

THE STUDY ON A DEVELOPMENT PLAN  
FOR  
PETROCHEMICAL DOWN-STREAM INDUSTRIES  
IN  
THE EMPIRE OF IRAN

VOLUME II  
GENERAL ASPECTS OF  
THE SURVEY

SEPTEMBER, 1978

JAPAN INTERNATIONAL COOPERATION AGENCY

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## ABBREVIATIONS

### General

C&F	Cost & Freight
FOB	Free on Board
GDP	Gross Domestic Products
GNP	Gross National Products
ROE	Return on Equity
ROI	Return on Investment
NA	Not available

### Company & Organization

APC	Abadan Petrochemical Co.
ICDC	Iran Chemical Development Co.
IJPC	Iran Japan Petrochemical Co.
IRNIP	Iran Nippon Petrochemical Company
JETRO	Japan External Trade Organization
MITI	Ministry of International Trade & Industry, Japan
NIOC	National Iranian Oil Co.
NPC	National Petrochemical Co.
OPEC	Organization of Petroleum Exporting Countries

### Units

ton	metric ton
lb	libra (pound)
bb1	barrel
MMBTU	million British Thermal Unit
KW	kilowatt
KWH	kilowatt hour

### Plastics

ABS	Acrylonitrile-butadiene-styrene Copolymer
AS	Acrylonitrile-styrene Copolymer
DOP	Diocetyl Phthalate
EDC	Ethylene Dichloride
EVA	Ethylene-vinyl-acetate Copolymer
PE	Polyethylene
HDPE	High Density Polyethylene
LDPE	Low Density Polyethylene
PP	Polypropylene
OPP Film	Oriented PP Film
CPP Film	Cast PP Film
PS	Polystyrene
HI, HIPS	High Impact Polystyrene
GP, GPPS	General Purpose Polystyrene
FS	Foamed Polystyrene, Expandable Polystyrene
PU	Polyurethane
PVC	Polyvinyl Chloride
uPVC	Unplasticized PVC
SF	Structural Foam
VCM	Vinyl Chloride Monomer

### Synthetic Rubber

BR	Butadiene Rubber
IIR	Isobutylene-isoprene Rubber
NR	Natural Rubber
SBR	Styrene Butadiene Rubber
H-SBR	High Styrene SBR
SBR-MB	SBR Master Batch
SR	Synthetic Rubber

### Synthetic Fiber Raw Material

AH Salt	Nylon 66 Salt
AN	Acrylonitrile
DMT	Dimethyl Terephthalate
FY	Filament Yarn
o-Xylene	Ortho-xylene
p-Xylene	Para-xylene
SF	Staple Fiber
TPA	Terephthalic Acid
p-TPA	Pure Terephthalic Acid

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# I CURRENT STATUS OF THE PLASTICS AND SYNTHETIC RUBBER PROCESSING INDUSTRIES IN IRAN

## 1. Plastics Processing Industry

Before starting the local survey, the Survey Team studied about current status of the plastics processing industry according to the information gathered by NPC.

It is estimated that the number of processing industry in Iran as of 1977 in total was 300 to 400 covering large-scaled leading companies to extremely small ones. Of these, NPC lists about 120 companies as the plastic processors of PE, PP, PS, and PVC, the names of which are shown in Table I-1-1.

### 1-1 Distribution of enterprises by product

Table I-1-2 shows classification of the enterprises on the basis of products they are manufacturing. Large enterprises most of which are producing PVC products are now diversified in production of plastics products such as household wares, films and industrial parts. Including those large-sized enterprises, share of factories manufacturing miscellaneous goods, films and packaging materials amounts to 53 per cent.

Remaining 47 per cent is composed of specialized factories which are producing plastics pipes, shoes, crates, woven bags, etc.

LDPE (1975) Table I-1-1 List of Major Plastics Processing Manufacturers in Iran (Unit: ton)

Company Name	Loca- tion	F	I	B	E	P	Total	Product
JALALI	T	-	70	-	-	-	70	Parts
DONYA PLASTIC	T	-	100	-	-	-	100	Parts
IRAN PLASTIC	T	-	450	-	-	-	450	Parts
PARK PLASTIC	Ta	70	-	-	-	-	70	Film
PLASAMCO	T	-	200	-	-	-	200	Household articles, toy
QUMARS	T	-	-	-	100	-	100	Conduit
ARYA PLAST	T	-	140	-	-	-	140	Flowers
TOYS	T	-	60	-	-	-	60	Toy
SHETAL	T	-	-	50	-	-	50	Containers
PLASTIC SANAT	T	-	300	-	-	-	300	Toy, parts
TOWLID PLASTIC	T	-	140	-	-	-	140	Toy, parts
BANOOJ	T	-	30	30	-	-	60	Containers
TEHRAN PLASTIC	T	-	-	75	-	-	75	Containers
ZARIF	T	-	5	15	-	-	20	Toy, flowers
LORANTIC	T	-	40	-	-	-	40	Containers
FOROUZANDEH	T	-	-	-	40	-	40	Wire
JAHAN PLASTIC	T	-	70	-	-	-	70	Containers
TECHNO PLASTIC	T	-	-	50	-	-	50	Containers
PLASTO MASSOREH KAR	T	-	10	-	-	-	10	Bobbine
AZMAYESH	T, S	-	30	-	-	-	30	Tray for refrigerator
PARS ELECTRIC	T, R	-	10	-	-	-	10	TV parts
VARDA	T	-	-	120	-	-	120	Bottle

Notes: 1) F: Film I: Injection Molding E: Extrusion B: Blow Molding P: Pipe Extrusion  
 2) T: Tehran I: Isfahan S: Shiraz R: Rasht K: Kermanshah, Ta: Tabriz Qo: Qom Qz: Qazvin M: Mashad B: Babol

## LDPE (1975)

(Unit: ton)

Company Name	Loca- tion	F	I	B	E	P	Total	Product
FARS PLAST	T	6,000	-	-	-	-	6,000	Film
TOLIDI TEHRAN	T	4,400	-	-	-	-	4,400	Film
PLASCO KAR	T(R)	3,460	820	240	280	-	4,800	Film, parts
TOLIDI DERAKSHAN	T	2,400	-	-	-	-	2,400	Film
HAREEM	I	760	-	-	-	-	760	Film
MOHEB	I	2,600	-	-	-	-	2,600	Film
BOROZ	T	2,400	-	-	-	-	2,400	Film
PLAAT	T	450	150	-	-	-	600	Bag, household articles
IRANIAN	Ta	800	-	-	-	-	800	Film
PARS PLASTIC	T	-	400	-	-	-	400	Household articles
PLASTIRAN	T	-	400	300	-	-	700	Household articles, parts
NYLON CHAT	Ta	480	-	-	-	-	480	Bags
SUPER PLASTIC	T	350	-	-	-	-	350	Film
IKO IRAN	T	-	-	-	180	-	180	Wire and cable
EDALLAT KAR	T	300	-	-	-	-	300	Film
HONAR PLASTIC	Q0	-	350	-	-	-	350	Household articles, TV Antenna
IRAN CONDUCTOR	T	-	-	-	350	-	350	TV antenna
BEHZAD	M	200	-	-	-	-	200	Film
SEH SETAREH	T	-	70	210	-	-	280	Toy
PART PLAST	T	200	-	-	-	-	200	Film
SHAHIN	T	-	-	100	-	-	100	Containers
IRANDAR	T	-	200	-	-	-	200	Containers

## LDPE (1975)

(Unit: ton)

Company Name	Loca- tion	F	I	B	E	P	Total	Product
JAHAN CHEET	Qz	200	-	-	-	-	200	Film
MEHRAN SHAD	T	-	35	15	-	-	50	Containers
POLY PROPYLENE	Qz	360	-	-	-	-	360	Film
TECHNIC PLASTIC	T	-	20	-	-	-	20	Film
BRUSH (New name Tehran Shamer)	Qz	-	100	-	-	-	100	Pen
PLASTI KAR	T	-	125	-	-	-	125	Household articles
MASHAD PLASTIC	M	300	-	-	-	-	300	Film
FOJAN CO.	-	150	-	-	-	-	150	Film
DANROLL	Qz	3,000	-	-	-	-	3,000	Film
IEM CO.	I	-	-	-	-	900	900	Pipe
OTHERS		800	100	100	-	-	1,000	-
TOTAL		29,680	4,425	1,305	950	900	37,260	-

HDPE (1975)

(Unit: ton)

