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THE PRESENT STATUS AND FUTURE PLANS
FOR DEVELOPMENT OF THE PLASTIC INDUSTRY IN
THE PEOPLE'S REPUBLIC OF BULGARIA
AND TECHNICAL ASSISTANCE REQUIRED^{1/}

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I. INTRODUCTION

Past status

1. In People's Republic of Bulgaria (PRB) the processing of plastics has for a long time preceded the production of polymers. The first industrial experiments for manufacturing of plastics dated around 1950 on the base of imported raw materials and equipment. Small industrial processing plants sprang up sporadically.
2. The foundation of the State Economic Enterprise "Plastics and Rubber" in 1966 was the first step towards a concentration of the plastics and rubber processors.
3. The world's technical boom influenced Bulgaria at a good rate. Plastics played a major part in the technical revolution. The rapid growth of the plastics' consumption in PRB in all areas of the national economy was conditioned by their excellent technical and economic characteristics.
4. The 70's are characterized by the trends towards specialization and concentration of the production and processing of plastics.

Present status

5. In this period the State Economic Enterprise (SEE) "Plastic Articles" for processing of plastics was created. It possesses 15 industrial enterprises over the whole area of the country, producing 80 per cent of the total amount of plastic articles. The remaining 20 per cent comprise the amount of plastics processed in the specializing enterprises and shops in the machine-building industry and in the cooperative sector. This decentralization is necessary to meet the self demands of the plants for short runs and for special purpose plastic articles.
6. The SEE "Plastic Articles" is the sole co-ordinating centre for the plastics processing industry in the country. It supplies almost all branches of the national economy.

Usage pattern of SEE "Plastic Articles"

7. Its production pattern includes the following articles: floor-coverings, floor tiles, pipes and fittings, profiles for different purposes, artificial veneer, wall coverings, sound-insulation panels, rigid sheets (plates and films), polyethylene foil with different widths, hoses, artificial bast, battery separators, artificial leather, glass-reinforced plastic articles, containers in the range of 0,050 l to 300 l, transport crates, injection-moulding articles etc.

II. PRODUCTION OF POLYMERS

Growth rates

8. The growth rates of the plastics processing industry in SEE "Plastic Articles" are given in table I.

Table I

Year	Total industrial production growth over 1965	Growth per cent over preceding year
1965	100	-
1966	140	40
1967	186.1	33
1968	254.8	36.9
1969	290.5	14.0
1970	333.2	14.7
1971	362.2	8.7

Production of local polymers

9. In 1964 the first Bulgarian polymers were produced, in particular polyvinylchloride (PVC), followed by low- and high density polyethylene (LDPE, HDPE), polystyrene (PS), polyamide. This gave the possibility to the processors to broaden the amount and the variety of plastic products.

10. The development of the plastics processing industry on the base

of local raw materials, especially for the basic polymers, proved profitable. That is why an expansion of the production capacities for the basic polymers and the coming on stream of new plants is forecast for the period to 1980.

Projections to 1980

11. Table II shows the forecast capacities of PRB for the production of polymers in 1000 tons.

Table II.

No	Polymer	1970	1975	1980
1.	PVC	14.1	36	150
2.	HDPE	9.5	20	20
3.	LDPE	25	32	85
4.	Polypropylene	-	-	50
5.	PS	2.08	20	26
6.	Polyurethane	-	-	60
7.	Polyamide	-	-	1
8.	PMMA	-	-	5
9.	Epoxides	0.37	0.55	1.5
10.	Phenolics	3.52	3.4	10
11.	Amino plastics	0.70	0.80	1

12. The experience in PRB showed that when developing new capacities for the production of different basic polymers two points are very important: the choice of adequate technology and optimum capacity.

13. The technology must take into account the available raw material's sources. In Bulgaria the production of polymers is developed mainly on the base of the petroleum industry.

14. For the production of short tonnage polymers it is expedient from the economic point of view the cooperation with other countries, as the total demand of the country can not cover the available capacities which brings about an increase of the polymer price.

15. The price of the polymer and the production costs influence both the spread of the consumption of plastic articles over a higher number of application fields.

16. Having this in mind it is considered expedient to develop new large capacities for the production of polymers in the period of 1980-1990.

