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CONTRY PAPER ( UC/RAB/88/155 )

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## 1 - INTRODUCTION

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Algeria has a very important industrial basis. Investments concerning almost all the fields of industrial activities were implemented.

During the 1967/1984 period, one hundred ninety five billions algerian dinars were allocated to the industrial sector which represented forty five percent of the total investissement. In this same period 3,8 millions employes were created of which 1.5 million concern the industrial sector.

the average annual rates for the GDP between 1967/1984 are as follow :

- 1967/1973 : 6,2 % of which 7% for the industry
- 1973/1979 : 6 % of which 4% for the industry
- 1984/1979 : 21 % of which 20% for the industry.

The period 69/73 has been characterised by the manufacture of mining products and processing industrie(textiles / food.)

The period 73/79 has been characterised by the manufacture of mechanical products (trucks,grues,cycles...), chemical and petrochemicals products (fertilizer...) and building products (cement ...)

The period 79/84, appearance of new products essentially electrical and electronics fields as refrigerator, T.V, telephone in one side and reinforcement of the existing capacities.

The petrochemical industry did not play an important role in the developpement of the industry and the national economy in general.

In spite of availaibility of raw materials and energy at advantageous prices, the petrochemical industry has not been developped sufficiently.

This industry is only partially developped. The developpement of this industry was mainly oriented toward processing industries such as plastics, detergents and paints. Only two petrochemical complexes were constructed, one at Skikda and one at Arzew.

The domestic market of basic and intermediates petrochemicals was satisfy totaly, mainly by imports, until the years 1985 where ther rate of growth of the demand was nearly 5%. Since then, only 50% of the national needs were satisfied due to the combinations of several factors (fall of oil price, fluctuation of the US\$ and he high rate of growth of demand).

Algeria, which has raw materials and a large domestic market has decided to implement an ambitious program in the next ten years ta reduce the dependance ou foreign for its procesing industries in one side and to penetrate the international market in the other side.

Table 1 shows the imports of basic petrochemicals, intermediates and finished products (1986/1988). The national demande in 1987 for the finished products only was estimated at 552,000 tonnes of which:

- . 77 % concern the plastic processing industry.
- . 10 % concern glues and paints.
- . 5 % concern detergents.
- . 5,5% concern synthetic fibers.
- . 3 % concern elastomeres.

Table 1. IMPORTS OF BASIC PETROCHEMICALS, INTERMEDIATES  
AND FINISHED PRODUCTS .

U: TON

PRODUCT	1986	1987	1988
L D P E	29.800	23.500	19.500
L L D P E	-	-	4.100
H D P E	32.000	24.500	30.500
PVC SUSPENSION	17.600	22.700	22.500
PVC EMULSION	3.200	1.100	2.100
PVC COMPOUND	2.700	4.900	4.000
POLYSTYRENE	11.500	8.100	16.600
POLYPROPYLENE	3.600	3.400	4.000
PLASTICIZERS	9.500	7.500	8.600
SPECIALS PRODUCTS	53.300	40.500	32.000
T O T A L	163.300	136.400	144.500

## II. PATTERN OF PRODUCTION OF POLYMERS.

### II.1 POLYMERS CAPACITIES

Algeria has two main production facilities.

- The plastic material complex of Skikda which comprises the following units : ethylene (120,000 T/Y ), VCM (40,000 T/Y), PVC (35,000 T/Y), LDPE (48,000 T/Y) and chlorine (36,000 T/Y).
- The methanol and synthetics resins complex of Arzew which comprises the following units : methanol (100,000 T/Y), phenol resin (6,000 T/Y), melamine resin (500 T/Y) and urea resin (8,000 T/Y).

An installed production capacity of aromatics exists also at Skikda benzene (90,000 T/Y), toluene (5,000 T/Y), mix-xylene (247,000 T/Y) and paraxylene (38,000 T/Y).

The total production of aromatics is exported.

### II.2 POLYMERS PRODUCTION

The Skikda complex uses 50 to 70,000 tons/year of ethylene for the production of LDPE and PVC.

The Arzew complex consumes 10,000 tons/year of methanol for the manufacture of resins.

The surplus quantities of ethylene and methanol are exported.

The production of LDPE and PVC are totally sold to the domestic market.

Table 2 shows the production of polymers from 1985 ta 1988.

TABLE 2 - PRODUCTION OF POLYMERS 1985-1988. <sup>3</sup>  
----- U 10 TON

PRODUCT	CAPACITY	PRODUCTION			
		1985	1986	1987	1988
ETHYLENE	120	79	73	70	53
L D P E	48	34	33	40	34
P V C	35	9,4	9,1	6	8
METHANOL	100	89,5	62	90	96,6

### III - DOWNSTREAM PETROCHEMICAL PROCESSING UNITS

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#### III.1 PRODUCTION CAPACITIES.

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The installed production capacities for processing plastics and rubbers (not included foam producers and included PVC compound producers ) are evaluated at around 642,000 tons/year(19

These capacities are dispat ched as follow:



The national plastics and rubber company (ENPC) has a total capacity of 122,000 tons/year.

