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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

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ID

Distribution
LIMITED

ID/WG 166/17
9 November 1973

Original: ENGLISH

United Nations Industrial Development Organization

Fourth Training Programme in Plastics Technology
Vienna, Austria, 10 September - 9 November 1973

THE DEVELOPMENT OF THE PLASTICS INDUSTRY IN TURKEY[1/]

by

Erdogen CICEKCI

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id.73-8028

Plastics processing industry in Turkey started in the 1930's with increasing plastics import activity, plastic products made of phenol-formaldehyde, such as electrical materials, radio cases, ash trays etc., were manufactured in this period. The processing capacity reached 120 metric tons in 1939.

With the outbreak of World War II the plastics processing industry in Turkey came to a halt and as a result the capacity did not increase very much until after the war. From 1952 on, the plastics industry gradually developed and started manufacturing by importing petrochemicals such as polyvinyl chloride, polystyrene, polyethylene, cellulose acetate, celluloid and urea formaldehyde.

Petkim Petrochemical Company, which I am working for, has a capital of 1,5 billion Turkish liras (approximately 110 million dollars). The product flow sheet for the Petkim Petrochemical Complex is presented in Table I. This table includes the petrochemicals which will be manufactured in the near future. As of 1972, the complex has been manufacturing main petrochemicals such as polyethylene, polyvinyl chloride and dodecyl benzol. It has been planned to consist of 21 units. Table II gives a list of these units.

Petrochemical production situation in Turkey is presented in Table III. Table IV gives the petrochemical consumption and Table V the amount of petrochemicals which are imported. A list of the companies which produce petrochemicals is given on Table VI In this list, Petkim is excluded. The amount of plastics consumption per person is 1,7 kg/year in Turkey.

The distribution in polyethylene consumption is as follows:

Film for covering purposes	24,1 %
Film for packaging	32,3 %
Injection moulding	13,3 %
Bottles and toys	13,0 %
Wires and cables (insulation etc.)	11,3 %

However, PVC films for covering purposes can replace polyethylene films if the relevant technology is made widely available in Turkey. The use of polyethylene for cover on paper and aluminium foil has also been developing in Turkey.

The distribution in PVC consumption in Turkey, as of 1970, is as follows:

Shoes	19 %
Wires and cables	12 %
Synthetic leather	22 %
Piping and profiles	26 %
Hoses	7 %
Floor applications	11 %
Records and miscellaneous applications	3 %

These figures have changed somewhat in 1973 and consumption in hoses has decreased together with an increase in the consumption of records and bottles. The application of PVC as flexible film (for cover) has also started. However, the production of PVC compound has not been completely standardized yet; and this prevents PVC flexible film production from further development. Studies made in this area show that the consumption of PVC film is capable of increasing very quickly.

There are a number of plastics products which the processing industry is not capable of producing yet. Among these is polyethylene bags with heavy duty vent. They are most needed in the fertilizer industry. For this reason, contacts with foreign countries are being made in regard to patents and know-how.

Likewise, the technology for packaging canned food with aluminium foil is not developed in Turkey. A number of techniques for packaging meat, milk, yoghurt etc., are being considered. However, technical know-how is lacking in this area. The Meat and Fish Company of Turkish Republic, the biggest consumer in this field, is considering to solve its packaging problems as follows:

1. Transparent packaging materials which will let oxygen in but which will not let the moisture out will be used. The desired materials are cellophane paper covered with nitrocellulose, or polyethylene, polyvinyl chloride shrink films. At the present time, none of these except polyethylene films can be made in Turkey.

2. The material inside the bags which are vacuum resistant must be seen from the outside. Some activity in this area has just started in Turkey and NASAS is the leading company. NASAS manufactures aluminium foils covered with polyvinyl chloride. For the present time, enough technical know-how in this field is not available in Turkey. Similarly the technology for polyester or poly-propylene films is not available in Turkey yet.