Company Name	Loca- tion	F	I	B	E	P	Total	Product
PLASCO KAR	T	-	1,100	600	-	-	1,700	Household articles, parts
PLASTIRAN	T	-	700	400	-	-	1,100	Crates and parts
PARS PLASTIC	T	-	240	160	-	-	400	Toys, containers
HAREEM	T	230	-	-	-	-	230	Film
DONYA PLASTIC	T	-	250	-	-	-	250	Containers
SASAN	T	-	330	-	-	-	330	Crates
FOROUZANDEH	T	-	-	-	300	-	300	T.V antenna, conduit
MINA GLASS CO.	T	-	430	-	-	-	430	Crates
HADY BARGH	Qz	-	-	-	75	-	75	TV antenna
IRANDAR	T	-	85	245	-	-	330	Containers
MAKAF	T	-	400	-	-	-	400	Toys, parts
POLY PROPYLENE	Qz	-	-	-	1,500	-	1,500	Rope, film
TEHRAN PLASTIC	T	-	500	-	-	-	500	Toys, containers
ARYA PLAST	T	-	140	-	-	-	140	Toys
POREEM	T	120	-	-	-	-	120	Film
THREE STAR	T	-	-	50	-	-	50	Toys, containers
FLASAMCO	T	-	-	100	-	-	100	Containers
MAHBOBIAN	T	-	-	-	85	-	85	Conduit
JAHAN PLASTIC	T	-	60	-	-	-	60	Containers
IRAN PLASTIC	T	-	225	225	-	-	450	Household articles

HDPE (1975)

(Unit: ton)

Company Name	Loca- tion	F	I	B	E	P	Total	Product
ELCO KAR	T	-	-	-	65	-	65	Conduit
BANOOJ	T	-	60	-	-	-	60	Bottle
TOYS	T	-	30	30	-	-	60	Toys
QUSHID	T	-	1,500	-	-	-	1,500	Toys
LORANTIC	T	-	40	-	-	-	40	Parts
TOWLID PLASTIC	T	-	65	65	-	-	130	Toys, containers
PLASMAN	T	-	240	-	-	-	240	Household articles
PLASTIC SANAT	T	-	300	-	-	-	300	Toys, parts
MEHRAN SHAD	T	-	60	-	-	-	60	Toys, parts
ZARIF	T	-	20	-	-	-	20	Toys, flowers
JAHAN CHEET	Qz	20	-	-	-	-	20	Film
FORGHANI & CO.	T	-	40	-	-	-	40	Toys
SHAHIN	T	-	50	-	-	-	50	Toys, containers
SHETAL	T	-	50	-	-	-	50	Household articles
IRAPAK	Qz	-	-	550	-	-	550	Containers
BRUSH (Tehran Shamer)	Qz	-	500	-	-	-	500	Brush
PLASTI KAR	T	-	125	-	-	-	125	Household articles
TOLIDI TEHRAN	T	-	100	-	-	-	100	Conduit
VARDA	T	-	45	45	-	-	90	Bottle
TEKNIK PLASTIC	T	-	30	-	-	-	30	Household articles
INTER PLAST	Qo	720	-	-	-	-	720	Film

HDPE (1975)

(Unit: ton)

Company Name	Loca- tion	F	I	B	E	P	Total	Product
DANROLL	Qz	500	-	-	-	-	500	Film
IEM CO.	I	-	-	-	-	1,350	1,350	Pipe
OTHERS		-	250	250	-	-	500	
<b>TOTAL</b>		<b>1,590</b>	<b>7,965</b>	<b>2,720</b>	<b>2,025</b>	<b>1,350</b>	<b>15,650</b>	

PP (1975)

(Unit: ton)

Company Name	Loca- tion	F	I	E	Products
JAHAN CHEET (ARMEH)	Qz	-	-	1,400	Woven bags
IRAN GHARB	Qz	-	-	1,400	Woven bags
SYNTHETIC	M	-	-	750	Woven bags
POLYTEX	B	-	-	750	Woven bags
KISSEH IRAN	Qz	-	-	750	Woven bags
VARZIDEKAR	R	-	-	720	Woven bags
BISOTOON	K	-	-	700	Woven bags
KISSEH BAZR	Qo	-	-	600	Woven bags
TOLID TEHRAN	T,R	-	-	600	Woven bags
BOROUZ	M	500	-	-	Film
NYLONCHAP	Ta	480	-	-	Film
IRAN FILA	S	-	-	400	Woven bags
IRANIAN	Ta	360	-	-	Film
MELLI	T	-	300	-	Heel support
PLASCO KAR	T,R	-	-	1,060	Strap-rope
POLYPROPYLENE	Qz	-	-	600	Rope
DONYA PLASTIC	T	-	300	-	Basket
PARS PLASTIC	T	-	100	-	Household articles
TOWLID PLASTIC	T	-	140	-	Household articles, Toys
PLASTO MASSOREH KAR	T	-	80	-	



PP (1975)

(Unit: ton)

Company Name	Loca- tion	F	I	E	Products
IRAN RASHT	R	-	60	-	Flush-bulb stem
DON BAXTER*	T	-	-	-	
PARS TOSHIBA	R	-	25	-	Electric motor casing
PARS ELECTRIC	T,R	-	10	-	Parts
NIROU	T	-	10	-	Battery lids
PLASTIRAN	T	-	100	-	Parts
JAHAN PLASTIC**	T	-	-	-	Containers
TEHRAN PLASTIC	T	-	660	-	
ARYA PRAST	T	-	10	-	Parts
LORANTIC		-	40	-	
BANOOJ***	T	-	-	-	Containers
BRUSH	Qz	-	500	-	
QUSHID	T	-	-	-	
OTHERS		-	500	-	
TOTAL		1,340	2,835	12,230	

Notes: \*: Uses 30 tons for blow molding

\*\*: Uses 10 tons for blow molding

\*\*\*: Uses 50 tons for blow molding

PS (1973)

(Unit: ton)

Company Name	Location	(ton/year)	Type	Products
AZMAYESH	T,S	320	H I	Refrigerator
ARJ	T	480	H I	Refrigerator
GENERAL STEEL	T	840	H I	Refrigerator
FILVER		(-)	H I	Refrigerator
GENERAL WESTINGHOUSE		150 <sup>1)</sup>	H I	Refrigerator
GENERAL ELECTRIC		50 <sup>2)</sup>	H I	Refrigerator
EMERSON		100 <sup>3)</sup>	H I	Refrigerator
BRUSH	Qz	50	G P	Tooth brush
		100	S F <sup>4)</sup>	Container
IRAN BRUSH		90	G P	Tooth brush
BIC		300	G P	Pen
PLASTIRAN	T	780	H I	Sheet
		300	G P	Household articles, parts
PLASCO KAR	T,R	590	H I	Sheet
PLASTO MASSOREH KAR	T	498	G P	Household articles, parts
		130	H I	Bobbins
GENERAL PLASTIC		300	F S <sup>5)</sup>	Ice Box, packaging materials
PLASTO FOAM		500	F S	
		40	H I	Ice box
PARS PLASTIC	T	60	H I	Containers
		180	G P	Toys
TOLIDI TEHRAN	T	300	S F	Decoration parts
TEHRAN PLASTIC	T	360	G P	Toys
		60	H I	Containers
TOWLID PLASTIC	T	80	G P	Toys
PARS ELECTRIC	T,R	120	H I	Radio and TV cabinet
GHERGHEREH ZIBA		350	H I	Bobbins
ELECTRIC IRAN RASHT	R	70	H I	Parts
PETROPLAST	T	30	H I	
		15	G P	Refrigerator parts
MAKAF	T	240	G P	
		60	H I	Household articles, toys

(Unit: ton)

Company Name	Location	(ton/year)	Type	Products
JAHAN PLASTIC	T	36	G P	Toys
		60	H I	Containers
ZARIF	T	100	G P	Toys
		6	H I	Containers
DONYA PLASTIC	T	400	G P	Household articles, comb
		150	H I	
BANOOJ	T	50	G P	Cosmetic containers
ARYA PLAST	T	60	H I	Containers, bobbins
HONAR PLASTIC		20	H I	Household articles, toys
MEHRAN SHAD	T	25	H I	Comb, ruller
VENUS PLAST	Ta	15	G P	Household articles
LORANTIC	T	12	G P	Containers, refrigerator parts
		12	H I	
PLASMAN	T	25	H I	Household articles, toys
TOYS	T	60	H I	Toys
MINICAR		10	G P	Toys
		5	H I	
BOUKANI		10	H I	Radio and TV parts
FORGHANI & Co.	T	12	H I	Toys
ZIBA PLASTIC		15	G P	Containers, toys
		7	H I	
UNOLIT		400	F S	Ice box, packaging materials

- Notes: 1) They buy sheets from Plastiran  
2) They buy sheets from Plasco Kar  
3) They buy sheets from Plasco Kar  
4) SF: Structural foam  
5) FS: Foamed polystyrene

