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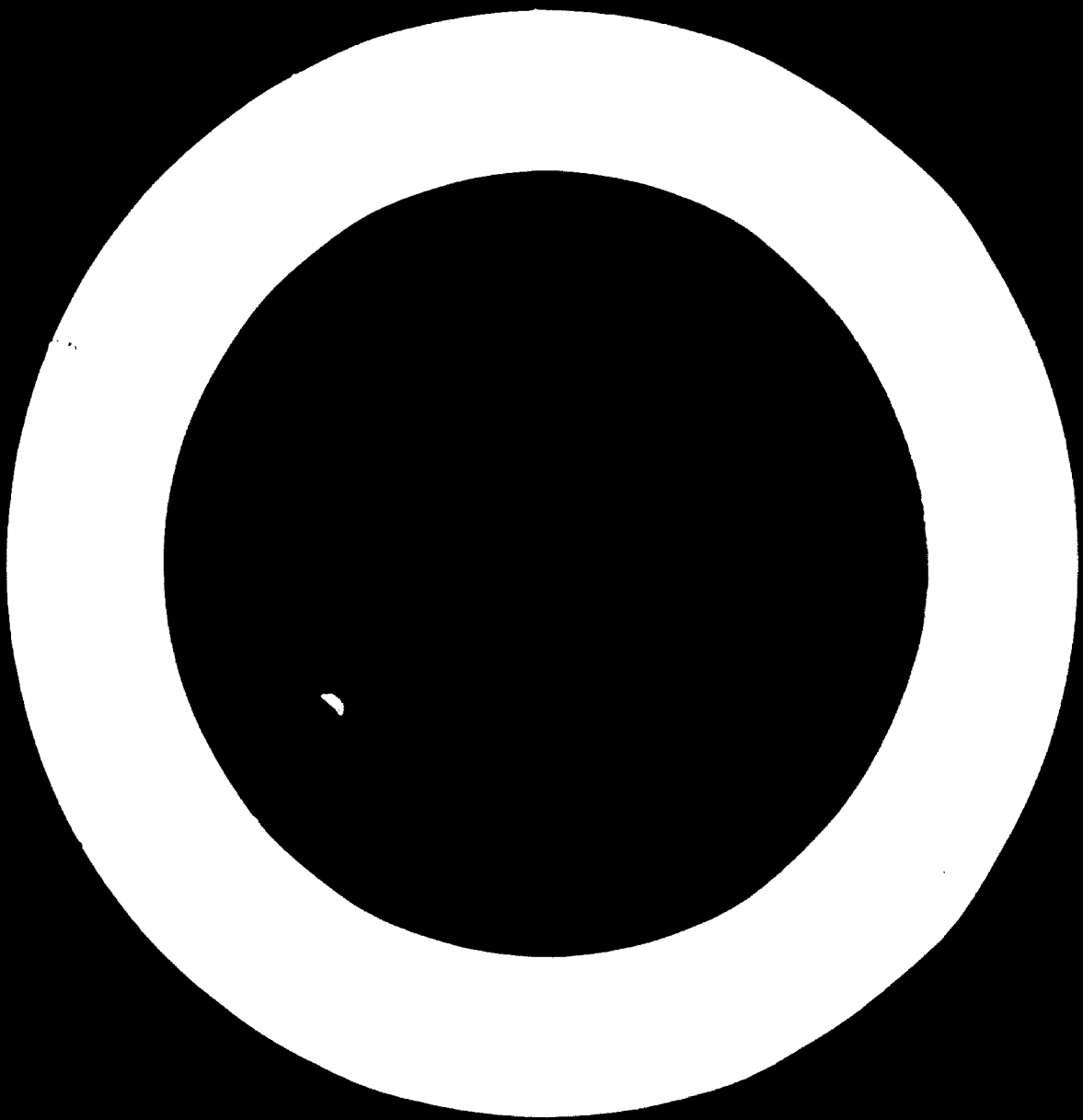
MINUTES OF THE [illegible] MEETINGS OF THE UNIDO/FAO/IFDC
WORKING GROUP ON FERTILIZERS

id.76-782

CONTENTS



INTRODUCTION

In order to provide comprehensive information to the [illegible] meetings of the UNIDO/FAO/IBRD Working Group on Fertilizers for those attending the future meetings; this explanation is made.