Table_I

PETKİM PETROKİMYA A. Ş.
YARIMCA PETROKİMYA KOMPLEKSİ AKIM ŞEMASI

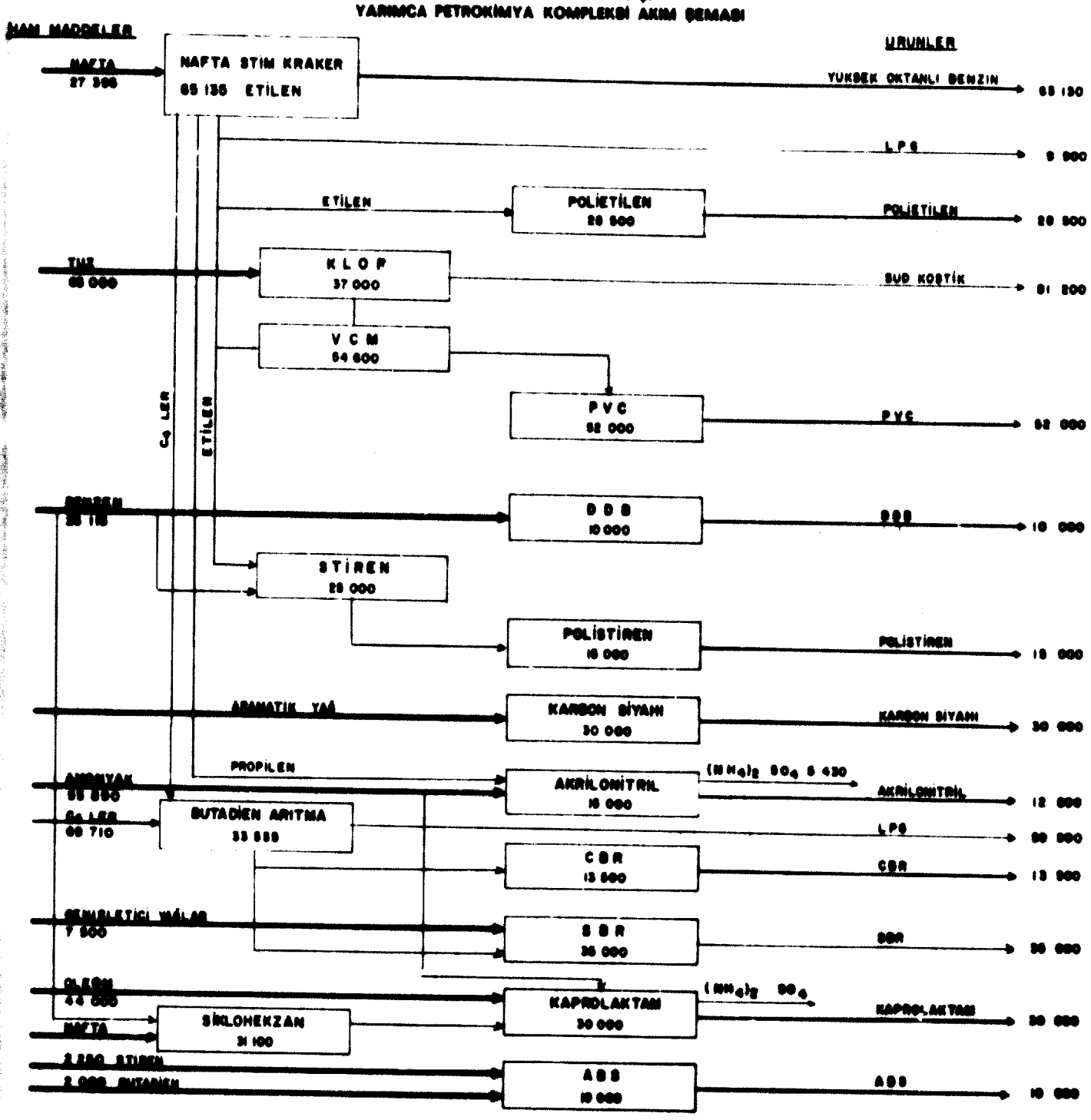


TABLE II

THE UNITS OF PETKİM COMPLEX

1. Ethylene
2. Polyethylene (PE)
3. Vinyl Chloride Monomer (VCM)
4. Polyvinyl Chloride (PVC)
5. Dodecyl Benzene (DDB)
6. Chlorine-alkaline
7. Auxiliary Facilities and their Connections
8. Common Facilities
9. Styrene
10. Polytyrene
11. Carbon Black
12. Thermal Cracker
13. Aromatics Extraction
14. Butadiene
15. Styrene Butadiene Rubber (SBR)
16. Cis.Polybutadiene Rubber (CBR)
17. Dimethyl Terepthalate (DMT)
18. Caprolactam
19. Acrylonitrile
20. Acrylonitrile Butadine Styrene (ABS)
21. Phthalic Anhydride

Production of Petrochemicals in Turkey

Table III

	Mevcut Kap. Ton/Yıl	Birim	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Polietilen	27.000	Ton								6.638	10.246	12.413
		000 TL.								42.782	66.035	81.677
Polivinil Klorür	26.000	Ton								1.542	9.556	17.325
		000 TL.								8.866	54.947	130.409
Polivinil Asetat	10.630	Ton		35	1.575	3.433	4.415	5.617	6.450	7.000	7.395	10.300X
		000 TL.		164	7.371	16.078	28.256	40.442	38.700	50.050	69.100	81.400
Poliyester Reçineleri	4.443	Ton				75	533	588	1.162	1.600		
		000 TL.				675	4.313	5.128	10.981	19.200		
Fenolikler	2.450	Ton						952	1.207	1.355		
		000 TL.						815	5.092	6.910		
Üre-Formaldehit Reçineleri	11.135	Ton						568	2.966	3.511		
		000 TL.						1.444	7.507	10.340		
Plastikleştiriciler	10.050	Ton					2.202	3.167	5.078	5.114	7.180	11.400X
		000 TL.					18.669	26.850	43.051	49.749	58.300	93.500
Dodesil Benzol	10.000	Ton										42
		000 TL.										146