PVC (Suspension) (1974)

(Unit: ton)

Company Name	Location	(ton/year)	Products
TOLIDI TEHRAN	T	5,600	Sheet, tile, hose, profile
BELLA	T	3,600	Footwear
SHADANPOUR SHOE	T	3,120	Footwear
MELLI	T	3,000	Footwear
WIEN SHOE	T	2,400	Foot wear
POLYVINA	Qz	1,800	Rigid PVC pipes
TOLIDI DERAKSHAN	T	1,600	Sheet, tile
ZARDOSHTI	T	1,500	Sheet
IRAN BAYKA	S	1,500	Cable
IRAN SHOE		1,350	Footwear
IKO IRAN	T	1,200	Cable
POLIKA	T	1,170	Rigid PVC pipes
SEH SETAREH	T	1,100	Footwear
PVC ESFAHAN	I	960	Rigid PVC pipes
HELIFLEX		700	Hose
HADY BARGH	Qz	660	Cable
FARS PLAST	T	660	Rigid sheet
DOODMAN	Qz	600	Profile
PLASCO KAR	T	500	Profile, rigid sheet
SIMCO	R	500	Cable
PLASTIRAN	T	480	Rigid sheet
SHIRAZ PLASTIC	S	420	Rigid PVC pipes
PLASTILUX	Qz	600	Rigid PVC pipes
VACUMEPLAST	T	400	Sheet, rigid sheet
FOROUZANDEH	T	380	Cable
BERRYPLAST		300	Tile
IRAN CONDUCTOR	T	260	Cable
FARBAZ	T	260	Profile
FIRUZEH	T	230	Tile, footwear
VANIKA	M	200	Rigid PVC pipes

(Unit: ton)

Company Name	Location	(ton/year)	Products
ELECTRIC KHORASAN		200	Cable
MOZHDEH	T	160	Sheet
DORACO	T	160	Profile
SUPER PLASTIC	T	160	Profile, hose
SAYEBAN	T	140	Profile, hose, strips
MOHEB	I	130	Hose
QUMARS	T	130	Hose
ELCO KAR	T	130	Cable
CABLIST	T	110	Cable
GENERAL PLASTIC		30	Strips

PVC (Emulsion) (1974)

(Unit: ton)

Company Name	Location	(ton/year)	Products
TOLIDI TEHRAN	T	2,600	Sheet
ZARDOSHTI	T	1,800	Sheet
TOLIDI DERAQSHAN	T	1,500	Sheet
PLASTEX		450	Sheet
MOZHDEH	T	100	Sheet
BERRYPLAST		100	Tile
TOWLIDI PLASTIC	T	90	Toys
CHEHRENAME		80	Toys
FIRUZEH	T	80	Tile

Table I-1-2 Distribution of Plastics Processing  
Factories by Product in Iran

	Number of factories	%
Miscellaneous goods, film and packaging materials	68	53
Film	(22)	(17)
Packaging materials	(22)	(17)
Plastics pipe	7*	6
Shoes	7	6
PVC leather, floor tile and others	10	8
Plastics crate	2**	2
Woven bag	8	6
Electric wire and cable	10	8
Electric appliances and parts	14	11
Total	126	100

Source: NPC  
Table I-1-1

Notes: \*According to the original NPC list.

\*\*Specialized factory for crate production

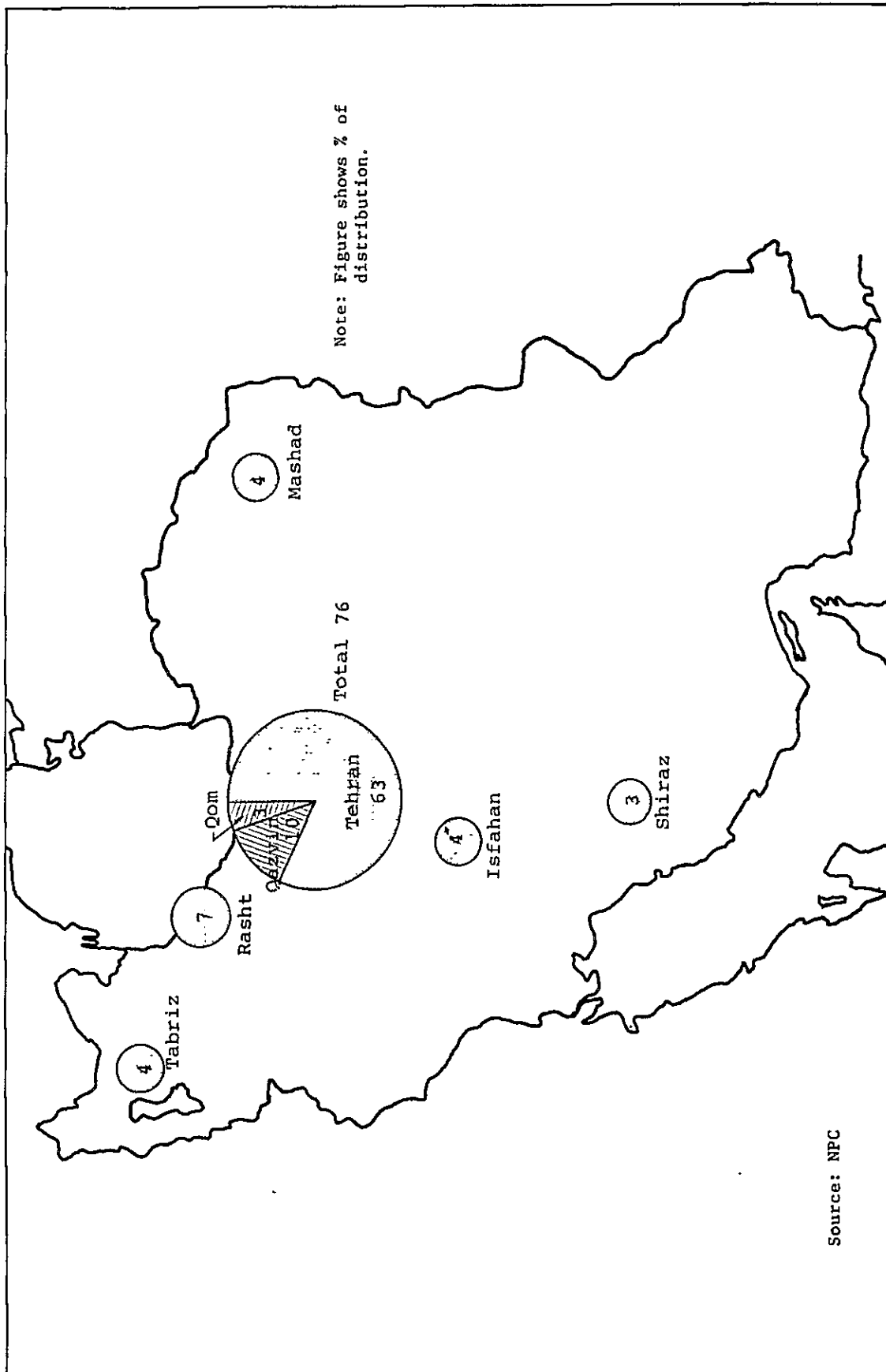
## 1-2 Regional distribution of enterprise

In accordance with the NPC's enterprise list, it is obvious that the majority of the processors are located in an area within 120km-radius centering on Tehran. As shown in Table I-1-3, the number of these enterprises occupy 63% of the total. In view of the plastics material consumption, about 72% of the total output is used in and around Tehran. The plastics processing industry of Iran started with the production of end-consumer items such as daily-use miscellaneous goods, general-use packaging films, etc. so that most of the processors are concentrated in the large consumption areas. A new regulation prohibits expansion or new construction of plastics processing facilities within a 120-km radius from Tehran, the processors began to branch their operations into industrial complex areas such as Qazvin, Qom, etc. However, the enterprises which actually started operations in these localities are mostly large-sized enterprises with ample capital most of which are specialized manufacturers of standard products necessitating a comparatively small extent of transportation cost. On the

Table I-1-3 Areal Distribution of Plastics Processing Factories in Iran

	Number of Factories		Production Quantity	
		(%)	(ton/year)	(%)
Tehran	76	63	73,200	72
Isfahan	5	4	5,000	4
Shiraz	4	3	2,500	2
Tabriz	5	4	2,200	2
Mashad	5	4	2,900	3
Rasht	8	7	3,700	3
Qazvin	12	10	16,000	14
Qom	3	3	3,000	3
Others (Babol, Kermanshar)	2	2	1,500	2
<b>Total</b>	<b>120</b>	<b>100</b>	<b>110,000</b>	<b>100</b>

Source: NPC



Source: NPC

Figure I-1-1 Distribution of Plastics Processing Factories



other hand, the processors operating in local cities such as Shiraz, Mashad, Tabriz, Rasht, etc. are mostly small-sized enterprises mainly supplying their products to their local market.

