cotton	-	-	-
1.14	Wood & Wood Articles	14.9	360	4.672
1.15	Prepared Food Stuffs	7.3	20	2.903
1.16	Edible Fruits & Nuts	1.7	114	1.415
1.17	Vegetable Products	-	175	6.304
1.18	Raw Hides & Skins (Dried)	14.9	12	1.424
1.19	Petroleum Products	- 1.8	11	.206
1.20	Other General Cargo	- 2.0	50	16.811
1.33	Electric Cables & Wires	7.4	10	.876
1.34	Paper Board (Craft Board & Craft Liner)	8.1	31	.841
1.39	Non-ferrous Metals, Semi-Manufactures (Sheets)	4.6	10	.915

TABLE 6.13 (CONT'D...)

GENERAL CARGO IMPORTS - 1361

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
1.42	Floor Coverings & Carpets	-	*	.082
1.48	Raw Hides & Skins (Wet)	-	-	-
1.50	Footwear	-	-	-
	TOTAL GENERAL CARGO	10.3	4918	369.842

TABLE 6.13(CONT'D...)

GENERAL CARGO EXPORTS - 1361

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
1.01	Chemical Products	14.3	1280	75.258
1.02	Mechanical Equipment	10.0x	100	5.030
1.03	Electrical Equipment	8.0x	40	1.720
1.04	Paper & Paper Materials	26.2	16	.538
1.05	Plastics & Rubber	7.6	500	31.500
1.06	Iron & Steel Manufactures	15.0	40	1.200
1.07	Sugar & Confectionary Sugar, boxed	5.9	40	0.092
1.08	Mineral Products	8.5	150	0.742
1.09	Non-ferrous Metals & Manufactures	24.0	81	5.535
1.10	Articles of Glass, Plaster, Cement etc.	24.0	150	3.222
1.11	Animal Products	-11.9	4	.445
1.12	Textiles	20.0	45	16.280
1.13	Cotton	9.9	378	17.730
1.14	Wood & Wood Articles	14.9	8	.080
1.15	Prepared Food Stuffs	8.5	6	1.613
1.16	Edible Fruits & Nuts	7.8	248	9.212
1.17	Vegetable Products	9.9	255	6.995
1.18	Raw Hides & Skins (Dried)	14.9	60	5.324
1.19	Petroleum Products	-	-	-
1.20	Other General Cargo	15.0	450	53.608
1.33	Electrical Cables & Wires	11.9	35	1.666
1.34	Paper Board (Craft Board & Craft Liner)	-	-	-
1.39	Non-ferrous Metals, Semi-Manufactures (Sheets)	-	-	-

TABLE 6.- 13(CONT'D...)

GENERAL CARGO EXPORTS - 1361

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
1.42	Floor Coverings & Carpets	20.6	118	53.682
1.48	Raw Hides & Skins (Wet)	-	-	-
1.50	Footwear	9.9	40	3.021
	TOTAL GENERAL CARGO.	13.1	4044	294.493

TABLE 6.13 (CONT'D...)

BULK-GENERAL CARGO IMPORTS - 1361

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
2.01	Cement	-1)	-	-
2.02	Manufactured Fertilizers	-	-	-
2.03	Meals & Feeds	-5.3	27	0.533
2.04	Animal & Vegetable Fats & Oils	7.5	367	9.410
2.05	Quarry Stone	-	-	-
2.06	Gypsum	-	1	0.008
2.07	Bagged Sugar	2.3	225	2.813
	TOTAL BULK GENERAL CARGO	19.2	620	12.764

BULK-GENERAL CARGO EXPORTS - 1361

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
2.01	Cement	+1)	1000	1.458
2.02	Manufactured Fertilizers	15.0	2000	15.706
2.03	Meals & Feeds	-	20	0.094
2.04	Animal & Vegetable Fats & Oils	2.0	77	2.479
2.05	Quarry Stone	2.9	46	0.040
2.06	Gypsum	-	10	.005
2.07	Bagged Sugar	-	-	-
	TOTAL BULK GENERAL CARGO	23.0	3153	19.782

1) Infinite (negative)

TABLE 6.13 (CONT'D...)

BULK CARGO IMPORTS - 1361

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
3.01	Cereals	-	1888	13.501
3.02	Soya Beans	8.5	1800	27.000
3.03	Fertilizer Materials	22.5	2493	2.737
3.04	Sulphur	-	-	-
3.05	Iron & Steel Scrap	5.0x	750	2.100
3.06	Coal	-	-	-
3.07	Iron Ore Pellets & Sponge	-	-	-
3.08	Chromite Ore - Concen	-	-	-
3.09	Ferrochrome	-	-	-
3.10	Lead-Zinc Ore & Concen	-	-	-
3.11	Alumina & Bauxite	8.5	135	0.909
3.12	Salt	-	-	-
3.13	Other Ores	14.9	4	.080
3.36	Coke	-	-	-
	TOTAL BULK CARGO	10.8	7070	46.327

TABLE 6.13(CONT'D...)

BULK CARGO EXPORTS - 1361

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
3.01	Cereals	-	-	-
3.02	Soya Beans	-	-	-
3.03	Fertilizer Materials	5.4x	244	1.133
3.04	Sulphur	15.5	2000	2.948
3.05	Iron & Steel Scrap	-	-	-
3.06	Coal	5.4	260	0.904
3.07	Iron Ore Pellets & Sponge	-	-	-
3.08	Chromite Ore - Concen.	2.5	260	0.676
3.09	Ferrochrome	1)	50	0.835
3.10	Lead-Zinc Metal	-	70	1.725
3.11	Alumina & Bauxite	-	-	-
3.12	Salt	-	4	0.005
3.13	Other Ores	20.0	109	0.181
3.36	Coke	-	-	-
	TOTAL BULK CARGO	12.2	2997	8.407

1) Infinite

TABLE 6.13 (CONT'D...)

SPECIAL CARGO IMPORTS - 1361

	COMMODITIES	GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
4.01	Iron & Steel	-1.3	1500	22.063
4.02	Copper Blister, Ingot	-	-	-
4.03	Vehicles	-	400	64.048
4.04	Liquified Petroleum gases	-	-	-
4.05	Ammonia	-	-	-
4.06	Solvents	-	-	-
4.07	Military Cargo	-	-	-
4.11	Live Animals	8.5	120	4.628
	TOTAL SPECIAL CARGO	-0.6	2020	90.739
	TOTAL IMPORTS	6.2	14628	519.672

TABLE 6.13 (CONT'D...)