The other national companies have a total capacity of 60,000 tons/year.

The private sector has a total capacity of 460,000 T/Y.

Around 45% of the ENPC total production is used in agriculture and water management.

Around 12% of the private sector total production is used in these two fields.

The other public companies produce to satisfy their factory needs (electrical insulation, refrigerator ).

### III. 2 PRODUCTION CAPACITIES (END -USE AGRICULTURE AND WATER

#### MANAGEMENT .

#### - AGRICULTURE END-USE

##### E N P C

Films	( 14,580 T/Y )
Soft bags	( 5,200 T/Y )
Fertilizers bags	( 4,450 T/Y )
LDPE tubes	( 2,000 T/Y )
Packaging	( 12,600 T/Y )

##### Private

Films	( 12,000 T/Y )
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- WATER MANAGEMENT END-USE

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E N P C  
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Tubes and PVC raccords	( 10,200 T/Y )
PES tubes	( 2,500 T/Y )
Extruded mailles	( 4,060 T/Y )
PES TANKS	( 250 T/Y )

Private  
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Tubes / irrigation ( 40,000 T/Y ).

III - ORGANISATION OF THE PROCESSING INDUSTRIES  
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The processing industries in Algeria are owned either by the national plastic and rubber company (ENPC) or by the private sector. There are no foreign investment in this field.

The " Entreprise nationale des plastiques et caoutchous " which was born in 1980 from the SONATRACH reorganisation has nineteen (19) units with a total capacity of 122,000 tons/year ( 1988 ).

The social office of y this company is located at Setif  
ENPC employs more than 5000 persons.

The private sector which plays an important role in the plastic processing industry owns more than 650 units with a total capacity evaluated at around 460,000 tons/year ( 1988 ).

Its units are spread all over Algeria with a large part in the north.

The developpement of this sector did not follow any strateg~~y~~. or planification.

These last years , the gouvernement has decided to orient the existing factories toward the manufacture of products needed by sectors of first priorities as agriculture.

Fiscal and financial measures have been taken by the *government* to help new investors who accept to locat their projects out side the northern wilayates and to manufacture products to satisfy needs of first priority sectors .

The facilities conceded to these investors are:

- Loan between 10 to 30% of the total investissement.
- exemption from Bic and TAIC for a period of five years.
- Insurance, by local autorities, to obtain a building-site for the project.

Since these last two years , the chamber of commerce imports equipments for the benefit of those investors and supply them with raw materials on its own foreign currency budget.

#### IV Institutional Infrastructures

Two entities are mainly concerned by the research in the plasticulture field in Algeria.

##### 1. ITDCMI

This institute is under the supervision of the Ministry of Agriculture.

The objectives assigned to this institute in the plasticulture field are :

- To develop, under cover, certain types of vegetables adapted to this type of production throughout the country (green houses, tunnel, mulching).
- To look for solutions to problems met when using plasticulture in growing vegetables by experimenting new techniques, and materials used.
- To follow the production by the promotion of appropriate techniques.

The labor force consists of more 550 employé<sup>s</sup> of which 22% are technical people (doctors, engineers, technicians).

At a regional level the institute policy is carried on by the CASSDEP (agriculture cooperative of specialised services in the development of plasticulture) located in almost all the wilayates.

The CASSDEP regroups the farmers who use plastics within its wilaya.

The CASSDEPS have been created to boost the development of this production technique by supplying its members with infrastructures and advices they need.

## 2. Cerhyd

This research center is under the supervision of the Ministry of Mines.

It is a joint venture of all major petroleum and petrochemical companies in Algeria such as NAFTAL, NAFTEC, ENIP, ENPC, ASMIDAL and the government

Algeria is planning to implement a plastic development centre which will be a regional centre in the application of plastics in agriculture and water management.

Cerhyd will take in charge the erection and the management of production of this centre.

The Plastics Development centre will serve the maghreb region (Tunisia, Maroco, Lybia and Algeria).

The labour force of Cerhyd (research centre of hydrocarbons) consists of 90 employe~~s~~of which 30% are scientists.

The national coordination for plasticulture is assured by the "comite national de la plasticulture" presided by the Ministry of agriculture. This comite regroups all parties concerned by this activity (ministries, import/export companies, producers)

V. Recommendations

1. Encourage exchange of informations and experiences in production and application of plastics in agriculture and water management.
2. UNIDO should promote technical cooperation among arab countries.
3. To hold annually a workshop on production and application of plastics in agriculture and water management in the arab world.
4. Arab governments should encourage the production and application of plastics in agriculture and water management by providing fiscal and financial support to producers and farmers.
5. Create a regional Arab committee in cooperation with CIPA to promote the production and application of plastics in agriculture and water management in the Arab world.
6. The next workshop on plastics in agriculture and water management, which will be organise by UNIDO, should take place in BISKRA (ALGERIA) where the application of plastics in agriculture has reached an important level.
7. UNIDO should help the CERHYD to implement the planned Plastics Development Centre.