X Tahmini

Bu tablo DPT Petrokimya sun'i ve sentetik elyaf özel ihtisas komisyonu raporu (Mart 1972) ve DPT 1973 yılı programı S.154,T-99 yardımıyla hazırlanmıştır.

Consumption of Petrochemicals in Turkey

Table IV

	1963	1964	1965	1066	1967	1968	1969	1970	1971	1972
Polietilen (PE)	3.334	4.850	4.307	9.870	9.333	18.295	18.302	26.923	30.916	36.923
Polivinilklorür (PVC)	5.510	5.678	6.550	15.059	11.341	13.058	14.667	18.780	27.703	33.256
Polivinilasetat	-	35	1.575	3.432	4.457	5.651	6.502	7.050	7.973	10.392 X
Plastikleştiriciler	-	-	-	-	2.664	3.600	11.382	13.432	16.609	21.032 X
Dodesil Benzol (DDB)	-	-	-	-	674	4.436	4.418	7.315	9.981	11.114
Poliester Reçineleri	-	-	-	75	580	598	1.162	1.603	-	-
Fenolikler	-	-	-	-	403	1.465	2.593	3.319	-	-
Üre-Formaldehit reçineleri	-	-	-	-	99	744	3.876	5.893		

X Tahmini

Halen yurdumuzda üretilmeyen petrokimyasal ürünlerin ithalat değerleri görünür tüketim değerlerine eşit olduğu için bu ürünlere ait tüketim değerleri ithalat tablosunda verilmiştir.