SPECIAL CARGO EXPORTS - 1361

		GROWTH RATE % per annum	WEIGHT 000's tons	VALUE Billion Rials
4.01	Iron & Steel	1)	1000	8.710
4.02	Copper Blister, Ingot	-3.8	105	7.796
4.03	Vehicles	24.0	18	2.754
4.04	Liquified Petroleum gases	15.0	5000	0.633
4.05	Ammonia	14.7	450	0.854
4.06	Solvents	15.0	800	2.00
4.07	Military Cargo	-	-	-
4.11	Live Animals	-	7	.198
	TOTAL SPECIAL CARGO	18.0	7380	22.945
	TOTAL EXPORTS	16.7	17574	345.627

1) Infinite

TABLE 6.14

IRAN FOREIGN TRADE 1346-1366

(Figures in Millions of Tons)

IMPORTS

P.S.O. & OVERLAND

CARGO TYPE	1346	1351	1356	1361	1366
General	1.13	1.64	3.01	4.92	7.70
Bulk/General	0.22	0.43	1.49	0.62	0.70
Bulk	0.15	1.02	3.33	4.58	5.35
Special	1.29	1.82	2.08	2.02	1.00
Sub Total	2.79	4.91	9.91	12.14	14.75
ENCLAVE					
Sub Total [1]		0.39	0.90	2.49	3.50
Total		5.30	10.81	14.63	18.25

1) Mainly liquid and dry bulk

TABLE 6.14 (CONT'D..)

IRAN FOREIGN TRADE 1346-1366
(Figures in Millions of Tons)

EXPORTS

P.S.O. & OVERLAND

CARGO TYPE	1346	1351	1356	1361	1366
General	0.35	0.61	1.29	2.44	4.80
Bulk/General	0.13	0.22	0.14	1.15	1.20
Bulk	0.27	0.28	0.68	0.75	1.00
Special	0.09	0.01	0.14	1.13	2.10
Sub Total	0.84	1.12	2.24	5.47	9.10
ENCLAVE					
Sub Total [1]		1.42	5.96	12.10	19.90
Total		2.54	8.20	17.58	29.00

1) Mainly liquid and dry bulk.

TABLE 6·14 (CONT'D.)

IRAN FOREIGN TRADE 1346-1366

(Figures in Millions of Ton)

THROUGHPUTS

P.S.O. & OVERLAND

CARGO TYPE	1346	1351	1356	1361	1366
General	1.48	2.25	4.30	7.36	12.50
Bulk/General	0.35	0.65	1.63	1.77	1.90
Bulk	0.42	1.30	4.01	5.33	6.35
Special	1.38	1.83	2.22	3.15	3.10
Sub Total	3.63	6.03	12.15	17.61	23.85
		ENCLAVE			
Sub Total [1]		1.81	6.85	14.59	23.40
Total		7.84	19.00	32.20	47.25

1) Mainly liquid and dry bulk.

TABLE 6.15

VALUE OF IRAN'S FOREIGN TRADE 1346-1366

(Figures in Billions of Rials)
In constant 1351 prices

Year	1346	1351	1356	1361	1366
Imports	110	196	384	520	696
Exports	27	51	175	346	604

SECTION 7

REVIEW AND ANALYSIS OF THE TRADE FORECAST

7.1 A COMPREHENSIVE VIEW

Perhaps the most comprehensive view of past, present and future foreign trade flows is given on Table 6.14 and Table 6.15. For the terminal years of two past Plan periods, the 3rd and 4th Plans, and for three future Plan periods, the 5th, 6th and 7th Plans, non-oil foreign trade is described in terms of weight and values. Over the 20 years covered, Table 6.15 shows import value to have increased more than 6 times and export value 22 times. Although the gap between imports and exports is not closed in the period examined, great strides are made in that direction.

7.2 LEVEL OF DEMAND FOR SERVICES

Table 6.14 shows the trend of throughput over the same 20 year period. The 1356 to 1366 portion of Table 6.14 identifies the aggregate demand to be placed upon the foreign trade delivery system. In terms of overall demand, the delivery system will be expected to expand its total throughput services between 1350 and 1361 by over 4 times. The PSO and Overland throughput is expected to expand about 3 times during the same period. Within this aggregate demand, that service category which will be expected to increase most is bulk cargo handling, experiencing an increase of about 4 times. The other cargo handling categories will increase their demand for service by 3.3 times for general cargo, 3.7 times for bulk-general, and 1.7 times for special cargo. This reflects the general world trade trend towards bulk cargoes and Iran's increasing independence on special cargoes, outside the enclave cargoes.

7.3 TECHNOLOGICAL CHARACTERISTICS OF FLOW

Figure4.4 presents the pattern of structural change which Iran's foreign trade is projected to undergo. This figure literally describes the specialization or "technological" characteristics of Iran's merchandise foreign trade flow.

7.4 GROWTH OF THE ENCLAVE

Figure 6.1also illustrates the comparative growth of "PSO and Overland" throughput and total non-oil throughput. Note that the difference between "PSO and Overland" and total grows from 1.81 million tons in 1351 to over 23 million tons in 1366. This growth in enclave items is accounted for mainly by the fact that Iran's increasing volumes of petrochemicals are assumed to move over a special physically and economically seperated delivery

system. This means that in 1366, 23 million tons of merchandise, about 50% of the total non-oil foreign trade, will not contribute its absolute volume to a relative reduction in unit delivery costs charged against all other non-oil foreign trade items. Certainly the cost and benefits of continuing this policy of special treatment to some products should be carefully examined.

7.5 COMPARISON WITH OTHER COUNTRIES

In 1361 Iran is projected to have a GNP of 5,000 billion Rials in 1351 prices. This corresponds to about 125,000 Rials per capita, equivalent to $ 1,650 per capita with US $ 1 = Rials 75. About 12-13 years from now the GNP per capita will have reached $2,500. This compares with some selected European countries' current (1350) GNP per capita as listed in Table 7.1

TABLE 7.1

GNP PER CAPITA IN SELECTED EUROPEAN COUNTRIES IN 1350 IN U.S. DOLLARS[1)]

COUNTRY	GNP/CAPITA
Belgium	2,372
France	2,783
W. Germany	2,512
Italy	1,548
United Kingdom	1,976

This means that Iran within the study period will reach an economic activity level comparable to what is currently experienced in Western Europe.This is based on 1351 prices. With recent and future increases in oil prices, Iran's GNP will grow faster than shown.

It is also interesting to note that the projections, which admittedly are only trend projections, indicate that in 1366, Iran will have a foreign non-oil seaborne export trade of just over 0.5 ton per capita. This is the same as the French per capita seaborne export trade in 1350[1)]

1) U.S. Department of Commerce, Bureau of Census. Statistical Abstracts of the United States 1971.

SECTION 8

THE ORIGINS AND DESTINATIONS OF IRAN'S FOREIGN TRADE

8.1 GENERAL

Section 6 described volumes, both present and forecasted, of foreign trade by commodity. This section fixes origins and destinations to the volumes. Volumes, origins destinations, plus the distribution cost by mode of transport by commodity over alternative routes between origins and destinations(to be defined in subsequent volumes) form the main inputs into the process of defining that series of port locations and specializations which represent a minimum cost for the foreign trade delivery system.