The main objectives of the Working Group set up in July by Dr. I.H. Abdel-Rahman, then Executive Director of UNIDO in consultation with FAO and IBRD were as follows:

1. To co-ordinate and co-operate in the work programmes of UNIDO, FAO and the World Bank in the field of technical assistance to developing countries for fertilizer industry development and fertilizer use in agriculture to avoid overlap;

2. To make periodical compilations of existing capacities of nitrogen, phosphate and potash projects and actual production in the world and to make projections for supply and demand for future years;

3. To jointly make studies and/or to promote and execute technical assistance projects;

4. To undertake any other work within the competence of the organizations participating and as agreed upon;

These main objectives were supported by the resolutions of the World Food Conference and the FAO Commission on Fertilizers. In the meetings of the Working Group the industry as well as the institutions and organizations representing manufacturing interests and marketing interests as well as the International Fertilizer Development Centre in Muscle Shoals, Alabama, USA, have always been invited and their participation has been most useful.

The original members of the Working Group were:

M.C. Verghese	UNIDO, Vienna
E. Becker-Boost	World Bank (now in Vienna)
F.W. Hauck	FAO, Rome
J. Couston	FAO, Rome
R. Ewell	Consultant

The detailed objectives and functions of the Working Group were well defined by Dr. Abdel-Rahman in his statement to the first meeting in Vienna on 9 December 1971.

I. First Meeting

Minutes of the ad-hoc meeting to discuss financing of fertilizer projects in developing countries

UNIDO/FAO/World Bank

UNIDO Headquarters

9-11 December 1971

The meeting was attended on behalf of the World Bank by Mr. E.H. Becker-Boost of IFC and on behalf of FAO by Mr. J.W. Couston. A list of participants is attached herewith (Annex 1).

Dr. I.H. Abdel-Rahman, Executive Director of UNIDO opened the meeting and made an extempore statement. The statement is attached verbatim as Annex II. Mr. Becker-Boost and Mr. Couston made short statements regarding their programmes of work in the field of fertilizers and Prof. Ewell explained the magnitude of the financing involved in the development of the fertilizer industry in the Second Development Decade.

The group decided that during this first meeting three tables should be prepared which will enable the organizations to rationalise their programmes and help this group to recommend further action.

TABLE I - Classification of developing countries according to nitrogen fertilizer production, consumption and demand.

TABLE II - Projects under preliminary planning (idea or proposal stage), financing / engineering approved and under construction or start-up (1969).

TABLE III - Balance sheet showing new projects needed by 1980.

TABLE IV - List of least developed among developing countries.

It was decided that these draft tables will be typed and sent to the participants by UNIDO and they will scrutinise them and make their comments in the next few weeks.

The participants were also requested to prepare similar information for Group V countries, as per Table I for phosphate fertilisers (P_2O_5). Similar information for Group IV countries is also to be prepared.

Mr. Becker-Boost and Prof. Ewell will meet in Washington during January 1972 and review these tables. It was decided that the next meeting of the ad-hoc group will take place in FAO/Rome between 7-14 February 1972. It is expected that this second meeting will recommend a definite plan of action for the three organisations.

