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the Fertilizer Industry

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SUMMARY TABLE OF
INFRASTRUCTURE REQUIREMENTS
FOR 18 FERTILIZER PROJECTS
APPRAISED BY THE WORLD BANK *

prepared by

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WORLD BANK FERTILIZER PROJECT INFRASTRUCTURE

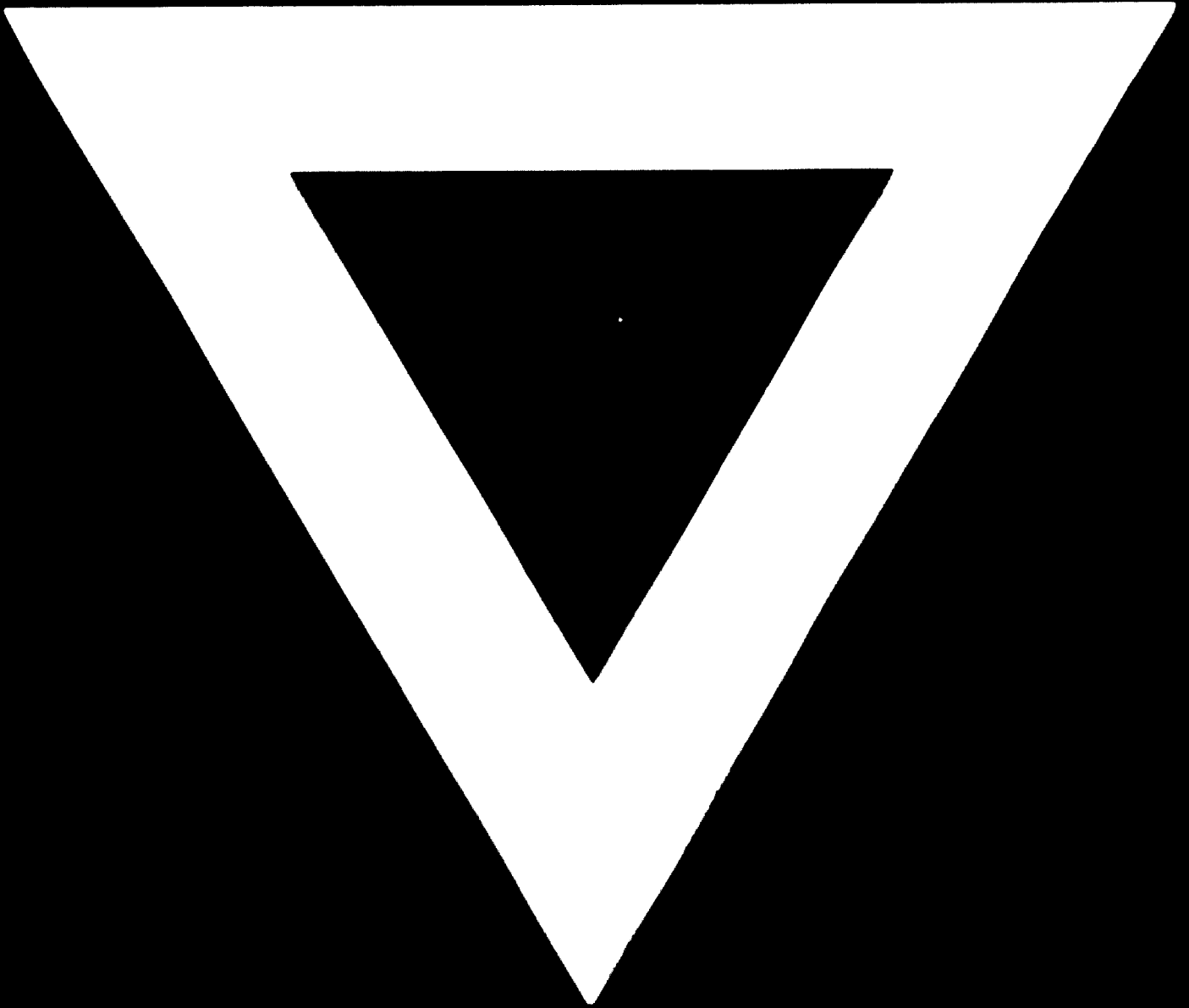
Number of Projects	1	2	3	4	5	6	7	8	9	10	11
Country	Indonesia	India	India	Turkey	India	Indonesia	Morocco	Pakistan	Egypt	Burkina Faso	Tunisia
Year of Loan	1970	1971	1972	1972	1972	1975	1976	1976	1976	1976	1976
Capacity: NTPP N	175,000		61,630	203,206 N (126,040 N as Urea)	246,000	262,200	262,000	246,000	262,000	225,000	0
NTPP P205 NTPP P20	0	115,000	0	0	0	0	371,200	63,600	0	100,000	3,273,000
Products Made	Ammonia/Urea	NPK	Urea	Urea + 90,000 tpy NPK Empts.	Ammonia (PO) Urea	Urea	Phos Acid MAP (11-53-0)	NP + CAP + Urea	Urea	Urea, MAP	Phos. Rock
Raw Materials	Natural Gas	C. Naphtha	C. Naphtha	Oxygen, Naphtha Fuel Oil	Coal Oil, Air	Natural Gas	Rock, Sulphur, NH3	Phos. Rock & CO2 + N. Gas	Natural Gas	Natural Gas Phos. Rock	Phos. Ore
Steam Generation Installed	Natural Gas Boilers	4 x 12 tph Boilers + Waste Steam	3 CF Boilers	3 CF Boilers (+ Wasteheat)	3 CF Boilers (+ Wasteheat)	Waste Heat Boiler	3 NH Boilers + 36 tph NP Boiler	2 CF Boilers (+ Wasteheat)	Natural Gas Boilers	Natural Gas Boilers	NA
Capacity	N.S.	135 tph Total	135 tph Total	N.S.	165 tph each at 100 AFA	15 NH Gas Turbine	2 x 15 NH + 60/6 NP Transformer	60 tph each	En-Local Grid	25% Generated	NA
Power Generation Installed	Part	Via 2 110 KV Feeders	Yes	N.S. Public Grid	Minor	15 NH Gas Turbine	2 x 15 NH + 60/6 NP Transformer	Yes, Steam	En-Local Grid	25% Generated	NA