This section will describe both ends of the foreign trade flow:

- the domestic origins of Iran's exports and the domestic destinations of its imports and;
- the foreign destinations of Iran's exports and the foreign origins of its imports.

Section 8.2 describes the assumptions, methods and finally, volumes of each commodity accruing to each domestic origin and destination. Section 8.3 accomplishes the same task for foreign origins and destinations.

8.2 DOMESTIC ORIGINS AND DESTINATIONS

8.2.1 Data Availability

The definition of domestic origins and destinations plus volume of exports and imports accruing to each, assumes a data availability which surpasses Iran's present resources. The latest census was carried out in 1346, hence all data concerning regions or urban areas must be based on that year.

8.2.2 Urban Areas as Origins and Destinations

To calculate the cost and determine the path of foreign trade flows, quantities of the various commodities must be fixed to modes in Iran's present and probable future transport network. As the role of collecting or distributing quantities of foreign trade merchandise is a function of a city within its gravitional area, origins and destinations have been assumed to be cities of a particular size, located

at nodes in the transportation network.

To be precise, with five exceptions, cities with 40,000 or more inhabitants in 1346 were chosen as domestic origins and destinations. Following this criteria, 44 cities qualified. Nine of the cities, however, were associated to the same node in the transportation network and therefore were combined into 3 composite urban areas. The cities of Shahi, Amol, Sari and Babol were combined to form "Babol". Tehran, Tajrish and Rey were combined to form "Tehran" and Najafabad, Homayunshahr and Esfahan were combined into "Esfahan". The data listed for Babol, Tehran or Esfahan represents the sum accounted by that city plus its above noted neighbours. This process of consolidation reduced the number of urban areas to 37. In spite of their small population in 1346, there were 5 cities which possess such important future roles in the foreign trade delivery network as to qualify them as "exceptional". These cities were Bandar Shahpour, Bandar Abbas, Chahbahar, Bandar Bushehr and Semnan.

The addition of these five cities brought the list of selected urban areas serving as domestic origins and destinations to 42. The population and employees in manufacturing for the urban areas in 1350, 1356 and 1361 are listed in Appendices 1 and 3 respectively.

8.2.3 Commodity Types

With the exception of certain assigned or unique commodities, to be described later, the volumes of commodities generated by or terminating at the particular urban area were assumed to be a function of economic characteristics of the urban area itself. Thus, changes over time in volumes to or from the urban areas were assumed to be a function of change in these same characteristics. It was also assumed that the growth of the node is representative for the surroundings, although this may not always be true. It is believed however, that the pluses or minuses will cancel each other in the total trade. The choice of urban area characteristics to be used for the distribution of trade flows depends on:

- the homogenous nature of the commodity. In this study the term "commodity" refers to a commodity in the Port Planning Nomenclature. According to this nomenclature a commodity such as 1.01 Chemical products is heterogenous, and say 3.04 sulphur is homogenous.

- the extent to which the origins and destinations for each commodity are actually known.

Accordingly, four types of commodities can be distinguished:

- Assigned Commodity: a commodity which is assigned to be imported or exported through an assigned port, regardless of its foreign origin/destination or its domestic destination/

origin. The reason for assigning certain commodities is found in the fact that they all require special handling facilities which are not available in all ports generally;

- Unique Commodity: a homogeneous commodity which originates or terminates 75% or more of its volume at known, identifiable locations.

- General Industrial Commodity: a heterogeneous commodity produced or consumed by establishments with a wide-spread location pattern.

- General Consumption Commodity: a heterogeneous commodity import destined to wholesalers with a widespread location pattern.

8.2.4 Distribution Indicators

For each of the above defined commodity types a volume distribution indicator was selected. Each indicator, except for those used in distributing assigned or unique commodities, is derived from certain economic characteristics of the 42 selected urban areas.

By definition , assigned or unique commodities presented no difficulty. The indicator for assigned commodities is defined as the percentage share of volume production for export or consumption of import of a commodity passing through an assigned port. The indicator for unique commodities is defined as the percentage share of volume production for export or consumption of import of a commodity at known locations. Vectors of percentage shares for the distribution of assigned or unique commodities to certain ports or the 42 urban areas were worked out for 1350, 1356 and 1361. Table 8.1 and 8.2 present the vectors adopted for each assigned or unique commodity.

The indicator selected for the distribution of general industrial commodities is a case where a more suitable series should be substituted when available. Most favorably, value added for each urban area in sectors corresponding to commodities should be used. As a substitute, the closest approximation for which sufficient data existed to make future projections possible was value added in total manufacturing by cities. Thus for the present, the indicator for distributing general industrial commodities is defined as the percentage shares of 42 selected urban areas in 1350, 1356 and 1361. The value added and percentage shares for the 3 years for the 42 selected urban areas are listed in Appendix 4.

The indicator selected for distributing general consumption commodities to the urban areas is defined as the percentage shares of the urban areas in the total private consumption expenditures of all 42 urban areas in 1350, 1356 and 1361. The private consumption expenditures and percentage shares by urban areas for the 3 years are listed in Appendix 2.

Table 8.3 identifies by commodity, which of the 4 indicators is to be used

TABLE 8.1

FOREIGN TRADE INDICATORS
FOR ASSIGNED COMMODITIES
(in percent of total)

COMMODITY / PORT	IMPORT			EXPORT		
	1351	1356	1361	1351	1356	1361
1.01 Chemical Products						
Bandar Mahshahr	-	-	-	-	85	86
1.05 Plastics & Rubber						
Bandar Mahshahr	-	-	-	100	100	100
1.08 Mineral Products						
Bushehr	-	32	28	-	-	-
1.17 Vegetable Products (Molasses)						
Bandar Shahpour	-	-	-	-	31	20
2.01 Cement						
Bandar Shahpour	-	-	-	-	-	90
Bushehr	-	-	-	-	-	10
2.02 Manufactured Fertilizers						
Bandar Mahshahr	-	-	-	100	100	100
2.04 Animal & Vegetable Fats & Oil						
Bandar Shahpour	-	47	49	-	-	-
Bandar Abbas	-	25	27	-	-	-
Nowshahr	-	6	5	-	-	-
3.01 Cereals &						
3.02 Soya Beans						
Bandar Shahpour	-	58	57	-	-	-
Bandar Abbas	-	42	43	-	-	-
3.03 Fertilizer Materials						
Bandar Mahshahr	100	100	100	100	100	100
3.04 Sulphur						
Kharg	-	-	-	-	100	100
Bandar Mahshahr	-	-	-	100	-	-

TABLE 8.1 (CONT'D.)