Ad Hoc [illegible] Problems of [illegible]

[illegible]

UNIDO [illegible], Vienna
9-11 [illegible], Room [illegible]

AGENDA

Tuesday, 7 December 1971

14.30 - 17.30

1.	Opening statement	I.H. Abdel-Rahman
2.	Background of the meeting	R. Ezell
3.	Statement by World Bank representative	E.H. Becker-Boost
4.	Statement by FAO representative	J.W. Couston
5.	Discussion of the problem in general terms	H.C. Varghese

Friday, 10 December 1971

9.30 - 12.30

6.	Estimates of fertilizer demand in various developing countries in 1980	R. Ezell
7.	Programme of FAO in developing better demand estimates for 1980	J.W. Couston
8.	Financial requirements of fertilizer industry during next 10 years	E.H. Becker-Boost
9.	Fertilizer projects now under construction and in various stages of planning	E.H. Becker-Boost H.C. Varghese

14.30 - 17.30

10.	Possible sources of financing for fertilizer projects now in various stages of planning	E.H. Becker-Boost
11.	Criteria for financing of fertilizer projects by World Bank Group	E.H. Becker-Boost
12.	Role of UNIDO in assisting developing countries in preparing effective proposals for fertilizer projects and in resolving technological alternatives	H.C. Varghese

Saturday, [illegible] 1971

9.30 – [illegible]

13.	Possibility of special programs by [illegible] plant improvement and de-bottlenecking to increase productivities of existing fertilizer plants	E.H. [illegible] H.C. [illegible]
14.	Future procedure of contacting individual countries and regional organizations to obtain better information on fertilizer projects and on regional supply/demand estimates	All participants
15.	Special problems of the 25 "hard-core" least developed countries -- what can be done to help them in field of fertilizers	All participants
16.	Conclusion of meeting	R. Ewell

Annex 1

Ad-hoc Meeting of UNIDO, FAO and WORLD BANK
to discuss formulation of fertilizer industry projects
in developing countries
Vienna, 6-11 December 1971

Opening session 7 December 1971 14:30 - 18:00

Present:

Mr. I.H. Abdel Rahman	-	Executive Director, UNIDO
Mr. J.H. Cousten	-	Senior Economist, FAO
Mr. E. Becker-Poort	-	Representative of IFC-World Bank Group
Mr. N.K. Grigoriev	-	Director, Industrial Technology Division, UNIDO
Mr. F. Le Guay	-	Director, Industrial Policies and Programming Division, UNIDO
Mr. S. Lurié	-	Senior Adviser to the Executive Director, UNIDO
Mr. G.N. Sfeir	-	Assistant to the Director, on behalf of the Director of Technical Cooperation Division - Mr. S. Quijano-Caballero
Mr. M.C. Verghese	-	Chief, Fertilizers, Pesticides and Petrochemicals Industries Section, Industrial Technology Division, UNIDO
Mr. R.N. Dwell	-	Senior Industrial Development Officer Fertilizers, Pesticides and Petrochemicals Industries Section, Industrial Technology Division
Mr. A. Nadeiba	-	Assistant Industrial Development Officer Industrial Management Section, Industrial Services and Institution Division, UNIDO

ANNEX 2

Extempore statement made by Mr. I.N. Abdel-Rahman, Secretary-Director UNIDO at the Joint Meeting of UNIDO, FAO and World Bank, to discuss fin[illegible] of fertilizer projects in developing countries (Vienna C-11 Dec.1 71)

Thank you very much gentlemen. I think our distinguished colleagues from FAO and the Bank are well informed of the background of this meeting. In addition to the discussions at the Second Inter-regional Fertilizer Symposium at Kiev and New-Delhi this is a continuation of a discussion which I had in Washington in the Bank with Mr. Fuchs and later with Mr. Gant. At the suggestion of Mr. Fuchs we will continue the discussions here. The idea is to have in this meeting really a programming session and we want to see what UNIDO and the FAO and the Bank, each one in their own programmes of work can agree together if possible. The whole consultation here is to help the developing countries to identify their needs in the field of fertilizers and to find the best way of meeting these needs. Naturally most of these needs will be met by the establishment of industry but not necessarily for every country and of every type, because there is a considerable international trade in fertilizers, and there is also production in the advanced countries. As you know from the studies and certainly from your own experience, the requirements of the developing countries have been estimated at various levels. Even if you take the most conservative level, still this represents in the coming years quite an appreciable sum of investments and major decisions as regards the expansion and utilization of fertilizers, the importation and exportation, investment and financing need to be done. The question now is what the three organizations round this table can do to help the developments in this direction and I think this is the question which we would like, this small gathering of representatives of the three organizations, to come to tackle after the few days of deliberation.