Capacity	N.S.	17 MW	50 MW	N.S.	Yes	Yes	Yes	10 MW each	Yes	Yes	NA
Water Treatment Installed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes, N.S.
Capacity	N.S.	4-3 H.C.P.H.	7 Recovery (25 tpd Cryo-like Waste)	Yes	Yes, Incl. Ash Disposal	Yes	Yes, Oxygen sent to Sea	125 tph each	N.S.	Yes	Yes, N.D.
Maintenance & Plant Stores	Yes	Yes	None Extra	None Extra	None Extra	Enlarged	Yes	Enlarged	Included	Yes	-
Raw Material Storage	No	Phosphor Sulphur Ammonia (10 K) Packed	Extra 8,200 t Naphtha Tank	N.S. (10,000 ton Ammonia)	7/0 Tanks	None (Natural Gas)	60,000 t of S 35,000 t of S 25,000 t Rock	Phos. Rock Building	No	-	25,000 t (1976)
Finished Products Storage	30,000 tons Urea	Yes, NPK etc.	None Extra	None Extra	None Extra	None Extra	30,000 t MAP 34,000 t P205 as 54% Acid 4,000 t NH3	New Bulk and Bagged NP and CAP Storage Buildings	Yes	Yes	NA
Plant Protection	Yes	Yes	None Extra	None Extra	Yes - Wall & Fence Guards	Minimal	Yes	Yes - Wall & Fence Guards	Yes	Yes	NA
Plant Operator Housing etc.	Yes	Some	None Extra	None Extra	Minimal	Minimal	N.S.	New Houses and Reception for Senior Staff	N.S.	N.S.	NA
Railroad/RA Equipment	N.S.		None Extra	None Extra	N.S.	N.S.	125 Cars for Rock Sulphur, 32 Cars for Phos. Acid	Yes	N.S.	-	NA
Shipping Dock, Bunde	Yes	Yes	None Extra	None Extra	Minimal	Yes	Expanded Railroad and Bunde	Yes	N.S.	N.S.	NA
Gas Lines	Yes	No	None Extra	None Extra	Minimal	Yes	Yes	Yes	N.S.	N.S.	NA
Water Supplies	Yes	Yes	None Extra	None Extra	Local	Adaptate	Yes	Adaptate	60 NH, 0-3 N	N.S.	NA
Effluent Disposal	Yes	Yes	Some Increase	Yes	Adaptate	Adaptate	Adaptate	Adaptate	Adaptate	N.S.	NA
General: Bag Making	No	No	No	No	Yes, 200/Year	Yes, 200/Year	No	No	Yes (P/E)	No	No