COMMODITY / PORT	IMPORT 1351	IMPORT 1356	IMPORT 1361	EXPORT 1351	EXPORT 1356	EXPORT 1361
3.05 Iron & Steel Scrap						
Bandar Shahpour	-	100	80	-	-	-
Bandar Abbas	-	-	20	-	-	-
3.06 Coal &						
3.08 Chromite Ore &						
3.09 Ferrochrome						
Bandar Abbas	-	-	-	-	100	100
3.10 Lead/Zinc Ore						
Bandar Shahpour	-	-	-	-	55	-
Pahlavi	-	-	-	-	45	-
3.11 Alumina & Bauxite						
Bandar Shahpour	100	100	100	-	-	-
3.13 Other Ores						
Bandar Shahpour	-	-	-	-	-	55
Bandar Abbas	-	-	-	-	-	45
4.01 Iron & Steel						
Bandar Shahpour	-	53	42	-	-	-
Bushehr	-	17	19	-	-	-
Bandar Abbas	-	15	19	-	-	100
Minor Persian Gulf Ports	-	1	1	-	-	-
Pahlavi	-	3	3	-	-	-
Nowshahr	-	1	-	-	-	-
Rail & Road	-	10	16	-	-	-
4.02 Copper Blister, Ingot						
Bandar Abbas	-	-	-	-	100	100
4.03 Vehicles						
Bandar Shahpour	25	25	25	-	-	-
4.04 LPG						
Kharg	-	-	-	100	100	100
4.05 Solvents						
4.06 Ammonia						
Bandar Mahshahr	-	-	-	100	100	100
4.11 Live Animals						
Bandar Shahpour	100	100	100	-	-	-

TABLE 8.1 (CONT'D.)

NOTES TO TABLE 8.1

When the indicators do not add up to 100, the balance of the commodity is distributed over all ports and modes. When the indicator is shown by a dash (-), it also means that the commodity is distributed over all ports and modes.

TABLE 8.2

FOREIGN TRADE INDICATORS FOR
UNIQUE COMMODITIES
(In percent of total)

COMMODTY URBAN AREA	IMPORT 1351	 1356	 1361	EXPORT 1351	 1356	 1361
1.04 Paper and Paper Materials						
Tehran	-	-	-	95.0	60.0	50.0
Ahwaz	-	-	-	5.0	10.0	10.0
Rasht	-	-	-	0.0	30.0	20.0
Babol	-	-	-	0.0	0.0	20.0
1.07 Sugar & Confectionary Sugar (Boxed)						
Tehran	-	-	-	80.0	70.0	60.0
Ahwaz	-	-	-	7.0	14.0	20.0
Shiraz	-	-	-	6.0	8.0	10.0
Esfahan	-	-	-	7.0	8.0	10.0
1.13 Cotton						
Qazvin	-	-	-	4.5	4.5	4.5
Babol	-	-	-	9.2	9.2	9.2
Gorgan	-	-	-	62.3	62.3	62.3
Tabriz	-	-	-	7.5	7.5	7.5
Kermanshah	-	-	-	0.5	0.5	0.5
Ahwaz	-	-	-	0.5	0.5	0.5
Shiraz	-	-	-	5.7	5.7	5.7
Kerman	-	-	-	1.0	1.0	1.0
Mashhad	-	-	-	8.3	8.3	8.3
Esfahan	-	-	-	0.2	0.2	0.2
Borugerd	-	-	-	0.3	0.3	0.3
Semnan	-	-	-	0.0	0.1	0.1
1.16-1.17 Edible Fruits & Nuts & Vegetables Products						
Tehran	-	-	-	9.0	9.0	9.0
Rasht	-	-	-	6.0	6.0	6.0
Babol	-	-	-	13.0	13.0	13.0
Tabriz	-	-	-	17.0	17.0	17.0

TABLE 8.2 (CONT'D...)

COMMODITY / URBAN AREA	IMPORT 1351	IMPORT 1356	IMPORT 1361	EXPORT 1351	EXPORT 1356	EXPORT 1361
Rezaiyeh	-	-	-	9.0	9.0	9.0
Sanandaj	-	-	-	2.0	2.0	2.0
Kermanshah	-	-	-	4.0	4.0	4.0
Shiraz	-	-	-	4.0	4.0	4.0
Mashhad	-	-	-	22.0	22.0	22.0
Esfahan	-	-	-	14.0	14.0	14.0
4.03 Vehicles						
Tehran	-	-	-	100.0	100.0	100.0

TABLE 8.3

FOREIGN TRADE DISTRIBUTION INDICATOR
TO BE USED FOR EACH COMMODITY, IMPORTS
OR EXPORTS

	COMMODITY	IMPORT	EXPORT
	A=Assigned Indicator U=Unique Indicator I=Industrial Indicator C=Consumption Indicator		
1.	GENERAL CARGO		
1.01	Chemical Products	I	A & I
1.02	Mechanical equipment	I	I
1.03	Electrical equipment	I	I
1.04	Paper & Paper materials	C	U
1.05	Plastics & Rubber	I	A
1.06	Iron & Steel manufactures	I	I
1.07	Sugar & Confectionary sugar, boxed	C	U
1.08	Mineral Products	I & A	I
1.09	Non-ferrous metals & manufactures	I	I
1.10	Articles of glass, plaster, cement etc.	I	I
1.11	Animal products	C	I
1.12	Textiles	C	I
1.13	Cotton	I	U
1.14	Wood & Wood Articles	I	I
1.15	Prepared food stuffs	C	I
1.16	Edible fruits & nuts	C	U
1.17	Vegetable products	C	U & A
1.18	Raw Hides & Skin (Dried)	I	I
1.19	Petroleum products (imports only)	I	N.A.
1.20	Other general cargo	C	I
1.33	Electrical Cables and Wires	I	I
1.34	Paper Broad (Craft Board & Craft Liner)	C	I
1.39	Non-ferrous Metals & Semi Manufactures	I	I
1.42	Floor Covering & Carpets	C	I
1.50	Footwear	C	I

TABLE 8.3 (CONT'D...)

