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**THE ACTUAL SITUATION AND PROJECTS FOR DEVELOPMENT  
OF THE INDUSTRY OF PLASTICS IN MOROCCO  
AND THE TECHNICAL ASSISTANCE REQUIRED. I**

by

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### 3 - EVOLUTION OF THE CONSUMPTION OF PLASTICS IN THE LAST YEARS

1. Since the creation of the first factory for transformation of plastics in 1939, the number of companies increased considerably, especially after 1962. In the beginning of 1973 there were 80 transformation factories.
2. They are using all technics, with the exception of laminated extrusion, extrusion-coating of paper and boards, dip moulding and fluid bed coating. The production of high pressured laminated plastics will start in 1975.
3. In the last 10 years the activity of the industry of transformation has been so important, that the share of imported semi-finished and finished products as compared to total plastic imports decreased from 48 % in 1961 to only 11,4 % in 1972.
4. The installed equipment and machinery in 1972 is the following:
  - 76 extruders
  - 42 blowing machines
  - 47 shoe moulding machines
  - 111 injection presses
  - 12 presses for records
  - 1 press for Roto-moulding
  - 10 thermoforming ovens
  - 4 installations for polyurethane foam
  - 3 installations for expanded polystyrene

This list does not enumerate the auxiliary equipment and the equipment for secondary transformation.

5. In 1972, the distribution of the consumption of plastics was the following :

polyvinyle chloride	9.000 t
plasticizers	5.300 t
polyethylene L.D	8.700 t
polyethylene H.D	3.700 t
polyethylene (reticulated)	850 t
polypropylene	990 t
polystyrene	1.700 t
polyester (insaturated)	600 t
polyurethane	1.700 t
others	100 t

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Total : 31.300 t

6. The distribution by field of transformation is the following :

shoe moulding	10.000 t
various extrusions	9.400 t
injection moulding	4.300 t
blow moulding	2.200 t
cellular materials	1.900 t
calendering	1.200 t
reinforced plastics	600 t
coating	400 t
others	1.300 t

7. The sectors of utilisation in 1972 are the following :

leather and textile	12.400 t
packaging	10.200 t
agriculture	2.000 t
building and furniture	2.000 t
household goods	1.400 t
electrical industry	1.000 t
transportation, ships	600 t
toys, games, sports	650 t
pharmaceutical industry	150 t
others	900 t

8. Polyvinyle chloride is used for :

shoes	61,2 %
imitation leather	10,1 %
pipes, profiles	9,75 %
bottles ; flasks	7,15 %
laminated papers	5,6 %
cabling	2,5 %
others	3,7 %

9. The polyethylene L.D is used for extrusion of films and blown cases : 79,5 % and for moulding of household goods and toys : 10,2%

10. The polyethylene H.D is used for :

bottle crates	58 %
textile ribbons	19,5 %
packaging	11,65 %

11. The consumption of plastic raw materials increased by 25 % yearly from 1966 to 1969, and by 20 % yearly from 1969 to 1971. The consumption increased eightfold, in 10 years, while the average world consumption increased only fourfold (the world-consumption doubles every five years).

Since 1971, the Moroccan consumption follows the worldrate of 15 % yearly.

12. The weight of these plastic raw materials increased from 5.429t in 1961 to 44.100 t in 1972, including all the resins for other utilizations, the semi-finished products and the finished products.

The consumption by inhabitant increased from 450 g in 1961 to 2,85 kg in 1972.

13. This industry employed in 1972 2.993 persons, that is an average of 40 persons by factory.

engineers and technicians	53
clerks	172
workmen	2.768

The productivity by workman has been 11,3 t in 1972.

## II. PROJECTION OF THE CONSUMPTION TILL 1980

14. The past tendency of the consumption permits to expect a consumption of about 67.000 t in 1975 and of 120.000 t in 1980.

15. A projection according to elasticity of consumption in other countries, can be based on a gross national product per person of 270 U.S. \$ in 1980, and a population of 20 millions, which leads to a consumption of 106.000 t in 1980.

16. Following this projection, the consumption of PVC will be 23.000 t in 1980 (in 1975 : 15.250 t).

17. The expected consumption of polyethylene :

	1975	1980
polyethylene L.D.	11.100 t	16.500 t
polyethylene H.D.	7.400 t	13.500 t

## III. PROJECTS FOR EXPANSION AND DIVERSIFICATION

18. A project for the production of 25.000 t of PVC in Morocco is being studied (suspension PVC and emulsion PVC). This capacity will correspond to the expected consumption of 1980.

19. This project will be attached to a plant of salt Electrolysis (caustic soda - chlorine) which will respond to the needs of caustic soda of the country.

The PVC-plant shall absorb the total production of chlorine of the electrolysis-plant.

20. Before 1977 a feasibility study will be worked out regarding the realization of a polyethylene L.D.-plant and a polyethylene H.D./polypropylene-plant.