### 1-3 Scale-wise enterprise distribution

Table I-1-4 shows classification of the enterprises on the basis of the amount of plastics material consumption due to the difficulties in classifying them on the basis of capital scale or labour employment scale. Enterprises consuming more than 1,000 tons of materials per year occupy only 25% of the total. It should be noted that this enterprise list does not include a number of extremely small enterprises. Therefore, the share of the large-consuming enterprises should actually be much higher. In Tehran, as shown in Table I-1-5, only 17 out of 76 enterprises consume more than 1,000 ton/year of the materials, or 22% of the total. If the unlisted small enterprises are taken into consideration, it is highly likely that the plastics processing enterprises in Tehran are quite wide at the bottom line. However, the plastics material consumption by these larger enterprises occupying 22% of the total amounts to more than 50% of the entire material consumption made in Tehran. Therefore, it is obvious that the highest effects will be obtained by developing these higher-ranking enterprises in order to develop the consumption of plastics materials.

Table I-1-4 Distribution of Plastics Processing Factories by Production Quantity in Iran

Quantity (ton/year)	Number of Factories	(%)
0 - 199	43	35
200 - 499	26	22
500 - 999	21	17.5
1,000 - 1,999	14	11.5
2,000 - 4,999	12	10
5,000 - 9,999	3	2.5
More than 10,000	1	1
Total	120	100

As has been mentioned earlier, the number of large-scaled enterprises is comparatively high in industrial complex areas such as Qazvin, Qom, etc. In Qazvin, for instance, there are six companies, according to the NPC list, which are consuming more than 1,000 ton/year of plastics materials, thereby occupying about one-half of the total. The consumption amount of the materials by these six companies amount to more than 70% (Table I-1-6). These companies are

Table I-1-5 Distribution of Plastics Processing Factories by Production Quantity in Tehran

Quantity (ton/year)	Number of Factories	(%)	Notes
0 ~ 199	35	46	
200 ~ 499	15	20	
500 ~ 999	9	12	
1,000 ~ 1,999	6	8	} 22% Production 55%
2,000 ~ 4,999	7	9	
5,000 ~ 9,999	3	4	
More than 10,000	1	1	
Total	76	100	

Table I-1-6 Distribution of Plastics Processing Factories by Production Quantity in Qazvin

Quantity (ton/year)	Number of Factories	(%)	Notes
0 ~ 199	-	-	
200 ~ 499	-	-	
500 ~ 999	6	50	
1,000 ~ 1,999	4	33	} 50% Production 74%
2,000 ~ 4,999	2	17	
5,000 ~ 9,999	-	-	
More than 10,000	-	-	
Total	12	100	

specialized manufacturers of PVC pipes, LDPE/HDPE films, PVC tiles, etc. and these products call for a comparatively small rate of transportation cost when compared with other types of plastics products.

## 2. The Tire Manufacturing Industry

The total licensed capacity of the tire manufacturers, i.e., Kian Tire Co., General Tire and Rubber Co., Bridgestone-Iran Co., amounts to 70 thousand tons.

In 1979 the fourth tire manufacturing company, Pars Tire Co. will start production. The tire production capacity of this company is said to be 40,000 ton/year.

## II PLANTS VISITED

Table II-1 is a list of product-wise classification of plastics and synthetic rubber processing enterprises visited and interviewed by the Survey Team.

Table II-2 compiles the production, technical standard, labour productivity, and investment behaviour of these companies.

Table II-1 List of Visited Plastics and Synthetic Rubber Processing Factories in Iran

(1) Household Wares and Films

Name of Company	Location	Date of Visit	Name of Person Received a Visit
Plasco Kar	Tehran	Oct. 5	Mr. R.A. Petrosian
Makaf	Tehran	Oct. 5	
Pars Plastic	Tehran	Oct. 8	Mr. A. Alavi
Tehran Plastic	Tehran	Oct. 8	Mr. H. Roshan
Fars Plast	Tehran	Oct. 8	Mr. F. Mahboobin
Plastiran	Tehran	Oct. 11	Mr. Kashani
Derakshan	Tehran	Oct. 10	Mr. Akhlaghi
Sayeban	Tehran	Oct. 12	Mr. Y. Nosrat
Honar Plastic	Qom	Oct. 15	Mr. Abrishemi
Inter Plast	Qom	Oct. 15	Mr. Shakeri
Nylex	Qom	Oct. 15	Mr. A. Alizadeh
Danroll	Qazvin	Oct. 17	Mr. H. Sarraf
Moheb	Isfahan	Oct. 31	
Harim Packaging	Isfahan	Oct. 31	Mr. H. Moinzadeh

(2) Plastic Pipe

Name of Company	Location	Date of Visit	Name of Person Received a Visit
Karkhaneh Louleh Sazie Shemal	Rasht	Oct. 13	Mr. A. Zarabi
Polyvina	Qazvin	Oct. 19	
Plastilux	Qazvin	Oct. 17	Mr. R. Sassami
Esfahan PVC	Isfahan	Oct. 31	Mr. M. Paruizi
Shiraz Plastic	Shiraz	Nov. 2	
IEM	(Isfahan)		

(3) Shoes

Name of Company	Location	Date of Visit	Name of Person Received a Visit
Wien Shoe	Tehran	Oct. 16	Mr. M-Hasseinzadeh
Shadanpour Shoe	Tehran	Oct. 16	Mr. M-Zarrabin
Sport Shoe	Qazvin	Oct. 17	Mr. M. Khamsehpour
Otafuku Iran	Tehran	Oct. 17	Mr. M. Fukuoka
Setareh Shoe	Tehran	Oct. 18	Mr. A.T. Ravanchi
Volkan	Tehran	Oct. 19	Mr. Neman
Jam Shoe	Tehran	Oct. 29	Mr. Rator
TST	Tehran	Oct. 29	Mr. E. Tabbal

(4) PVC Leather and Floor Tile

Name of Company	Location	Date of Visit	Name of Person Received a Visit
Shahin Plastic	Tehran	Oct. 10	Mr. M. Aghdaie
Doodman	Qazvin	Oct. 17	Mr. Company
Winiflex	Qazvin	Oct. 17 & 18	Mr. Farzaneh

(5) Plastic Crate

Name of Company	Location	Date of Visit	Name of Person Received a Visit
Sasan	Tehran	Oct. 16	Mr. E.S. Sahakian
Minaglass	Tehran	Oct. 16	Mr. Naseri

(6) Woven Bag

Name of Company	Location	Date of Visit	Name of Person Received a Visit
Varzidekar	Rasht	Oct. 13	Mr. Novin
Kisseh Iran	Qazvin	Oct. 17	Mr. Ovaysi
Iran Faila	Shiraz	Nov. 2	Mr. K.K. Zadeh

(7) Electric Wire and Cable

Name of Company	Location	Date of Visit	Name of Person Received a Visit
Simco Ericsson	Rasht	Oct. 13	Mr. T. Hejll
Hady Bargh	Qazvin	Oct. 19	

(8) Electric Appliances and Parts

Name of Company	Location	Date of Visit	Name of Person Received a Visit
Azmayesh	Tehran	Oct. 5	Mr. C. Forouzesh
General Industrial	Tehran	Oct. 11	Mr. Benyamin
General Steel	Tehran	Oct. 11	
ARJ	Tehran	Oct. 11	Mr. Abrahamian
Pars Toshiba	Rasht	Oct. 13	Mr. Asgari

(9) Plastic Bottle

Name of Company	Location	Date of Visit	Name of Person Received a Visit
Plasamco	Tehran	Oct. 11	
Irapack	Qazvin	Oct. 17	Mr. Saeid

(10) Tire

Name of Company	Location	Date of Visit	Name of Person Received a Visit
General Tire & Rubber Co.	Tehran	Oct. 18	Mr. Taheri
Bridgestone-Iran	Shiraz	Oct. 19	Mr. Dohi
Kian Tire	Tehran	Oct. 30	Mr. Y. Mostofi

Table II-2 Activity List of Visited Plastics Processing Factories

(1) Household wares and films

Name of Company	PLASCKO KAR	MAKAF	PARS PLASTIC
Factory location	Tehran	Tehran	Tehran
Products	Melamine table wares LDPE blown film Injection molded articles with PE, PS, PP and ABS PVC corrugated plates, hose and containers	Toys Household wares	Household wares Electric appliances Injection molded articles Blow molded articles Melamine table wares
Main Production Facilities (units)	Injection: 59 Extruder: 22 Blown film mfg. units: 15 Compression: 34 Printing machine: 4	Injection: 6 (Two of them are domestic machines)	Injection: 16 Blow molder: 7 Compression: 17
Annual Consumption of Plastics Materials (1977) (ton)	14,000 (1976) LDPE: 6,500 HDPE: 2,120 PP: 167 PVC: 605 PS(GP): 678 PS(HI): 828	GPPS: 200 HIPS: 80	2,300 LDPE: 360 HDPE: 960 PP: 120 PS: 240 ABS: 180 Melamine: 460
Operational Rate (%)	90	-	90
Technical Level	Good	Good	Good
Number of Workers	800	12	150
Labour Productivity (ton/person/year)	18	-	15
Investment Behaviour	Neither expansion nor removal of factory is planned.	-	A factory with a 2,000 ton/year production capacity is under construction in Isfahan.