N.S. = Not Stated

Number of Project	12	13	14	15	16	17	18
Country	India	India	Mexico	Indonesia	Brazil	Brazil	Pakistan
Year of Loan	1974	1975	1975	1976	1977	1977	1978
Capacity: MTPD N	243,540 (As Urea + AS and AM)	228,000 (As Urea)	379,500 (As Urea - Two Plants)	262,000 (As Urea)	152,000 (As Urea)	0	262,000
MTPD P205	108,000	0	0	0	0	168,300 Mar	0
MTPD R20	0	0	0	0	0	0	0
Products Made	Urea + N Salts	Urea	Urea, NH3 Parathion	Urea, NH3	Urea, NH3	NAP, TSP	Urea
Raw Materials	Heavy Fuel Oil, P. Rock & Sulphur	Phosphate	Natural Gas	Natural Gas	Natural Gas	Brazil Rock	Natural Gas
Steam Generation Installed	3 C.F. Boilers	3 C.F. Boilers	Available	N.S.	2 x 60 tph Boilers	Waste Steam + Auxiliary of 40 tph	1 Boiler
Capacity	105 tph	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
Power Generation Installed	Existing 80 MW	N.S.	Available	Gas Turbines	Emergency	N.S.	Yes.
New Capacity	24 MW	-	-	15 MW	N.S.	30 KVA Connection	N.S.
Fuel Storage & Handling	Yes, Fuel Oil	Coal - 40,000 Tons	N.S.	None	10,000 bbl w/o 5,000 bbl w/c	N.S.	No
Water Treatment Installed	Yes	Yes, 10 MEGD	Available	Yes	Yes	Yes	Yes
Capacity	Yes	Yes	N.S.	N.S.	650 GPM	N.S.	N.S.
Waste Treatment Installed	Yes	Yes	Yes	Minimal	Adequate	Yes	N.S.
Capacity	N.S.	N.S.	N.S.	N.S.	Adequate	N.S. Fluoride Recovery	N.S.
Maintenance & Plant Stores	Yes	Yes	Available	Available	Yes	Yes	Yes
Raw Materials Storage	30 Days Fuel Oil 2 x 12,500 K/L Tanks	Naphtha, 30 Days	Ammonia Storage	None	10,000 Tons Sulphur erated NH3	28,000 Tons Sulphur 8,500 Tons Phos. Acid 30,000 Tons H2SO4	None
Finished Products Storage	20,000 Tons Urea	30,000 Tons Urea	Bulk & Bagged Urea Capacity N.S.	Yes, 20,000 tons approximately	30,000 Tons Bulk Urea 30,000 Tons Bagged Urea	100,000 for Product	Yes, 60,000
Plant Protection	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Plant Operating Housing, etc.	Minimal	Total	Minimal	Some	Minimal	Minimal	Full
Railroad	Minimal	Yes	Minimal	N.S.	N.S.	Minimal	R.R. Spur
R.R. Equipment	Minimal	By CDI	Minimal	N.S.	N.S.	Minimal	Yes
Shipping Dock, Boods	Minimal	RR Siding, Boods	Minimal	Some	N.S.	N.S.	Link Road
Gaslines	No	No	Minimal	Some	N.S.	Minimal	30 Miles
Water Supplies	Minimal	Yes	Yes	Some	920 m ³ Pretreat Storage	Yes	Deepwell Pumps
Effluents Disposal	Yes	Yes	Yes	Minimal	Yes	Yes	Yes
General: Bag-Making	No	No	Future	15 Million Bags/Yr	N.S.	N.S.	Yes

N.S. = Not Stated

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