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COST OF FERTILIZER PLANTS IN SPAIN, SOUTH AMERICA AND THE MIDDLE EAST*

by

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* The views and opinions expressed in this paper are those of the author and do not necessarily reflect the views of the Secretariat of UNIDO. This document has been translated from an unedited original.

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Summary

The paper provides up-to-date figures on costs within battery limits for plants producing DAP, NAC, TSP, phosphoric acid, sulphuric acid and NPK fertilizers in Spain, South America and the Middle East.

Spain began in 1960 to develop a powerful chemical and fertilizer industry, with the result that, starting almost from scratch, it has become the fifth largest producer in Europe and tenth in the world. The development was brought about by massive imports of technology, but also by promoting Spanish engineering and contractors. Spanish technology began to develop from 1970; as a result it has been possible to begin exporting fertilizer plants in recent years.

The most characteristic feature of the Spanish process is that, since the industry developed in such a short space of time, many of the problems encountered in Spanish export operations are familiar because they occurred recently in Spain, and the same companies and personnel that solved the problems in Spain are those that have to solve them in other countries.

Some economic data are given below on the costs of fertilizer plants in the experience of INSPINDESA and other associated companies. The costs have been updated to the first half-year of 1976 to make them comparable, and have been divided into three tables covering plants in Spain, South America and the Middle East respectively, since the differences between the three groups are considerable.

For a correct interpretation of the tables, the following points should be taken into account:

1. The figures given are in millions of pesetas;
   1 United States dollar = 80 pesetas.
2. The figures relate exclusively to plants within battery limits and do not include any infrastructure work. Most of the figures are for plants that have been built or are being built in existing industrial complexes.
3. Spares and raw materials for initial operation are not included.
4. The value of land, taxes, all types of contingency reserves, personnel training, financing costs, etc., are not included.
5. In all cases, the engineering, plant and materials are Spanish.
6. The costs of commissioning and construction supervision refer exclusively to the licensor's technical personnel and consulting engineers specifically assigned to the job.
7. The items civil engineering, structures, etc., are based on local prices.

SPAIN

		DAP 700 tonnes/day	NAC 600 tonnes/day	TSP 760 tonnes/day	Phosphoric acid (54% P_2O_5) 270 tonnes/day	Sulphuric acid (from sulphur) 850 tonnes/day	NPK 100,000 tonnes/year
3.	Licences, basic and detail engineering	53	67	38	86	79	43
3.4.1	Plant, material and seller's experts	133	194	102	362	267	96
3.5.2	Catalysts	-	-	-	-	23	-
3.6	Transport	-	-	-	-	-	-
3.7.1	Civil engineering, structures and buildings, insulation and painting	78	70	54	208	69	78
3.7.2	Installation, testing	13	40	20	135	134	22
3.9.6	Commissioning	5	4	4	10	10	3
	Construction supervision	20	32	20	31	41	32
	Total	302	407	238	830	623	274

SOUTH AMERICA

		DAP 700 tonnes/day	NAC 600 tonnes/day	TSP 760 tonnes/day	Phosphoric acid (54% P_2O_5) 270 tonnes/day	Sulphuric acid (from sulphur) 850 tonnes/day	NPK 100,000 tonnes/year
3.	Licences, basic and detail engineering	61	77	35	99	91	49
3.4.1	Plant, material and seller's experts	140	202	107	378	279	101
3.5.2	Catalysts	-	-	-	-	24	-
3.6	Transport	21	32	16	66	47	16
3.7.1	Civil engineering, structures and buildings, insulation and painting	108	96	74	287	95	108
3.7.2	Installation, testing	25	80	40	266	268	44
3.9.6	Commissioning	10	8	8	20	20	6
	Construction supervision	37	59	37	57	75	59
	Total	402	554	317	1,173	899	383

MIDDLE EAST

		DAP 700 tonnes/day	NAC 600 tonnes/day	TSP 760 tonnes/day	Phosphoric acid (54% P_2O_5) 270 tonnes/day	Sulphuric acid (from sulphur) 850 tonnes/day	NPK 100,000 tonnes/year
3.	Licences, basic and detail engineering	61	77	3[illegible]	99	91	49
3.4.1	Plant, material and seller's experts	148	206	111	388	287	105
3.5.2	Catalysts	-	-	-	-	24	-
3.6	Transport	25	38	20	79	56	18
3.7.1	Civil engineering, structures and buildings, insulation and painting	234	210	162	624	207	234
3.7.2	Installation, testing	50	160	80	532	536	88
3.9.6	Commissioning	20	16	16	40	40	12
	Construction supervision	54	86	54	84	111	86
	Total	592	793	478	1,846	1,352	592

SUMMARY AND CONCLUSIONS

1. If the avera e cost of a plant in Spain is assigned the value 1, the cost in South America is 1.40 and in the Middle East 2.12.