COMMODITY	IMPORT	EXPORT
A=Assigned Indicator U=Unique Indicator I=Industrial Indicator C=Consumption Indicator		
2. BULK GENERAL CARGO		
2.01 Cement	C	A
2.02 Manufactured fertilizers	A	A
2.03 Meals & Feeds	I	I
2.04 Animal & Veg. fats & oils	C & A	I
2.05 Quarry stone	I	I
2.06 Gypsum	I	I
2.07 Bagged Sugar	C	I
3. BULK CARGO		
3.01 Cereals	A	-
3.02 Soya beans	A	-
3.03 Fertilizer materials	A	A
3.04 Sulphur	-	A
3.05 Iron & Steel scrap	A	-
3.06 Coal	-	A
3.07 Iron ore, pellets & sponge	-	A
3.08 Chromite ore concentrate	-	A
3.09 Ferro-chrome	-	A
3.10 Lead-zinc ore & concentrate	-	A & I
3.11 Alumina & Bauxite	A	-
3.12 Salt	C	I
3.13 Other Ores	I	I & A
4. SPECIAL CARGO		
4.01 Iron & Steel	A	A
4.02 Copper, Blister-Ingot	-	A
4.03 Vehicles	A	-
4.04 Liquified petroleum gases	-	A
4.05 Ammonia	-	A
4.06 Solvents	I	A
4.11 Live Animals	A	C

8.2.5 Urbanization Trends

In order to foresee the trends over time in domestic foreign trade distribution, produced by the economic indicators, it is illustrative to examine the trends in urbanization that these indicators in fact represent. The 42 selected urban areas had 72% of Iran's urban and 30% of its total population in 1346. Accordingly to projections of their future growth these same urban areas will have 85% of the urban and 42% of the total population in 1361[1])

Figure 3.1 graphically illustrates the growth of population of these urban areas in 1350, 1356 and 1361. Figures 3.2, 3.4 and 3.5 present private consumption expenditures, employees in manufacturing and value added in manufacturing, respectively. Examining the picture of Iran's development portrayed by these 4 figures, a clear trend of relative growth in all indicators is pronounced, first, in cities from 100,000 to 250,000 population and second, in cities larger than 250,000 not including Tehran. Tehran, the urban area that clearly dominates the Iranian urban scene is seen to be a relative loser from 1350 to 1361. In terms of shifts in percentage shares between 1350 and 1361 for all the indicators , Table 8.4 illustrates the above observation.

TABLE 8.4

SHIFTS IN PERCENTAGE SHARES OF FOUR INDICATORS FOR THREE GROUPINGS: 1350 TO 1356

CITY GROUPING	POPULATION	PRIVATE CONSUMPTION EXPENDITURES	EMPLOYEES IN MANUFACTURING	VALUE ADDED IN MANUFACTURING
	Arithmetic shift in percentage shares between 1350 and 1356			
Tehran	-6.8	-7.8	-10.0	-12.3
Cities with more than 250,000 population[2])	+1.0	+2.7	+ 3.8	+ 4.7
Cities with from 100,000 to 250,000 population[3])	+3.6	+4.0	+ 4.5	+ 4.6

1) Adibi Harris Associates Projections
2) Esfahan, Mashad, Tabriz, Abadan, and Shiraz not including Tehran.
3) Kermanshah, Hamedan, Ahwaz, Yazd, Rasht, Qom and Arak.

Nearly two thirds of the Tehran's loss of percentage shares, for each indicator, of future urban growth was made up by cities greater than 100,000 population. Cities in the over 250,000 bracket account on the average, for about one sixth of Tehran's relative loss and cities in the 100,000 to 250,000 bracket account for over half of Tehran's relative loss.

The above statistical trends reflect clearly the Iranian Government's urbanization policy of:

- Limiting the growth of Tehran;
- Decentralization of industrial locations; and
- Large scale regional infrastructure development.

The basic justification of the use of the previously described indicators rests upon the correlation of the trends they produce and Government policy.

8.2.6. Commodity Volumes at Domestic Origins and Destinations

With the volumes of commodities projected till 1361, with indicators established for their distribution to domestic origins and destinations it is now possible to calculate for each commodity the amount accruing to the 42 selected urban areas. The actual process of calculation is carried out by computer. Appendix 8 gives for each of the 55 commodities the volumes in tons distributed to the 42 selected urban areas in 1351, 1356 and 1361.

8.3 INTERNATIONAL ORIGINS AND DESTINATIONS

8.3.1 Data Availability

For many years the Ministry of Finance, Department of Customs has recorded Iran's foreign trade. The records contain information about type and quantities of the commodities traded, country of origin and destination and the Iranian customs station involved for the various quantities. Each foreign country's share in percent of Iran's total foreign trade in each commodity with respect to both weight and value is also contained in the records. The commodities shown in the records are classified according to the Iranian classification system which was in use through 1351. Since 1349 the records have been computerized so the data are now also available from a computer file. The last full year for which the file is available is 1351.

8.3.2 Data Analysis

A review of the commodities and their countries of origin or destination for the last 10 years reveals that in general there is practically no trend to be found for the trade with individual countries from year to year. The few exceptions involve unique commodities that are only available from limited sources such as for example grain which almost always has been imported from North America and Australia .

When examining groups of countries or regions, however, trends can be found. For example, trade with West Europe as a whole shows a consistency that influences the establishment of the foreign regions of origin and destination, although the trade with individual countries within the group fluctuate considerably. This is a reflection of Iran's opportunistic trade policy. Certain types of commodities that last year were bought in Germany may this year be bought in U.K. and so on. As a consequence of the fluctuation in trade with individual countries and the relative stability in trade with regions, regions have been selected as origins and destinations for the foreign trade.

8.3.3 Origin and Destination Regions

For domestic nodes of origin and destinations, urban consumption/production - collection/distribution areas with populations of more than 40,000 were selected. This method of node selection, even with entirely different population limits, does not apply to the foreign regions, principally because of the fluctuations of trade with individual countries and the differences in the economies of the regions. Fortunately, however, world trade has established itself between certain gravity nodes that represent certain geographical regions. These nodes generally coincide with the terminal points between which basic transportation tariffs are published. In fact, the transportation industries selected their tariff - terminal points where they are because the trade node had already developed at that particular location. For example, for transportation tariffs purposes, Rotterdam is the terminal point for essentially all Western Europe seagoing trade with the East and Middle East. (A small surcharge is added for Scandinavia because of the added distance). Keeping in mind that the foreign nodes of origin and ultimately trade distribution, it is therefore logical to select the tariff terminal points as the foreign nodes. In turn, these nodes represent certain regions. In some cases more than one node may represent the same region. In such cases each nodes' share of the region's trade must be estimated or assumed unless unique knowledge is available.

Table 8.5 shows the selected nodes and regions. Table 8.6 shows the countries in each region.

8.3.4 Foreign Trade Distribution

In Section 8.2 the generation of demands for foreign goods and exportable surpluses in the various domestic nodes were described. In order to meet these demands, it has (for the purposes of this Report) been assumed that each foreign region is the equivalent of an inexhaustible warehouse except for unique commodities which can only be obtained from specific regions. For example significant quantities of soya beans are for all practical purposes only obtainable in North America. With respect to the exportable surpluses, it has been assumed that markets exist for these goods which means that Iran must sell at competitive world prices.