III. CONSUMPTION OF PLASTIC ARTICLES

17. The predicted consumption of plastics per capita will increase as follows: 1970 - 9.50 kg, 1975 - 34.50 kg, 1980 - 65.80 kg, 1985 - 37.20 kg and 1990 - 111.20 kg.

18. The main consumers of the production of the SEE "Plastic Articles" are the five major industrial sectors: machine-building, building industry, agriculture, consumer goods and packaging.

19. The forecast consumption of plastics in the above mentioned areas and the adequate consumption per capita are given in table III.

Table III

Branch	1976		1980		1985		1990	
	%	kg per capita	%	kg per capita	%	kg per capita	%	kg per capita
Machine-building	13	4.11	16	9.66	15	11.29	16	16.14
Building	23	7.28	24	14.50	26	19.56	27	27.24
Agriculture	20	6.33	17	10.27	14	10.53	14	14.13
Consumer goods	9	2.85	11	6.64	13	9.78	13	13.12
Packaging	35	11.08	32	19.33	31	23.48	30	30.30

20. Table III shows that for the period up to 1990 SEE "Plastic Articles" will give special emphasis on packaging and building industries.

21. PRB is a country of intensive mechanized agriculture production which places great demands on packaging.

IV. CENTRE FOR RESEARCH, TECHNOLOGY AND DESIGN AT SEE PLASTIC ARTICLES

22. The solution of various research and development problems regarding the application of plastics in different fields is the task of ZNIRPD (Centre for Research, Technology and Design) at the SEE "Plastic Articles". The centre which is an independent economic unit, consists of different sectors: scientific research institute, bases for technical development serving the big plants of the SEE, experimental base for new plastic articles, branch office for industrial planning etc. ZNIRPD helps SEE "Plastic Articles" in developing a great variety of plastic goods. The Centre gives the tactics and the strategy of the SEE, developing modern and profitable technological topics assisting the whole development of SEE.

V. NATIONAL ECONOMIC AND TECHNICAL PROBLEMS IMPEDING GROWTH

23. At present the demands of plastic goods in PRB exceed the available processing capacities which is the reason that, in spite of the higher prices of several polymers compared with traditional materials (e.g. wood), the development of the plastics processing industry is not affected negatively. It is evident that with realising the predicted growth for the production and processing of plastics the present ratio between the prices of plastics and traditional materials will change in favour of plastics. The efforts of responsible state organisations will be directed to that purpose.

24. In our country, as all over the world, the ageing of plastic materials hinders the expansion of their usage in several fields, e.g. building industry.

VI. PROBLEMS ALREADY SOLVED

25. Many significant problems for the national economy were solved by the implantation of plastic articles and parts: green-house production of vegetables by means of polyethylene foils, systems of plastic pipes for irrigation, containers for handling and sto-

rage of agriculture products, protective nets against hail, etc.

26. The replacement of metal and wooden transport crates in the trade network with plastic ones was extremely profitable for the state.

27. The replacement of parqueting, cutes and mosaics with polymer floor coverings and tiles, proved its efficiency. The usage of hydro- and sound-insulation materials in the building industry is increasing rapidly.

28. The packing of foods, e.g. yoghurt and milk, cheese, jam etc. in plastic materials improved to a great extent the handling of goods.

VII. AREAS IN WHICH UNIDO ASSISTANCE IS DESIRABLE

29. The main problems in which UNIDO assistance is desirable and likely to yield the most fruitful results for the economic development of our country are as follows:

30. Polished super thin polypropylene film, type "cellophane".

At present the food industry - cigarettes, sugar industry and the trade network - consumes about 5000 tons imported cellophane. It is considered appropriate the replacement of the cellophane with polypropylene film.

31. Paper-like film from high density polyethylene.

The imported several tons special purposes paper (e.g. oil paper) are expected to be replaced with "paper-like" polyethylene film, which possesses a number of advantages and so improved the quality and the range of application in the packaging industry.

32. Plastic battery cases

PRP is a big producer of batteries (traction and starting) which makes necessary, from technical and economic point of view, the replacement of ebonite cases with plastic ones. 1975 prospects are for a production of about 4 millions different types battery cases.