2. The main reasons for the higher costs are local costs, sometimes because of the shortage of skilled labour and sometimes because of the added costs due to saturation of local workshops and subcontractors, etc.

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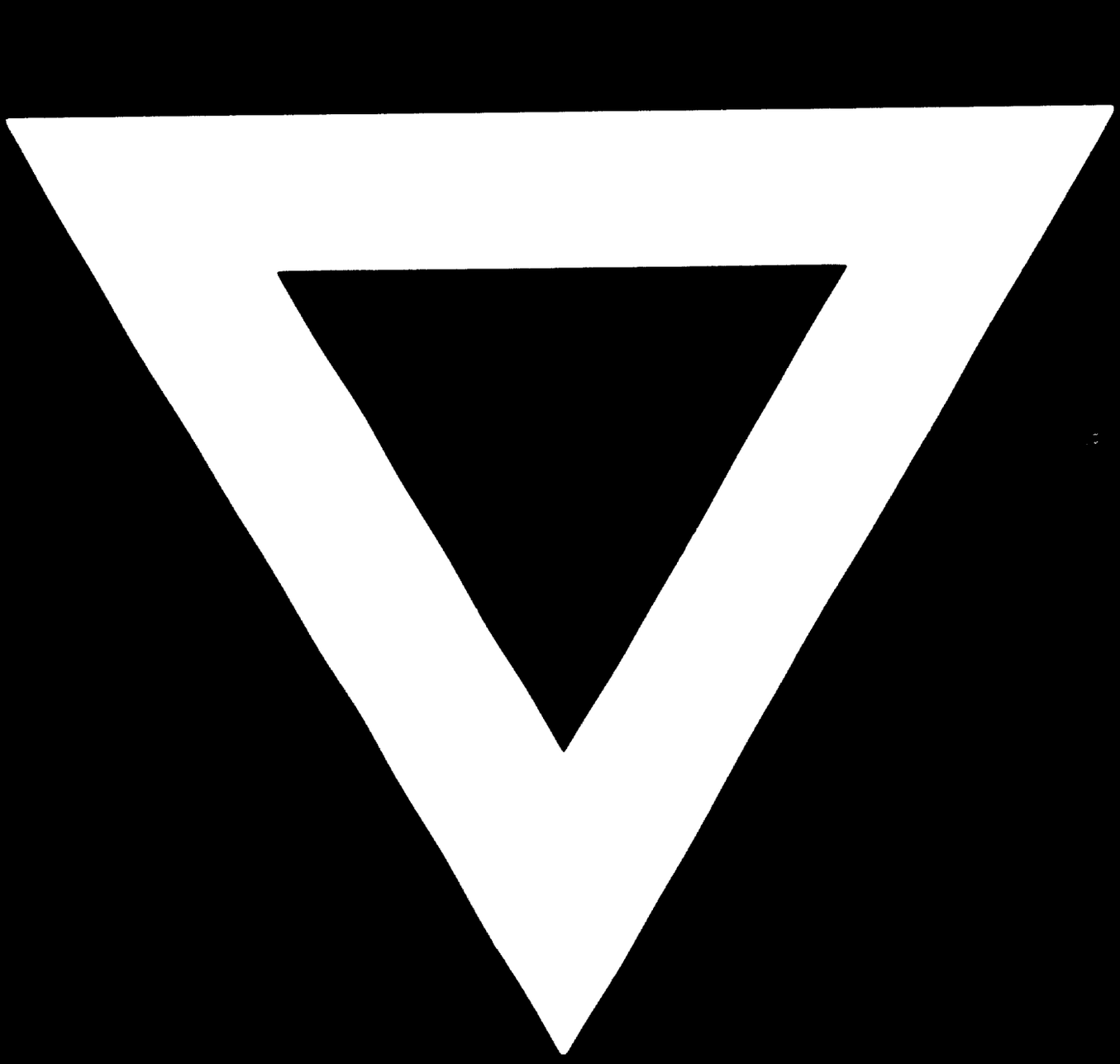

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