I want to put to you two extreme positions which could be taken as a result of the meeting. One extreme position is to make this meeting a continuation of the type of discussions you had in India and Kiev. Further elaboration of ideas about requirements of

fertilizers, utilization of fertilizers, new problems of fertilizer production, just like an open seminar, an open discussion. We can continue, the subject is still open, you have not exhausted everything and it is going on and I would say this still is useful. Certainly the developing countries as well as the organizations might benefit from further examinations, further elaborations, better decisions, wider coverage, follow-up of changing problems, whether problems of the utilization or problems of production or of the trade or in the financing or the technology and that actually has been the theme and the approach in this symposium you had. This is one extreme, and you may recommend to the three organizations to continue. This theme of course is quite useful. The other extreme position is to consider yourselves as the planners of the fertilizer development of the developing countries. You appoint yourselves as such and sit and make a plan that in the next ten years, by 1980, Africa should increase its production by so many tons and Latin America by so much and so on. And not only that you can be meticulous enough to be precise where Africa should increase, whether in Ethiopia or North Africa and how much will be the cost. You make a complete plan of development and financing the fertilizer projects. This, as I say, is by appointing yourselves as planners for everybody. Whether the developing countries will follow this plan or not, whether the money will come for this plan or not, this is not for you to decide. We do the planning, somebody else will have to use it. These, I think, are the two extreme positions in short.

The main approach in our discussions in Washington with Dr. Fuchs and his colleagues was really not one of these two extremes but rather a position half way between. Such a position would be very useful for our three organizations and later for other organizations which may usefully join, for example UNCTAD as regards the trade. You may invite UNCTAD to come in the proper time and speak and study continuously the questions of trade, prices, volumes, facilities etc. We may have some discussions with organizations interested about environmental problems related to the utilization of fertilizers and

residues which affect the health. There may be such an expansion of consultation but we start with the three organizations interested in agriculture, industry and finance to start with. It would be quite useful for these three organizations to try to build up programmes of work for themselves, or to look at the programmes of work of the three organizations together and try to harmonise these programmes for development.

What can we do in UNIDO? Mr. Verghese and Prof. Ewell could tell you much about our programme. I am sure our colleagues from FAO could say more about the activities of FAO and if the Bank is interested and already has in mind certain developments and approaches or actual projects in hand, they can indicate what can be done. I think that the first step for UNIDO is to get acquainted with the actual programmes of action, come to some recommendations which may come out of the discussions, and each one of you go back to his organization and say, as the result of the discussions it has been recommended that our own programme should be directed in such and such a way in order to have harmonization.

Your proposals may be accepted or not but at least you have taken an effort of discussing harmonizing these programmes and developing them. I would not say that any one can come next week with the plan UNIDO would be able to implement. We have limitations of planning, limitations of money, limitations of understanding, but I think you should do quite good in this first meeting to amplify how to harmonize the actions of the organizations. The actions can relate to a variety of items. First item would be the planning which I referred to before. FAO may see that it will be quite useful to intensify in quantity or quality some of their studies and examinations of utilisation of fertilisers or requirements and so on. UNIDO may intensify or develop certain studies as regards technology or feasibility or planning. The Bank may look into the deeper questions of financial requirements or financial costs or rates of interest or future marketing, possible impediments to the extension of utilization of fertilisers on a financial basis may be another form of study. This is one category.