33. For the proper solving of the above mentioned problems we would like to receive information and proposals, separately for each product, on the following points:

a) Quality characteristics of the end-products and major pro-

ducers;

b) Consumption break-down and application of the articles in the economy of the developed countries;

c) Raw materials and their quality characteristics;

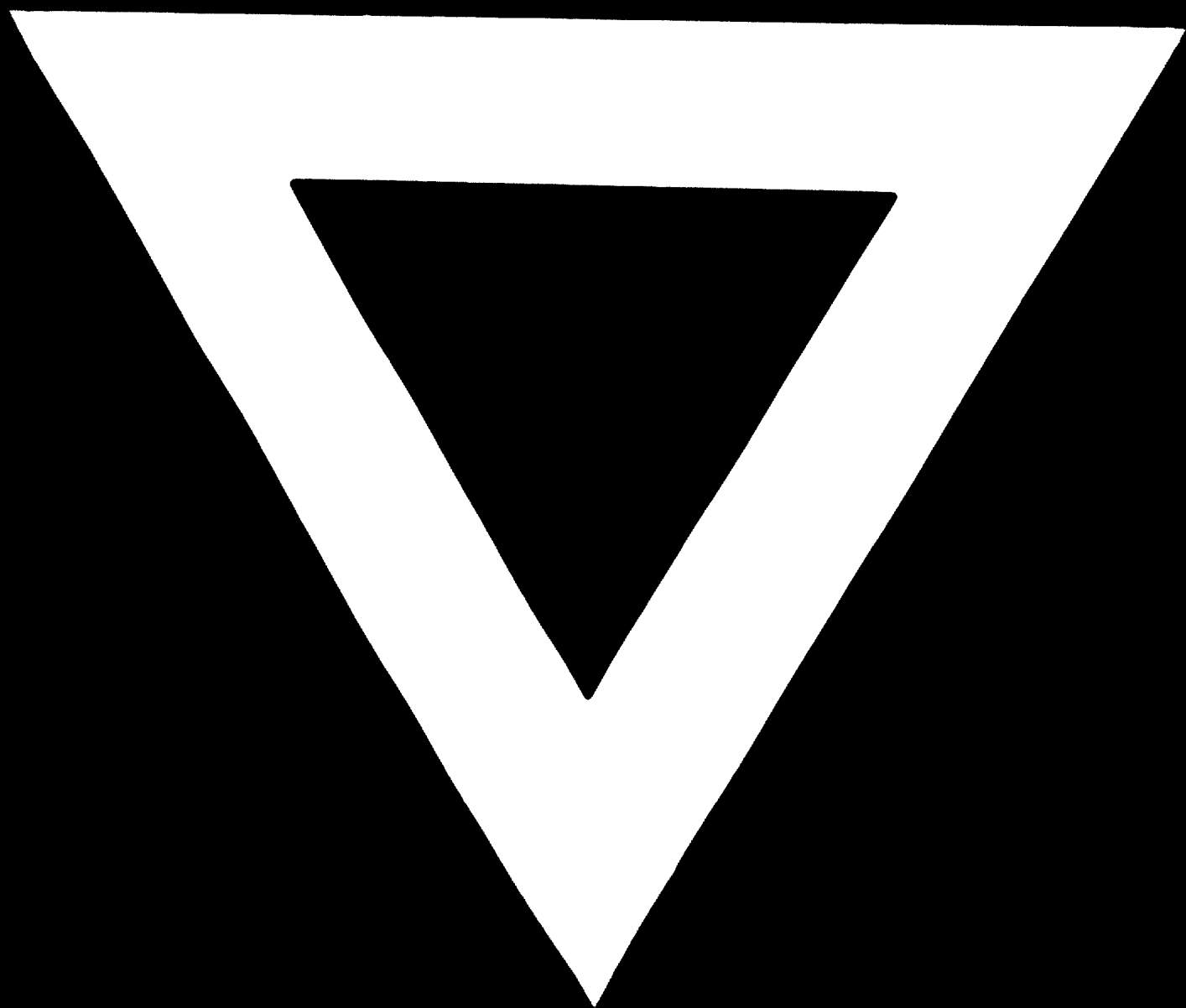
d) Processing machines and equipments, including major machinery producers;

e) Technology, inc. "know-how" and companies owners of "know-how";

f) Production costs over 1 ton production.

21. During the seminar we would like to discuss the problems with representatives of the appropriate companies.





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