Name of Company	TEHRAN PLASTIC	FARS PLAST	PLASTIRAN
Factory Location	Tehran	Tehran	Tehran
Products	Household wares Injection molded articles Blow molded articles	LDPE blow film PVC pipe, profile Melamine table wares Foamed rubber products	Household wares Injection molded articles Blow molded articles HIPS sheet for refrigerator PVC corrugated sheet
Main Production Facilities (units)	Injection: 13 Blow molder: 2	Blow film mfg. machine: 4	Injection: 60 Blow molder: 18 Extrusion: 1
Annual Consumption of Plastics Materials (ton) (1977)	1,500 HDPE: 70% PP: 20% - 25% PS: 5% - 10%	LDPE: 7,000 - 8,000 PVC: 1,500 PU: 3,000 Foamed rubber: 500	6,000 HDPE: 3,000 PS: 2,000 ABS: 100 PVC: 900 PP(copolymer): 60 - 70
Operational Rate (%)	85	-	90
Technical Level	Good	-	Excellent
Number of Workers	150	400	300
Labour Productivity (ton/person/year)	10	-	20
Investment Behaviour	Removed from Tehran City 5 years ago. Also have factories in Qazvin and Rasht. Positive in designing new items.		Establishment of new factories in Qazvin and Yazd is planned

Name of Company	DERAKSHAN	SAYEBAN	HONAR PLASTIC
Factory Location	Tehran	Tehran	Qom
Products	PVC calender sheet PVC calender film PVC calender leather LDPE blown film	PVC belt	Household wares Crates for agricultural use Blow molded bottles
Main Production Facilities (units)	Calender: 1 Blown film mfg. machine: 7 Laminator: 1 Coater: 1 Printing machine: 3 Banbury mixer: 1	Extrusion: 1	Injection: 12 Blow molder: 1
Annual Consumption of Plastics Materials (ton) (1977)	LDPE: 1,000 PVC resin: 2,200 PVC paste: 700 DOP: 2,500		3,000 LDPE: 600 HDPE: 2,400
Operational Rate (%)	90	-	-
Technical Level	Good	-	-
Number of Workers	340	2	-
Labour Productivity (ton/person/year)	21	-	-
Investment Behaviour	No plan to increase the existing production capacity due to the 120 km regulation	Factory was removed recently from Tehran City	

Name of Company	INTER PLAST	NYLEX	DAN ROLL
Factory Location	Qom	Qom	Qazvin
Products	Trash bags Shopping bags	Trash bags Shopping bags Side-welded bags Straw	Trash bags Shopping bags
Main Production Facilities (units)	Blown film mfg. machine: 2	Blown film mfg. machine: 7 (Two of them are water cooling system)	Extrusion: Many
Annual Consumption of Plastics Materials (ton) (1977)	HDPE: 1,200	HDPE: 1,000 PP: 240	HDPE: 1,800
Operational Rate (%)	-	-	-
Technical Level	-	-	-
Number of Workers	-	-	- (Koreans)
Labour Productivity (ton/person/year)	-	-	-
Investment Behaviour	Two extrusion units (KIEFEL) will be purchased in near future.		Production of 2,000 ton/year of agricultural film by BIELLONI(Italy) is planned.

Name of Company	MOHEB	HARIM PACKAGING	
Factory Location	Isfahan	Isfahan	
Products	LDPE film and bags Agricultural film	Gabbage bag Shopping bag	
Main Production Facilities (units)	Extrusion: 7 Heat sealer: 2	Extrusion: 8 Printing machine: 2 Heat sealer: 11	
Annual Consumption of Plastics Materials (ton) (1977)		2,000 HDPE: 60% LDPE: 40%	
Operational Rate (%)		60	
Technical Level		Good	
Number of Workers	20	42	
Labour Productivity (ton/person/year)			
Investment Behaviour			

## (2) Plastics Pipe

Name of Company	KARKHANEH LOULEH SAZIE SHEMAL	POLYVINA	PLASTILUX
Factory Location	Rasht	Qazvin	Qazvin
Products	PVC pipe & fitting (Furniture Electric appliances) Melamine wares	uPVC pipe & fitting uPVC corrugated pipe HDPE small tube	uPVC pipe & fitting
Main Production Facilities (units)	Extrusion: 5 Injection: 4 (Prod. cap. 7000-8000 ton/year)	Extrusion: 17 Injection: 22	Extrusion: 7 Injection: 3
Annual Consumption of Plastics Materials (ton) (1977)	2,000 (PVC pipe & fitting)	4,600 PVC: 4,000 HDPE: 600 (1978)	PVC: 2,400
Operational Rate (%)	25	50	60
Technical Level	Good	Excellent	Good
Number of Workers	100 (PVC pipe & fitting)	218 (3 shifts)	75 (3 shifts)
Labour Productivity (ton/person/year)	25	20	32
Investment Behaviour	An affiliated company of Plasco-Kar. Commenced test run in Sept., 1977.	Establishment of a new plant in Hamedan is planned.	A new factory in Tabriz is under construction.

Name of Company	ESFAHAN PVC	SHIRAZ PLASTIC	IRRIGATION EQUIPMENT MFG. (IEM)
Factory Location	Isfahan	Shiraz	Isfahan
Products	uPVC pipe	uPVC pipe	PE pipe (up to 400 mm) Pipe fittings Parts for irrigation system Flower pot
Main Production Facilities (units)	Extrusion: 4 Injection: 1	Extrusion: 4	Extrusion: 5 Injection: 9
Annual Consumption of Plastics Materials (ton) (1977)	PVC resin: 3,600		LDPE: 1,500 HDPE: 2,000 PP: 500 Nylon 6: 7
Operational Rate (%)			70
Technical Level		Fair	Good
Number of Workers	110	75	110
Labour Productivity (ton/person/year)			36
Investment Behaviour		Ordered production of conduit pipe for wire and cable.	

## (3) Shoes

Name of Company	WIEN SHOE	SHADANPOUR SHOE	SPORT SHOE
Factory Location	Tehran	Tehran	Qazvin
Products	Rubber shoes, boots Sandals & slippers Leather/textile shoes Sport shoes Chemical shoes	Leather shoes (PVC sole) All plastic shoes	Leather shoes (PVC sole) All plastic shoes
Main Production Facilities (units)	Bunbary mixer: 2 Mixing roll: 4 Compression: 20 Injection: 3 Pelletizer: 3	Injection (DSMA): 2 Blender: 2 Semi-handling injection: 2 Blender: 3 Pelletizer: 3 Coater: 1	Mixer, granulator: 1 Injection: 4
Annual Consumption of Plastics Materials (ton) (1977)	PVC compound: 1,600 DOP: 1,600 MB: 120 PVA: 300 SBR: 300 M-SBR: 300 NR: 2,400 PU: 1,200~1,500	PVC: 2,000 DOP: 2,000	PVC: 1,150 DOP: 820 PU: 660 PU 2 ton/day PVC 3.5 DOP 2.5
Operational Rate (%)	50	75	90
Technical Level	Good	Fair	Good
Number of Workers	800 (1/3 is for PVC shoes)	500 (1/2 is for PVC shoes)	200 (2/3 is for PVC shoes)
Labour Productivity (ton/person/year)			
Investment Behaviour	Immediate target is to enhance the operating ratio rather than expansion of production facilities.	No plan to expand the production facilities	Additional installation: PVC injection 1 sets PU injection 1 sets

Name of Company	OTAFUKU IRAN	SEH SETAREH SHOE	VULKAN
Factory Location	Tehran	Tehran	Tehran
Products	PVC sandal	Rubber footwear (30%) PVC footwear (70%)	Industrial goods (Hose, conveyor belt Military shoes (sole)
Main Production Facilities (units)			
Annual Consumption of Plastics Materials (ton) (1977)	PVC: 2,500 DOP: 2,000 Others: 70	PVC: 1,500~2,000 DOP: 1,500~2,000 SBR: 100 NR: 250 N Latex: 25	CR: 200 SBR: 200 NR:
Operational Rate (%)	50	70	50
Technical Level	Good	Fair	Fair
Number of Workers	700	400	80
Labour Productivity (ton/person/year)	6 - 7	8	8 - 10
Investment Behaviour	Positive mind for investing. Good profitability of the members of Melli Industrial Group.	Full-automatic machines are introduced.	No planning to expansion of the limited numbers of industrial rubber products manufacturers



Name of Company	JAM SHOE	TST
Factory Location	Tehran	Tehran
Products	Sport shoes	Rubber sandals

Main Production Facilities (unit)

Bunbary mixer:	1
Mixer:	2
Compression:	17

Annual Consumption of Plastics Materials (ton) (1977)	NR: 250 SBR: 400 SBR-MB: 200 H-SBR: 250	NR: 200 SBR: 120
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Operational Rate (%) 70 60

Technical Level Good Good

Number of Workers	300 (Plastic Div. 90)	50 - 60
Labour Productivity (ton/person/year)	10	8 to 10

Investment Behaviour

A PVC boots manfg. plant in Rasht is planned.	High intension to investment.
A new factory is under construction.	