TABLE 8.5

INTERNATIONAL ORIGINS AND DESTINATIONS

NO.	REGION NAME	TRADE & TRANSPORT NODES SEA	LAND
01	AFGPAK	KARACHI	KABUL
02	INDIA 1)	MADRAS	CALCUTTA
		BOMBAY	BOMBAY
03	SEASIA	SINGAPORE	-
04	FEASIA 2)	YOKOHAMA	YOKOHAMA
05	OCEANIA	SYDNEY	-
06	PERSGULF	BAHREIN	-
07	EASTEUR 3)	ROTTERDAM BAKU	WARSAW
08	MEDITERR	MARSEILLES	MILANO
09	WESTEUR	ROTTERDAM	FRANKFURT
10	SOUTAFR	DURBAN	-
11	NEAFR	MOMBASSA	-
12	NORTAMER 4)	NEW YORK	-
13	SOUTAMER 5)	SANTOS	-

NOTES: 1) The trade volume for this region has been estimated to be 50% with Madras and 50% with Bombay. The land nodes have been included, although currently inoperative because of the Pakistan - Indian conflict. The land nodes, however are expected to become operative again in the future.

2) The land transport leg is Iran-Vladivostok via the Transiberian railway. Most of the goods involved are from or to Japan and consequently must also travel a relatively short sea leg. Therefore, Yokohama is also the land transport node.

3) It is possible that this region may be split in two in the future depending upon Siberian industrial developments in exports products. In that case, the region East Eur. would be West of the Ural mountains and a new region established East of the Ural Mountains. This new region would have a land transport node only.

4) It has been estimated that 75% of the trade will be via New York and 25% via San Francisco.

5) The very small trade with the West coast of South America has been ignored.

TABLE 8.6

COUNTRIES IN THE INTERNATIONAL REGIONS

01 - AFGPAK

Afghanistan, Pakistan

0.2 - INDIA

Bangladesh, Ceylon, India, Nepal

0.3 - SEASIA

Burma, Cambodia, Indonesia incl. Singapore, Laos, Malaysia, N. Vietnam, S. Vietnam, Thailand.

0.4 - FEASIA

China, Hong Kong, Japan, Macao, Mongolia, North Borneo, N. Korea, Philippines, S. Korea, Taivan.

0.5 - OCEANIA

Australia, East Samoa, New Guinea, New Zealand, Other Oceania

0.6 - PERSGULF

Abu Dhabi, Bahrein, Dubay, Iraq, Kuwait Oman , Quatar, Saudi Arabia, Other Persian Gulf States.

0.7 - EASTEUR

Albania, Bulgaria, Czechoslovakia, E. Germany, Hungary, Poland, Romania, USSR, Yugoslavia.

0.8 MEDITERR.

Algeria, Canary Islands, Cyprus, Dahomey, Egypt, Gambia, Ghana, Greece, Guinea, Israel, Italy, Ivory Coast, Jordan, Lebanon, Liberia, Libeya, Mali, Malta, Mauritania, Monaco, Morocco, Niger, Nigeria, Portugal, Senegal, Sierra Leone, Spain, Syria, Togo, Tunisia, Turkey, Uppa Volta, Other North African states

0.9 WESTEUR

Austria, Belgium, Denmark, Finland, France, Greenland, Iceland Ireland, Lichtenstain, Luxemburgh, Netherlands, Norway, Sweden, Switzerland, W. Germany, UK.

10 SOUTAFR.

Angola, Botswana, Burundi, Camerron, Central Afr. Rep. Congo-Rep, Congo-Dem.Rep, French Somaly, Gabon, Malagasy, Malawi, Moris, Mozambique, Renuion, Rhodesia, Rowanda, South Africa, Southwest Africa, Zambia, Zanzibar.

11 NEAFR

Aden, Chad, Ethiopia, Kenya, Somali, South Yemen, Sudan, Tanzania, Uganda, Yemen.

12 NORTAMER

Bahama Islands, Canada, Costa Rica, Cuba, Dominican Republic, El Salvador, Guadeloupe, Guatamala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Trinidad, West Indies, USA.

13 SOUTAMER

Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, French Guiana, Guyana, Paraguay, Peru, Surinam, Uruguay, Venezuela.

As mentioned earlier, the Ministry of Finance, Department of Customs has a computerized file of Iran's foreign trade by foreign country, commodity and quantity. This file has been rearranged to show groups of countries, that is regions, with the commodities reclassified according to AHA port planning nomenclature, quantities and percentage of total trade in the specific commodity, that is the commodity vector. Appendix 7 shows the rearranged file for the year 1351. In terms of foreign regional trade this rearranged file is considered typical for Iran for that year. The vectors shown reflect all trade agreements in effect at that time plus the effect of free market forces for those goods that are not specifically covered by trade agreements. In order to forecast future vectors, trade agreements entered into since 1351 must be taken into account. The latest Iran-China trade agreement is included in the trade distribution. In addition, the devaluation of the dollar has been taken into account by assigning very slightly increased vectors for sophisticated manufactured goods from North America. World supply of unique commodities has also been taken into account. For example in 1350 India was the 100% supplier of soyabeans. The quantity shown, however, was only about 2 tons. For 1356, however, the forecast import may be as much as 1,200,000 tons. India does not have that kind of surpluses whereas North America and North America only has, and therefore, has been assigned a 100% vector for this commodity in the future. Similar consideration have been taken into account for export. The forecast tonnage for both imports and exports from/to the foreign regions are shown in Appendix 8.

For purposes of this Report it has been assumed that the vectors developed for 1356 also are valid for 1361 since it is impossible at this time to foresee any trade-agreements that will dramatically change the trade patterns. If, however, any trade agreements are entered into, the vectors may change. The total flow of goods would not change but the trade distribution could. PSO ports could be affected because the trade could shift from sea-borne to land transport or vice-versa. The vectors, therefore , should continually be kept up-to-date as new trade agreements or political influences may affect trade distribution so that ports can be developed accordingly.

SECTION 9

TRANSIT CARGO

9.1 GENERAL

In all there are four potential routes for transit cargo through Iran.

- Between Europe overland and Afghanistan
- Between Europe overland and Pakistan and India
- Between Europe overland and an Iranian Persian Gulf port with intermodal transfer of cargo in the port
- Between a Persian Gulf port and Afghanistan

The first two routes are all land routes. The second two routes are in part by sea and pass through a PSO port. Each of the routes are examined below.

9.2 BETWEEN EUROPE OVERLAND AND AFGHANISTAN

The overland cargo between Europe, primarily Eastern Europe and Afghanistan presently move via the Russian railway system. The Russian railway has two terminals on the northern Afghan border. It is unlikely, that any of this trade will be redirected through Iran in the foreseeable future because except for the Mediterranean countries, a route through Iran would be longer than through Russia. The trade with the Mediterranean countries is negligible. Afghanistan major trading partner is the USSR[1)] which accounts for nearly one third of Afghanistan's exports and about one-half of its imports. The second largest trading partner is USA[1)] which is the major supplier of imported food grains which are not moved overland from Europe. Other major trading partners of Afghanistan are India and Pakistan which obviously would not contribute to transit traffic through Iran.