21. Other feasibility studies will be set up concerning :

- polyvinyle acetate
- urea-formaline for adhesives
- insaturated polyesters for reinforced plastics.
- D O P (plasticizer)

22. With regard to auxiliary industry, a study is in work concerning the foundation of a "Center of Machine tools" in Fez, which could supply moulds to the Moroccan industry of plastics. Presently all moulds have to be imported. The local plastic industry is not sufficiently equipped with moulds to satisfy the needs.

This center could even export moulds for plastics into other countries. The turnover of such a center could be about 500.000 D.S \$ a year.

#### IV - THE PRINCIPAL PROBLEMS STOPPING THE EXPANSION

23. The difficulties have different reasons.

24. The narrowness and the poverty of the market lead to a preference of cheap products, which often are not compatible with the quality demanded. This is the case of foils for agricultural use, which have to be produced very thin to correspond to the limited purchase power of the buyer.

25. Bad experiences have been made because standards of resistance and necessary controls of the products have been neglected.

For example, at certain times there have been deliveries of unsuitable PVC-pipes ; since then these articles can be hardly sold. Due to this incorrect supply of plastic pipes by one manufacturer the market for this product has proved very limited.

26. The same difficulties exist in other sectors, as for example corrugated polyester sheets for roofs.

27. Another difficulty results from the fact, that products of minor quality are imported without restriction and disturb local production. This happened with imported pipes and with imitation leather, where local manufacturers even had to stop their production, because they could not compete against these low price import.

28. Difficulties arise from unfavorable imposition of custom's tariffs. For example, some semi-finished and finished plastic products enter Morocco without duty, in contrast to raw materials which are submitted to custom's duty.



29. Also chlorinated pipes, which are not produced in Morocco due to lack of the equipment, are suffering by a very high duty on imports, and for this reason are not imported at all. These pipes resist to heat and find an application in buildings as piping for hot and cold water. A promotion of other plastic pipes is not economic, because two series of pipes would have to be installed: plastic pipes for cold water and metallic pipes for hot water, which would need two different types of plumbers. This situation stops the expansion of the plastic plumbing in buildings.

30. Smaller companies lack information on progress in their industry sector. These companies have no equipment to test and to improve their products.

31. The employers need professional training (technicians, mechanics.) or at least a basic formation (workmen).

#### V - THE SOLVED PROBLEMS

32. The enumerated difficulties are not solved at this moment.

33. Some disparities at custom's tariffs have been abolished but not yet all.

34. The prohibition to reexport used moulds practically excludes the production of small series. This problem has often been discussed, but not yet resolved.

#### VI - FIELDS OF ACTIVITY, WHERE UNITED NATIONS TECHNICAL ASSISTANCE COULD GIVE FAVORABLE RESULTS.

35. Besides the creation of a "Center of Machine tools" which will manufacture the moulds for the Moroccan plastics industry, the companies should receive the assistance of an "Institute for Studies and Development of Plastics" (I.S.D.P.).

36. Such institutions are planned for the industrial sectors of packaging material and textile manufacture. These sectors are limited by the same problems as exist in the plastics industry.

37. An Institute for studies and development of plastics could cover :

- documentation, information
- tests, analysis
- pilot-plants for research, demonstration and professional training
- standardization, specification, trade-marks, quality control, quality labels.
- technical assistance to small and medium-sized companies.
- sales promotion of plastics
- coordination with the "Center of machine tools" in Ras.
- coordination with the "Moroccan Institute of Packaging" and the "Institute of Textile Quality" and with the "Institute for Promotion of Small and Medium-sized Companies".
- Study of customs tariffs and nomenclature of international trade.
- Coordination with similar institutions in other countries.

38. The technical assistance of the U.N. would give best results if it could be given to such an I.S.D.P., which could be established in Casablanca, where 83 % of the plastics industry is located.

39. This assistance could be given on three different lines :

- Laboratory equipment and pilot-plant
- Experts
- Scholarship for a Moroccan engineer

40. The laboratory equipment and pilot-plant for such an I.S.D.P. requires an investment of approximately 240.000 U.S \$, without buildings, offices and costs of first establishment.

41. The administration costs could be covered by a participation of the Ministry concerned and by a contribution of the companies involved.

42. The establishment could be realized in three stages :

- a) installation of services which require only limited equipment, but which are urgently needed by the industry such as : documentation, information, standardization, specification, partial technical assistance, promotion of utilizations.
- b) installation and start-up of a part of the laboratory and of the pilot-plant.
- c) completion of the laboratory and the pilot-plant.

43. Some experts will be necessary :

- a) one expert-manager of the project, responsible for the start-up of the Institute and the overall organisation.
- b) one expert, specialized in tests, standardization and quality control.
- c) one expert, specialized in the transformation of plastics who will be responsible for the establishment of the pilot-plant.

44. The scholarship for three months should permit a Moroccan engineer to study the organisation, management and financing of similar centers in other countries.





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