(4) PVC Leather and Floor Tile

Name of Company      SHAHIN PLASTIC      DOODMAN      WINIFLEX

Factory Location      Tehran      Qazvin      Qazvin

Products      PVC calender sheet      PVC profile      PVC floor tile  
uPVC calender sheet      uPVC pipe  
PVC leather      PS toilet cabinet

Main Production      Calender: 1      Extrusion: 10      Calender: 1  
Facilities (units)      Coater: 2      Injection: 1      (Tile 3,300 sq.m/day)  
Laminator: 7      Mixer: 3  
Printer: 1      Granulator: 3  
Knitting machine: 9

Annual Consumption      PVC resin: 2,700      PVC resin: 1,500 (1977)      PVC copolymer: 600 - 750  
of Plastics      3,000 (1978)  
Materials (ton)  
(1977)

Operational Rate (%)      60      90      90

Technical Level      Excellent      Good      Good

Number of Workers      250 (Direct workers; 185)      50 (3 shifts)      104

Labour Productivity      23      60      7 (Tile; 35)  
(ton/person/year)

Investment Behaviour      Although no expansion is planned, this company is expected to grow in pace with that of the automobile industry. Willing to develop new products.      Expansion of facilities by 900 ton/year is going on. Two extrusion units for doors and partitions will be equipped in spring 1978.      Has a plan to increase one production line with a 4,000 sq. meters/day in two or three years.

(5) Plastics Crate

Name of Company	SASAN	MINAGLASS
Factory Location	Tehran	Tehran
Products	Bottle crate for soft drinks	Bottle crate for soft drinks (PEPSI)
Main Production Facilities (unit)	Injection: 2	Injection: 3 (One of them will be equipped at the beginning of 1978)
Annual Consumption of Plastics Materials (ton) (1977)	HDPE: 800 - 1,000 (1977) 1,600 - 2,000 (1978)	HDPE: 600 (1977) 720 - 840 (1978)
Operational Rate (%)	90	
Technical Level		
Number of Workers		
Labour Productivity (ton/person/year)		
Investment Behaviour	A bottling plant in Hamedan is under construction. Two injection machines for production of 2,200 crates/day will be installed in that plant.	

## (6) Woven Bag

Name of Company	VARZIDE-KAR	KISSEH IRAN.	IRAN FAILA
Factory Location	Rasht	Qazvin	Shiraz
Products	Woven bag Plastic net Rope	Woven bag Rope	Woven bag Blown film and bag LDPE lamination PP band
Main Production Facilities (units)	Extrusion: 3 Plain loom: 104 Circular loom: 32 Rope mfg. mc.: 1 Net mfg. mc.: 1	Extrusion: 2 Circular loom: 25	Extrusion: 1 Extrusion laminator: 1 Circular loom: 18
Annual Consumption of Plastics	PP: 2,000 HDPE: 80	PP: 990	PP: 960 - 1,080 HDPE: 240
Materials (ton) (1977)	LDPE: 200		
Operational Rate (%)	-	-	-
Technical Level	Good	Good	Good
Number of Workers	600 (3 shifts)	-	-
Labour Productivity (ton/person/year)			
Investment Behaviour	Facilities for mono-filament and weaving will be installed in future.		Two extrusion lines will be added in near future

(7) Electric Wire and Cable

Name of Company	SIMCO ERICSSON	HADY BARGH
Factory Location	Rasht	Qazvin
Products	PVC power cable Telephone cable (PVC insulation, LDPE jacket)	PVC insulated wire PVC sheathe cable
Main Products	Extrusion: 5	Extrusion: 11
Facilities (units)	Pelletizer: 1	Super mixer: 2
Annual Consumption of Plastics Materials (ton) (1977)	PVC resin: 1,200	PVC resin: 1,200
Operational Rate (%)	30	60
Technical Level	Good	Fair
Number of Workers	200	120
Labour Productivity (ton/person/year)	34 (as cable)	30 (as cable)
Investment Behaviour	Removed from Tehran. A production facility of high voltage cable (on cross-linked PE) will be installed in 1978.	Due to shortages in power supply and labour, no expansion is planned. (8 hrs/shift, +2 shifts)

## (8) Electric Appliances and Parts

Name of Company	GENERAL INDUSTRIAL		GENERAL STEEL
	AZMAYESH		
Factory Location	Tehran	Tehran	Tehran
Products	Refrigerator (5) <sup>1)</sup> 100,000 <sup>2)</sup> Cooler (10) 60,000 <sup>3)</sup> TV (3) 30,000 Gas oven (6) 20,000 Heater (5) 80,000 Water heater 40,000 Mixer	Refrigerator 20,000 <sup>2)</sup> Water-heater 100,000 Space heater 140,000 Cooler 30,000 Heating panel 300,000	Refrigerator 130,000 <sup>2)</sup>
Main Production Facilities (units)	Injection: 3 Extrusion: 25 Thermo forming machine: 5 (2 sets of them are automatic)		
Annual Consumption of Plastic Materials (ton) (1977)	5,000 (1976)		PS: 1,200 (Not producing plastics parts)
Operational Rate (%)	90		
Technical Level	Good		
Number of Workers	1,500 (Direct Lab. 1,230)		
Labour Productivity (ton/person/year)	-		
Investment Behaviour	Tehran factory will be closed in 1978. There is a new factory in Shiraz, in which an automation system will be employed on a large scale.	They have agreement with Plasco-Kar about supplying plastics parts exclusively.	

Notes: 1) Number of models  
2) 1977  
3) 1976

Name of Company	ARJ	PARS TOSHIBA
Factory Location	Tehran	Rasht
Products	Refrigerator (6) 120,000 Washing machine Water heater Space heater Cooler Gas range	Electric fan (40cm) 320,000 <sup>1)</sup> Rice cooker 120,000 Meat grinder 86,000 <sup>2)</sup> Juicer 53,000 Heater
Main Production Facilities (units)		Injection: 15 (Thermoplastic 13 units) (Thermosetting 2 units)
Annual Consumption of Plastics Materials (ton) (1977)	PS: 200 - 250 ABS: 1,200	GPPS: 70 HIPS: 30 ABS: 200 (stand of electric fan) AS: 150 (blade of fan, juicer cup) Others: Nylon, phenolic resin
Operational Rate (%)	High	High
Technical Level	-	Excellent
Number of Workers	2,000 (1977)	1,500 (Plastic 60)
Labour Productivity (ton/person/year)	Direct labour in 1976 was 500.	
Investment Behaviour	The factory commenced the first production of washing machine in Iran. Continuously developing new electric appliances.	Planning establishment of a new plant in a place 15km from Rasht. Two sets of phenolics injection machines will be installed in near future. Production of washing machines is planned.
		Notes: 1) 1977 2) 1976

(9) Plastics Bottle

Name of Company	PLASAMCO	IRAPACK
Factory Location	Tehran	Qazvin
Products	LDPE/HDPE blow bottles (6 - 20 liters) Toy (tire)	PVC shampoo bottles HDPE small bottles GPPS caps
Main Production Facilities (units)	Blow molder: 9 Injection: 1 (Hand operation)	Blow molder: 1 Injection: 1
Annual Consumption of Plastics Materials (ton) (1977)	LDPE: 120 HDPE: 240	330
Operational Rate (%)	40	
Technical Level	Fair	
Number of Workers		
Labour Productivity (ton/person/year)		
Investment Behaviour	A new plant in Sari for injection molding and blown film manufacturing is planned. Injection: 4 Blown film mfg. mc.: 1	