A check with the major goods forwarders reveals that they are handling essentially no cargo by truck from Europe to Afghanistan, and do not expect any substantial increase in the future.

It is therefore concluded that no significant transit traffic between Europe and Afghanistan through Iran will materialize.

9.3 BETWEEN EUROPE OVERLAND AND PAKISTAN AND INDIA

This traffic is much more difficult to forecast than the traffic between Europe and Afghanistan. According to the international forwarders operating in Iran, the present traffic between Europe

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1) Economic Survey of Asia and the Far East, United Nations 1970

and Pakistan consists of an occasional truck which essentially means that the traffic is negligible. The forwarders also state that they do not expect any significant increase in the future.

At the present time there is no truck traffic overland through Iran-Pakistan between Europe and India. Although such traffic currently would be hampered by the relations between Pakistan and India, the important reasons for the non-existent traffic is basically lack of demand according to the international forwarders.

There is no through rail connection; the link between Kerman and Zahedan is missing. The potential traffic on this link, if built has been studied by other consultants who came to the conclusion that the construction of this link will not be economically feasible for several years[1], even with the potential Iran-Pakistan trade.

Practically all trade between Europe and Pakistan and India is currently waterborne. In case the Suez Canal is reopened, which at the present time appears likely, overland traffic would be even more disfavoured than now.

It is therefore concluded that no significant overland transit traffic through Iran between Europe and Pakistan-India will develop.

9.4 BETWEEN EUROPE OVERLAND AND AN IRANIAN PERSIAN GULF PORT WITH INTERMODAL TRANSFER OF CARGO IN THE PORT

Such a route has been in existence for some time. Both rail and road have been connecting Europe and Khorramshahr/Bandar Shahpour for several years. Nevertheless practically no transit traffic has developed according to international forwarding companies operating in Iran and international shipping companies which also were contacted.

Bandar Abbas has for about 5 years also been connected to Europe by road. Nevertheless, as in the case of the Northern Persian Gulf ports, no transit traffic has developed. It has been speculated that this may change with containerization. There already is a large number of containers travelling between Europe and the Far East, particularly Japan but they are not shipped in transit through Iran inspite of this being possible.

When examining the reasons for this lack of traffic it is necessary to examine traffic to/from Western Europe and to/from Central Europe separately.

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1) Pre-feasibility study for railways Zarand of Kerman - Bandar Abbas and Kerman - Zahedan, Iran-Kampsax 1351

For Western Europe the land route offers practically no time savings compared to the fast containerships. For example, Rotterdam-Colombo around the Cape is about 10,500 miles. Bandar Abbas-Colombo is about 2,000 miles. Therefore the overland route to the Persian Gulf compares with 8,500 miles at sea. At 23 knots which is current sustained speeds of the new containerships, this takes about 15 days which is as good or better than overland. Truck time between the German Border and Tehran is 12 to 15 days to which must be added Tehran - Bandar Abbas time of 2 days. Rail time is currently twice the truck time.

For Central Europe the picture is slightly different. To the sea trip, land transport to/from a West European Port must be added. The same amount of time can be subtracted from the overland trip. For example goods moving from Munich would require about two days to reach Rotterdam for transfer to ship. The trip from Munich to Bandar Abbas would be two days shorter than from Rotterdam. In other words, using truck, the overland route through Iran would have a slight time advantage to/from Central Europe. No traffic of this type has yet developed, inspite of the time advantage which has existed for about 5 years. Rail to/from Central Europe, just as rail to/from Western Europe, is currently twice that of truck time, or about 24 days. In order to be competitive, this time would need to be reduced to one half or less. This would require:

- Sufficient goods to create unit trains rather than wagon loads which are shunted from train to train and spending much of their time on sidings.

- A general upgrading of the rail lines through the difficult terrain of Austria, Yogoslavia, Greece, Turkey and Iran.

- A general agreement between the aforementioned countries and West Germany to reduce border crossing formalities to an absolute minimum.

Provided these conditions are met, it may be a long range potential for transit traffic between Central Europe and Bandar Abbas with intermodal cargo transfer in the port. If the stated conditions are not met, there will be no significant transit traffic.

In the likely case of opening of the Suez Canal, the potential for above mentioned transit traffic essentially would no longer exist.

9.5 BETWEEN A PERSIAN GULF PORT AND AFGHANISTAN

At the present time all waterborne foreign trade of Afghanistan passes through the port of Karachi. The amount has been about

100,000 tons per year for the last five years[1]. The single biggest commodity has been food grains from USA. A railway and a road connect the port of Karachi with the Afghan border.

Afghanistan's population is increasing at a rate of about 2.5% per year[2]. The GNP is increasing at essentially the same rate[2]. Assuming that the foreign trade will increase at this rate, the current 100,000 tons through Karachi would increase to about 150,000 tons in 15 years. The current and future cargo quantities are insignificant relative to the rail capacity between Karachi and Afghanistan. They are also small relative to the Karachi port capacity. Karachi has currently 26 general cargo berths. At the present time there is some congestion. Therefore 13 general cargo berths and 3 bulk cargo berths (excluding oil) are being added which will include ample provisions for the small Afghanistan trade. A diversion of trade to for example Bandar Abbas and then by road to Afghanistan would not be competitive, the land route being more than 30% longer and trucking costs higher than the rail costs. Also, as mentioned before, the biggest commodity is grain which lends itself better to rail traffic than truck traffic.

It is therefore anticipated that under normal economic conditions no significant transit traffic will develop between a Persian Gulf port and Afghanistan.

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1) Karachi Port Trust
2) Economic Survey of Asia and the Far East, United Nations 1970

SECTION 10

INCREASED OIL REVENUES

This Section evaluates the effect of increased oil revenues which have materialized since the original foreign trade forecast was made.

With the increase in oil prices, it was concluded that certain commodity imports by 1356 may increase about 100%. They are listed in Table 10.1.

TABLE 10.1

100% increase in		Increase - Tons (1356)
1.02	Mechanical Equipment	425,000
1.03	Electrical Equipment	120,000
1.06	Iron and Steel Manufacture	130,000
1.39	Non-ferrous Metals Manufacture	8,000
	Miscellaneous	260,000
		1,000,000

Most of the increase in goods to be used for capital projects.

This additional forecast carries the concurrence of the Ministry of Economy.

For 1361 and 1366 the additional tonnage would be 1.2 million and 1.5 million respectively.

This additional trade would require 6, 8 and 10 additional berths in the years 1356, 1361 and 1366 respectively.