Imported Petrochemicals in Turkey from 1963 to 1973

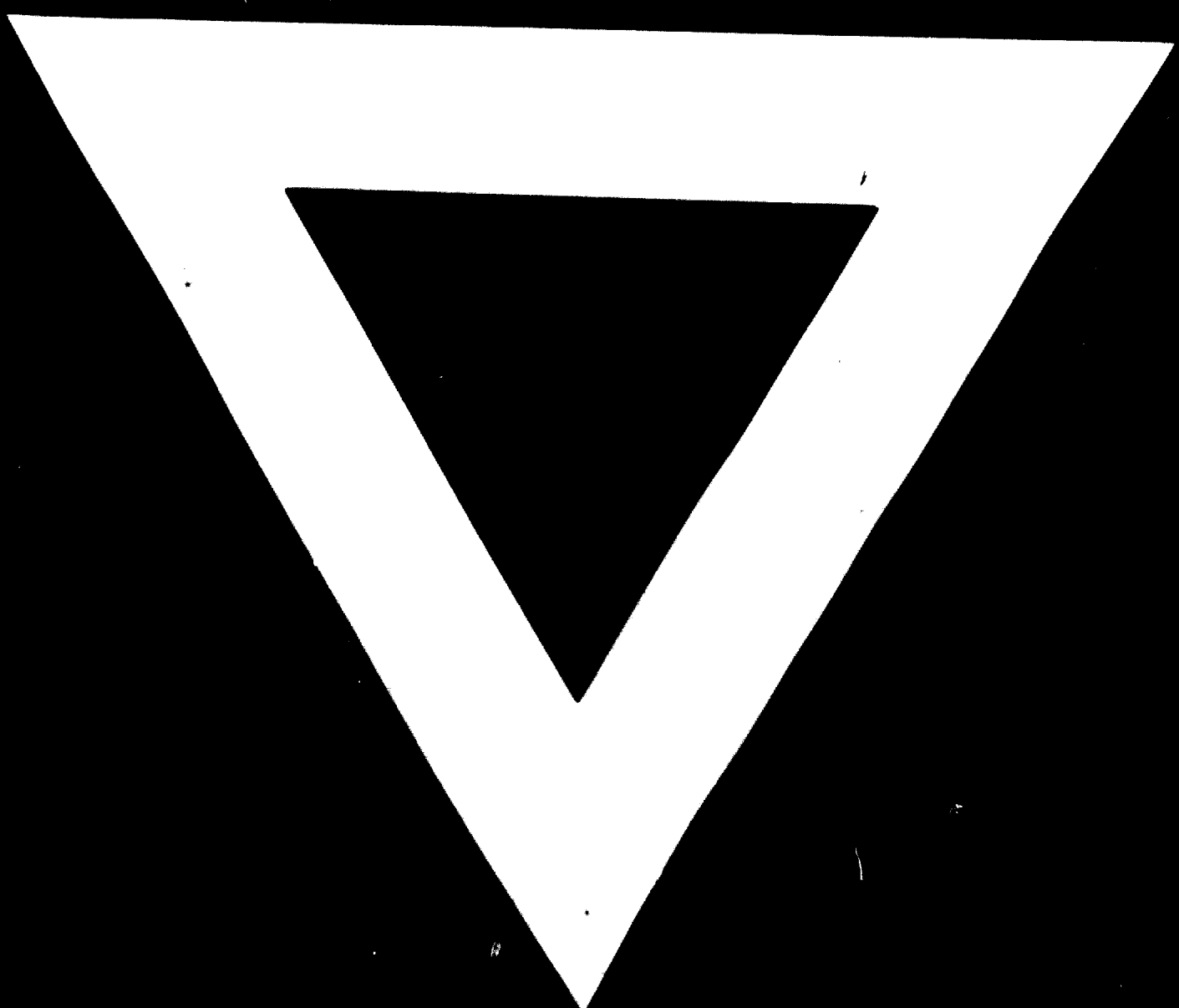
Table V

Ürünler	Birim ton/000	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Polietilen (PE)	Miktar	3.334	4.850	4.807	9.870	9.333	18.295	18.302	20.285	20.670	24.810
	Tutar	9.829	14.298	14.171	28.097	25.166	33.000	27.188	35.322	60.131	85.303
Polivinilklorür (PVC)	Miktar	5.510	5.678	6.650	15.059	11. 841	13.058	14.667	17.238	18.147	15.931
	Tutar	15.779	16.466	19.285	43.671	34.337	34.317	37.720	48.116	70.816	62.164
Polistiren	Miktar	1.656	2.980	3.569	4.742	3.263	5.045	4.725	7.002	6.203	13.325
	Tutar	4.721	8.496	10.175	13.519	9.305	13.135	11.219	18.728	21.718	49.410
Polipropilen	Miktar	-	-	69	245	384	492	285	630	2.555	7.286
	Tutar	-	-	378	722	838	1.078	449	2.078	8.405	25.822
Polivinilasetat	Miktar	-	-	-	-	42	34	52	50	78	92
	Tutar	-	-	-	-	293	268	137	234	367	420
Akrilikler	Miktar	-	-	-	-	50	11	19	8	219	392
	Tutar	-	-	-	-	223	85	253	743	2.405	5.199
Alkit Reçineleri	Miktar	-	-	-	-	207	247	27	31	75	11
	Tutar	-	-	-	-	936	678	167	360	674	133
Poliester Reçine	Miktar	-	-	-	-	47	12	-	3	0,1	1
	Tutar	-	-	-	-	202	51	-	52	1	27
Fenolikler	Miktar	-	-	-	-	403	1.213	1.386	1.964	2.108	2.042
	Tutar	-	-	-	-	1.022	2.738	3.106	7.619	12.820	12.985
Üre-Formaldehit Reçineleri	Miktar	-	-	-	-	99	176	910	2.382	2.435	2.360
	Tutar	-	-	-	-	270	281	1.804	5.786	5.844	5.630
[illegible]	Miktar	-	-	6.280	8.588	13.124	13.739	11.237	8.768	10.732	13.758
	Tutar	-	-	24.486	32.894	48.877	48.285	38.622	37.394	59.485	73.487

Other Petrochemical Production, the Production Capacities amd the Manufacturing Companies

Table VI

Ürün Cinsi	Kapasite (TON/YIL) (1)	ÜRETİCİ KURULUŞLAR
Plastikleştiriciler	11.050	PLASİFAY MARSHAL PLASTEL DERBY VİNYL PLAST
POLİVİNİL ASETAT	10.630	HOECHST MARSHAL POLISAN POLİMPEX
ÜRE FORMALDEHİT REÇİNELERİ	11.135	BASF-SÜMERBANK POLISAN
ALKID REÇİNELERİ	8.291	BAYRAKLI DYO DEWILUX ÇAVUŞOĞLU MARSHAL EVA
POLİESTER REÇİNELERİ	4.448	DEWILUX MARSHAL EVA
AKRİLİKLER	200	FARGLAS ILKALEM BASF-SÜMERBANK ORGANİK KİMYA
FENOLİKLER	2.450	DERBY POLISAN POLIMPEX PESKIN
MELAMİNLER	2.000	BASF-SÜMERBANK DERBY
SENTETİK LİFLER		SASA SIFAŞ AKSA



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