(10) Tire

Name of Company	Kian Tire Co.	General Tire & Rubber Co.	Bridgestone-Iran Co.
Location	Tehran	Tehran	Shiraz
Products	PC & TB tires only (tubes not produced)	PC, TB Tire & Tube	PC, TB Tire & Tube
Estimated Production Capacity (ton/year) <sup>1)</sup>	20,000	20,000	30,000
Material Consumption (ton/year)	NR 3,400, SBR 2,400 BR 1,700	NR 4,000, SBR 2,000 BR 900, IIR 2,000	NR 5,500, SBR 3,000 BR 700, IIR 500
Production (ton/year)	15,000 (Tire)	14,000 (Tire, Tube)	19,000 (Tire, Tube)
Operational Rate <sup>2)</sup> (%)	75	70	63
Technical Level	Being the oldest company, the producing facilities are old, and efficiency is low. (A)	Mainly placing emphasis on TB tire production; however, facilities are becoming old and efficiency is lowering.	The production facilities are designed to suit the Iranian workers to increase the efficiency.
Direct Labour (persons) and Labour Productivity (ton/person)	900 persons (3-shift) 16 ton/person	1,000 persons (3-shift) 14 ton/person	800 persons (4 groups, 3-shift) 23 ton/person
Investment Behaviour	Intending to increase capacity by 10,000 ton to make a total production capacity of 30,000 ton/year.	Present production is 2,500 tires/day. Increase up to 4,000 tires/day is intended.	Intending to increase the production up to 30,000 ton/year by 1978.
Initial Investment	-	-	¥15 billion to ¥16 billion during 1974/1975

Notes: PC: Passenger Cars, TB: Trucks and Buses

1) Licensed amount

2) Production/Licensed amount

### III GENERAL ASPECTS IN PLASTICS AND SYNTHETIC RUBBER PROCESSING INDUSTRIES IN IRAN

About 50 plastics and synthetic rubber processing companies were visited by the Survey Team for the interview. The current status and problems of these companies are shown below.

#### 1. Plastics Processing Industry

##### 1-1 Prices

###### (1) Raw material prices

Because of the price increase of domestic PVC up to R55/kg in 1977, many PVC pipe and joint manufacturers are complaining about the pressure. Some of them have lost export competitiveness of their joints (e.g., Polyvina). Some companies expressed grievance about the instability of the raw material prices (Shadanpour Shoe). However, prices of materials other than PVC have so far been reduced to a certain extent, the profitability of the Iranian plastics processors in general is not actually deteriorated.

###### (2) Product prices

Some enterprises expressed that the current status is high raw material cost and low product cost because of the ceiling prices were enacted several years ago and are not changed ever since (Plasco-Kar, Towlidi Tehran). However, because of the above-mentioned reasons, no serious problem seem to be felt by these manufacturers as long as they are able to use imported raw materials. However, if the import prices of the materials should be increased in the future, it would be necessary to review and revise the product price accordingly. Since the product prices are regulated on the basis of weight, the value of commodity incorporating elaborate design or high grade quality cannot easily reflect the value of the price (Otafuku Iran). However, in the case of new products such as HDPE film, a separate ceiling prices are established from conventional LDPE film, thereby assuring ample profit (Nylex).

##### 1-2 Raw material supply

Concerning PVC, raw materials must be imported because of the lack of domestic production of paste resin. Because of the inadequacy of product quality, copolymer is imported all the way from Italy in some case (Winiflex). Other companies were compelled to import special grade of materials because of their inability to carry out sufficient foaming (Otafuku

Iran). Complaints about damaged wrappings because of poor packaging were often voiced, and some enterprises complained that the weight of the raw materials is not only irregular but also insufficient. These complaints were also heard about the imported raw materials as well. Part of the reasons may be insufficient unloading facilities at the port of importation. The loss rate due to damaged packaging in some cases amount to as high as 10% to 20% (IEM).

It is a normal practice that the processors themselves or their agents visit the raw material manufacturers or the port of importation to receive the cargo. Because of the time required for importation, processors normally hold inventory to cover four-months to six-months worth of production. Concerning the domestic raw materials, some companies complained about slow delivery (Shadanpour Shoe) which sometimes takes four weeks (Doodman).

### 1-3 Producing facilities and production technology

#### (1) Production facilities

Chapter 3 of Appendix III shows the current status of importation of plastics processing facilities into Iran from Japan, the U.S.A., and the European countries since 1971. It is obvious from the Appendix that the importation of the facilities suddenly increased in 1975. About 80% to 90% of the total importation of the facilities was made from West Germany. These facilities are excellent in design and performance, so that no problems is apparent in the production. However, some enterprises operating in the vicinity of Tehran with a long history of operation are still carrying out the production by old and obsolete facilities, thereby showing a poor level of productivity. New regulations prohibit expansion or new installation of producing facilities within a radius of 120km of Tehran. Therefore, if these obsolete producing facilities are left unrenewed, the situation will further deteriorate and the production efficiency will constantly fall. Because of this fact, there are many companies which decided to close their Tehran factories to move their operation elsewhere. However, recently renewal of production facilities became to be approved by the government.

Because of the difficulties in obtaining machine import license, there are a number of companies operating Iranian domestic machines in and around Tehran. There are eight machine manufacturers of which five are builders of injection molders. Because of the limited number of output of the domestic processing machines, the machine production including the design cost becomes considerably high. The market price of these machines is higher than the imported machines (Maher).

Although, it is difficult to say that the Iranian domestic machines are better than the imported machines in performances, materials, and service life, they have contributed to the development of plastics industry in Iran.

(2) Production technique

Since this market is basically the sellers' market, the consideration seems lacking in terms of product quality improvement. For instance, it has been often noted that there are LDPE films having slackening or fish eyes, and PVC pipes having uneven thickness or unsatisfactory smoothness. By and large, quality defects are still conspicuous. In spite of the fact that they are using the world's first class molding machines, these defects eloquently display inadequate setting of the molding conditions. Therefore, technical service rendered by the raw material resin manufacturers is highly necessary.

There are a number of Iranian processors who are operating on the basis of induced technology from West European processors (Doodman, Winyflex, Sasan). There are also several joint venture companies (Simco Ericson, Otafuku Iran). The technological standard of these companies is generally high. Companies managed by presidents who have experience in working for overseas companies (Shabin Plastic, Plastiran) seem to be enjoying wholesome management and excellent production technique.

1-4 Labour force

The labour force availability varies from place to place in Iran. Within a 120km radius centering on Tehran, no new installation or expansion of production facilities is permitted; however, the availability of labour force is still sufficiently high. Although all the processors are now engaging in full-capacity production, many of them are working two shifts of twelve hours a shift. In Iran, this working condition is rather unusual. It rather seems that this is due to a temporary work intensification in order to meet recent boom in the market. In Tehran, there are several processors who are suffering from labour shortage (Derakshan, Wien Shoe). One of these companies is employing Pakistani workers (Derakshan). Another company seemed to have a number of young workers (Pars Plastic). In Quazvin, all the processors are feeling a pressure of labour shortage (Dan Roll, Polyvina, Platlux, and other four processors). Some of them employ foreign workers (Polyvia, Dan Roll). Another processor was complaining about wage hike (Sport Shoe).

However, due perhaps to the still small number of processors, the enterprises operating in Qom, stated that recruitment of labour force from neighbouring villages

was easily possible (Honer Plastic). In Rasht, processors replied that labour availability is high in neighbouring farming villages (Varzide Kar). However, the wage of these local workers is not necessarily much lower than that in Tehran (Plasco Kar).

The labour productivity is generally low. For instance, in operating one injection molding machine, some processor is taking up 1.3 operators (Plasco Kar). Such a low level of labour productivity further deteriorates the shortage of labour. It is therefore strongly recommended that labour saving must be positively implemented. This holds true not only in the vicinity of Tehran but also in industrial complex areas where labour shortage is generally prevailing. The first step to be taken in the labour saving with a comparatively low extent of investment with a high efficiency with the introduction of peripheral streamlining such as improvements in raw material supply system and product shipment systems.

The quality of labour is not always high in Iran. This is clearly shown by the fact that the productivity during night is only 70% of that during day even in the case of well trained factories.

#### 1-5 Infrastructure

Electric power is generally procured from outside supply source; however, power shortage is constantly felt in Qazvin and Rasht where the processors are compelled to install their own in-plant generating stations. This has been causing a great impediment in further expansion projects.

Because of insufficiency in housing accommodations and other welfare facilities in and around the industrial complex areas, it is rather difficult for small and middle-scaled processors to branch their activities into these complexes.