APPENDICES BY OTHERS

TO VOLUME 6

NO.	TITLE	DESCRIPTION	COMPANY
1.	Property Survey - Bandar Shahpour	5 sheets	NCC
2.	Soil Investigation for Bandar Shahpour project	1 Report	PEYJOU
3.	"	11 Report	"
4.	"	111 Report	"
5.	Survey of Sea Conditions and Hydrographic Surveys in Persian Gulf and Caspian Sea Site: Bandar Shahpour	Report	CESCO, B.V.
6.	Hydrualic Studies for Port Development in Iran Site: Bandar Shahpour	Report	DHL

TO VOLUME 7

NO.	TITLE	DESCRIPTION	COMPANY
1.	Property Survey - Bandar Bushehr	3 sheets	NCC
2.	Survey of Sea Conditions and Hydrographic Surveys in Persian Gulf and Caspian Sea Site: Bandar Bushehr	Report	CESCO, B.V.

TO VOLUME 8

NO.	TITLE	DESCRIPTION	COMPANY
1.	Survey of Sea Conditions and Hydrographic Surveys in Persian Gulf and Caspian Sea Site: Bandar Abbas	Report	CESCO, B.V.
2.	Soils Investigation Bandar Abbas and Minor Ports Persian Gulf and Sea of Oman	Report	CESCO, B.V.

NO.	TITLE	DESCRIPTION	COMPANY
3.	Annex 1: Borings and Laboratory Test Results Bandar Abbas	Report	CESCO, B.V.
4.	Hydraulic Studies for Port Development in Iran Site: Bandar Abbas	Report	DHL
5.	Land Survey Port of Bandar Abbas and Adjacent Areas for Port Development	Drawings	RASSAD
TO VOLUME 9			
1.	Hydrographic and Land Surveys in Persian Gulf and Sea of Oman	Report	GECIMA/POSFORD, PAVRY
2.	Survey Drawings (for above)	11 sheets	GECIMA/POSFORD PAVRY
3.	Results of Soil Investigation Vol. 1 Minor Ports Persian Gulf and Sea of Oman (See also Appendix No. 2 of Vol. 8)	Report	MRTSL
TO VOLUME 10			
1.	Property Survey - Bandar Khorramshahr	Drawings	NCC
TO VOLUME 11			
1.	Hydrographic and Land Surveys Minor Persian Gulf Ports (also see Appendix Nos.1 & 2 Vol. 9)	7 Sheets	NGO
2.	Results of Soil Investigation Vol. II Minor Ports Persian Gulf and Sea of Oman (See also Appendices No.2 of Vol. 8 and No.3 of Vol.9)	Report	MRTSL
TO VOLUME 12			
1.	Property Survey - Bandar Pahlavi	Drawings	NCC
2.	Survey of Sea Conditions and Hydrographic Surveys in Persian Gulf and Caspian Sea Site: Bandar Pahlavi	Report	CESCO, B.V.

NO.	TITLE	DESCRIPTION	COMPANY
3.	Hydraulic Studies for Port Development in Iran Site: Bandar Pahlavi	Report	DHL
4.	Property Survey - Bandar Nowshahr	4 sheets	NCC
5.	Survey of Sea Conditions and Hydrographic Surveys in Persian Gulf and Caspian Sea Site: Bandar Nowshahr	Report	CESCO, B.V.
6.	Hydraulic Studies for Port Development in Iran Site: Bandar Nowshahr	Report	DHL

TO VOLUME 13

1.	Soil Investigation Report for Golmankhaneh Port of Lake Rezaiyeh	Report	MRTSL
2.	Report on Hydrographic Survey of Lake Rezaiyeh May - July 1973	Report	RASSAD
3.	Survey Drawings for Hydrographic Survey of Lake Rezaiyeh	17 Sheets	RASSAD

4. OTHER ABBREVIATIONS

N.A.	:Not Available/Not Applicable
C.P.T.	:Commercial Profit Tax
G.N.P.	:Gross National Product
G.D.P.	:Gross Domestic Product

IRAN PORTS MASTER PLAN

LIST OF ABBREVIATIONS USED IN THE TEXT AND ON DRAWINGS

1. COMPANIES & ORGANIZATIONS

P O	:Plan Organisation
P B O	:Plan and Budget Organization
P S O	:Ports and Shipping Organization
R C D	:Regional Cooperation for Development (Iran, Pakistan and Turkey)
N I O C	:National Iranian Oil Company
O O C	:Oil Operating Company (Private Company) (Formerly: Iranian Oil Exploration and Producing Co.)
I P A C	:Iran Pan American Oil Company
I O R C	:Iranian Oil Refining Company
I S R	:Iranian State Railway
I C A O	:International Civil Aviation Organization
N I A C	:National Iranian Airways Corporation
I R U	:International Road Union
T I R	:Transport International Routiere
IRN	:IRAN
I R S O T	:Iran Soviet Joint Stock Private Forwarding Co.
I S C	:Iran Statistical Centre
ARYA	:ARYA National Shipping Line
I R A L C O	:Iran Aluminium Company
N C C	:National Cartographic Centre
N G O	:National Geographic Centre
M R T S L	:Ministry of Roads Technical & Soils Laboratory
D H L	:Delft Hydraulics Laboratory
A H A	:Adibi Harris Associates, Consulting Engineers
A D L	:Arthur D. Little, Consultants
U N	:United Nations.
I B R D	:International Bank for Reconstruction and Development (World Bank)
I D A	:International Development Association
A S C E	:American Society of Civil Engineers
M E N A S	:Middle East Navigation Aids Service

E C A F E	:Economic Commission for Asia and the Far East

2. NAUTICAL TERMS

L.L.W.	:Lowest Low Water
H.L.W.	:Highest Low Water
M.S.L.	:Mean Sea Level
L.H.W.	:Lowest High Water
H.H.W.	:Highest High Water
L.W.S.	:Low Water Springs
L.A.T.	:Lowest Astronomical Tide
H.A.T.	:Highest Astronomical Tide
M.L.L.W.	:Mean Lowest Low Water
M.H.L.W.	:Mean Highest Low Water
M.H.W.N.	:Mean High Water Neaps
M.L.H.W.	:Mean Lowest High Water
M.H.H.W.	:Mean Highest High Water

3. MISCELLANEOUS

ELEV (EL)	:Elevation
B/L	:Bill of Lading
L P G	:Liquid Petroleum Gas
L N G	:Liquid Natural Gas
G M T	:Greenwich Mean Time ($3\frac{1}{2}$ hours earlier than Iran Mean Time)
G R T	:Gross Register Tonnage (entire internal cubic capacity of ship in terms of 100 cu. ft.)
N R T	:Net Register Tonnage (Gross tonnage minus space provided for crew, machinery engine room, fuel etc.).
D W T	:Deadweight (cargo weight, including bunker)
Displacement	:Weight of water displaced by the vessel
E	:East
W	:West
N	:North
S	:South
NE	:North East