#### 1-6 Investment behaviour

None of the old processors operating in and around Tehran have plans for expansion or new installation of producing facilities. Some of them are planning to new factories as follows:

Rasht:	Plasco-kar, Tehran Plastic, Jam Shoe
Isfahan:	Pars Plastics
Qazvin:	Tehran Plastic, Plastiran
Yazd:	Plastiran
Hamedan:	Sasan
Sari:	Plasamco

On the other hand, there are some other processors which are not showing willingness in new investment. In some cases, processors close their Tehran factories after commencement of the operation of their new factories outside Tehran (Simco Ericson, Azmayesh, Honar Plastic).

Generally speaking, the investment behaviour of factories operating in local areas is rather active. More than half of the processors visited by the Survey Team in Qazvin and nearly all the enterprises in Rasht expressed that they have expansion projects. However, the first problem to be solved in this respect is the labour shortage and electric supply shortage.

#### 1-7 Management ability and capacity

Generally, the plastics processing industry consists of a great many small or medium-sized enterprises in any country so that the number of management having organizing capacity is extremely small. However, there are several excellent processors in this respect as has been mentioned before (Shahin Plastic, Plastiran, Varzide kar), and also there are many others which operate within a 120-km radius of Tehran and are exerting efforts in improving the operation through aggressive development of new products (ARJ, Tehran Plastic, Shain Plastic). Generally speaking, Iranian plastic processors show a positive willingness in the production of end-consumer goods which have high possibility of advantageous marketing and the prices of which fluctuate in accordance with the market situation. However, the processors are rather unwilling to engage in the production of industrial plastics materials the prices of which are controlled. In the case of electrical appliance parts for example, nearly all the necessary items are being manufactured by appliance manufacturers themselves. The items which were produced by independent processors were limited to the stands of electric fans made of ABS (Pars Plastic) and the blades of the electric fans (Plastiran). The production of fan blades were carried out under spot orders.

The above two processors both have excellent factories, and are far superior to the other processors in terms of factory management. Therefore, these factories were capable of receiving orders to produce industrial parts. On the other hand, in the case of some other large-scaled manufacturers, the conditions of the management of production facilities were not up to the production of industrial parts.

Thus, the industrial parts in Iran are nearly entirely produced by the users themselves due to the following two reasons:

The first reason pertains to the problems of production management in terms of parts delivery due date. It is highly possible that delay in the delivery of small parts will suspend the operation of all the production lines of

the final products, so that farming-out of such parts is only possible when the processors are completely reliable in this respect.

The second reason pertains to the quality control problems. Because of the fact that these final product manufacturers do not possess a system for checking the performance of the processed parts, there is always a danger of irregularity in the mechanical performance of the parts which will eventually affect the quality of the finished products.

The Survey Team is of the opinion, however, that total in-plant production of the necessary parts and components by the consumer industries will become undesirable in the future. The reasons are:

- (1) The scale of investment requirements will grow enormously large.
- (2) The production efficiency (operational rate of the machines) will eventually be deteriorated.
- (3) Shortage of skilled plastics processing operators will become much more serious.

If the current conditions should persist, the consumer industries will keep producing those parts and components which they can economically and technically turn out inside their plants, and the rest will have to be imported. Therefore, the domestic demand for plastics for use in manufacturing industrial parts and components will never grow.

#### 1-8 Supporting industries

- (1) Plastics coloring materials

PVC compound has been in production in Iran since 14 years ago by Polika Factory. Some large-scaled shoe manufacturers are producing compounds for their own consumption and also for supply to the market.

However, the materials for producing HDPE pipes are already colored (IEM), and colored pellets of PS and ABS are also imported. Nearly all the processors who are carrying out coloring by themselves are importing master batch. Since both colored pellets and master batch can be comparatively easily produced, and also do not call for mass production by their nature, it is strongly recommended that domestic production of these items be implemented as soon as possible.

- (2) Molds

Comparatively simple molds are produced by the proces-

sors themselves (Tehran Plastic); however, most of the processors are carrying out only the repair work of the molds in spite of the fact that they usually have machine shop inside their plants. It is understood that there are many small-scaled mold manufacturing factories in Iran; however, most of the molds produced by them seem to be those of small sizes for use in thermosetting plastics.



## 2. Synthetic Rubber Processing Industry

### 2-1 The tire manufacturing industry

#### (1) The operational rate

The operational rate of Kian Tire Co. is 75%, while that of General Tire and Rubber Co. is 70%. The reasons for such a comparatively low level of operational rate are the obsolescence of the production facilities and the shortage of labour.

#### (2) Level of technology and labour productivity

These leading tire manufacturers are independently operating on licensed technology transferred from industrially developed countries. Therefore, the processes employed by them are all internationally proven techniques. As mentioned earlier, however, the obsolescence and aging deterioration of the plant facilities at Kian Tire and General Tire seem to need improvements as soon as possible. Otherwise, it is more than likely that the tire production by these companies will fall seriously behind the production increase which will be achieved by the automobile manufacturing industry of the country. Even at present, the total tire demand amounts to 90 thousand tons, while these companies are supplying only approximately 50 thousand tons. In the Iranian tire manufacturing industry, the most urgently needed action is the improvements and expansion of the manufacturing facilities rather than the enhancement of the level of production technology. If the necessary remedial action is taken in the nearest future, the labour productivity will also be improved accordingly. If a three-shift four-group production rotation such as employed by Bridgestone (340 to 350 days per year) is also adopted by the two companies, it would be possible to increase the production output higher than the present system of three-shift three-group (280-290 days per year).

#### (3) Investment behaviour

At present, these tire manufacturing companies are suffering from deficit on one hand, and on the other hand, are keenly seeking investment opportunities. Regarding Kian Tire and General Tire, implementation of facility expansion and production boost should be carried out in accordance with the proper recommendations. It has been learned that Bridgestone Iran is now preparing for establishing a 30-thousand ton production system to be implemented during the coming year.

### 2-2 Footwear manufacturing industry and others

#### (1) The operational rate

Concerning the data on the licenses of the footwear manufacturing companies and other rubber product manufacturers are all based on estimations, so that the estimated operational rates are on a lower side. However, it is true that many of the manufacturers are compelled to reduce their operational rate due to the shortage of labour. There are some factories which are standing completely idle because of the inability of securing the necessary manpower. Because of these idling of the plant facilities, the overall operational rate in these cases is extremely deteriorated. The degree of automation of the producing facility is not high, thereby creating low efficiency. A vicious circle seems to be working in this industry.

(2) Level of technology and labour productivity

Several leading manufacturers such as Melli, etc. are occupying the market share of as high as 70%. Partly due to such a circumstance, the rest of the footwear manufacturers are feeling extreme difficulties in improving their production facilities by introducing automation machinery. The so-called full plastic footwear is now produced by more than half of the Iranian footwear manufacturers because of the advantage of simple manufacturing process and low production cost. These full plastic footwear products are mainly based on PVC. This is one of the major reasons accounting for the conspicuous fall in the amount of SBR consumption in the Iranian footwear manufacturing industry.

In spite of the fact that the production of the full plastic footwear is quite active, most of the production facilities employed by the manufacturers are at best semi-automated facilities. This condition is constituting one of the major causes for the low level of labour productivity.

There is one factory producing the industrial-use rubber products. This factory was also producing soles for footwear. It appeared that the level of the industrial-use rubber products turned out by this factory was not very high. The special rubber consumed by this company was only one type of CR.

As has been mentioned earlier, most of the industrial-use rubber products are now supplied through importation. This has been impeding upon the proper growth of technology among the indigenous manufacturers. It seems urgent that a plan be established to improve the present situation by implementing an effective measure to foster the industrial-use rubber product manufacturing technology in Iran.

(3) Investment behaviour

Most of the footwear manufacturers visited by the Survey

Team seemed to be suffering from the shortage of labour, and were deprived of investment incentive due to the 120-km restrictions. If the improvements in the productivity is intended by improving and expanding the production facilities, favourable conditions must be given to the enterprises by the authorities in such a manner that sufficient incentive will be felt on the part of the manufacturers.

Followings are the problems which exist in the synthetic rubber industries in Iran:

(a) Shortage of labour

Due mainly to the inconvenience in the transportation, nearly all the factories operating in the suburbs of Tehran are suffering from the shortage of labour. For instance, Wien were compelled to cut the production by one-half of the peak period because of this problem.

(b) Renewal of licenses

Particularly in the case of the tire manufacturing industry, the manufacturers must renew their licenses even if the participation by Pars Tire Co. is expected for the year 1979. Without renewing their licenses, about 50% of the tires necessary in Iran will have to be imported forever.

In the case of the footwear manufacturing industry, renewal of licenses must be seriously considered in order to avoid the possible outcome of deterioration of the exportation of Iranian footwear to the neighbouring countries.





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