There may be questi ns of technical assistance. I think this applies to FAO and UNIDO and also to the Bank, may be the Bank has a programme of technical assistance. You may find it very advisable to recommend expansion of the technical assistance work whether in relation to certain countries or certain types of fertilizers or certain new technologies. Technical assistance can be related to the technology, to the training, to the feasibilities to advisory services about policies, whether for production, transport, storage or distribution or utilization and I think this field of technical assistance could be put as a second category. A third category is to see how can the area defined by the three organizations be expanded to bring other organizations in, defining for them possible co-operation so that the international effort could be further developed and does not overlap. Here it is not necessary that the matter should be limited to international organizations like the OECD or the Organization of American States or the Inter-American Bank, I am sure will be quite interested. I was told only yesterday that the Inter-American Bank would be very interested following up with this group in very great detail and in very much specific manner any kind of conclusions related to financing of fertilizer projects in Latin America. May be you could identify regional organisations both for development and financing that would be interested to widen the circle of the discussions and co-operation. You can even expand this idea of co-operation to the main producing countries. The US always has shown great interest in the development of fertilizers by bi-lateral US programmes, important for agriculture, for food and food development. This has been always a top priority subject. But you don't get to extend this circle immediately to cover the whole world. You may find it useful to work in this small group for a period until the ideas are consolidated and it would be useful to invite others to join later. This is the fourth category of possible recommendations, but I could see other recommendations for action, including very specific consultations that could be held by this group or by representatives of international organizations with one or more of the developing countries we can show them the type of planning which we have, the type of re-

commendation which is there and even to go down in the consultations to the advisability that they should start studying very carefully the establishment of such an industry. Such consultations which should be done very discretely and in the proper manner could lead to turning the interest of developing countries into practical areas. But we would like you to recommend if such an approach would be possible or not or how it is to be done. That is a fifth approach. A sixth one is that, if the developing countries have shown the interest, they will need a lot of assistance whether in making the feasibility studies and looking for finance, in planning the projects, in getting some kinds of agreements for the marketing and agreements for the development of the technology. In all these stages of implementation and management of the projects, I am sure FAO with its wide experience in its area, the Bank and UNIDO with other organisations may be able to effectively co-ordinate their assistance in these different phases. I am looking into these categories of possible actions, because I would really feel that this is a very good opportunity for the international organizations to take a very specific subject like the question of the development of fertilisers which is a very definite, very important, generally acceptable subject, and try to harmonize and further its development. Knowing very well that we are not planning for others, but we are trying to help, the positions may be taken by each country and each organisation independently. The purpose of this gathering which I hope will be repeated in the future would be to help each organisation to have a better and more effective programme so that the final objective which is the development of fertilizer industry in a business-like manner with the developing countries could be really assisted.

You may wish at the end of the meeting to decide about a next meeting, you may wish in the intervening time between this meeting and the next one to assume your responsibilities, namely amplification of certain questions, and this is really what I would like, and I am sure you would examine this matter at the end of your meeting so that the result of the first meeting would lead to the furtherance of the objectives. I believe it is much better that we go in this manner

co-operatively but still independently because if one of the organisations present here has its own conditions and situations and we do not need at the moment to be in the stage of close planning. I wish we can reach it but not necessarily now. If it can be reached, well and good, but I do not think it is necessary now because each one of you has to go back to your organization, would have to look into the problem from a different angle and I think that will help you to speak more freely, to consider ideas which later may be subject of further examination. But if there are certain specific questions for specific joint work, I would be very happy on my part on behalf of UNIDO to consider them. I would like on this occasion here to thank in particular Prof. Ewell for the very, very generous help he has given to us in UNIDO during the last few months. As you know he is not new to this subject. I am sure he will continue to give us full support and take full interest not only in UNIDO but for all the international community. He will be leaving us in a few days to rejoin his university. I would like, on behalf of UNIDO and I am sure also on behalf of our colleagues, to thank you for your interest and request you to go ahead with your planning. Thank you.

Table 1

Classification of Developing Countries

According to Nitrogen Fertilizer Production, Consumption and Demand

Small demand Small plant already in existence	Very small demand Only import indicated	Small demand Mixing plants indicated	Medium demand Satellite plants indicated	Large demand Large plants indicated	Present or potential surplus N producers (plan to export over [illegible] production)
0	I*	II	III	IV	V
Afghanistan Iraq Israel Syria Tanzania Zambia	Laos Nepal Botswana Centr.Afr.Rep. Congo (B) Dahomey Ethiopia Ghana Guinea Liberia Somalia Uganda Zaire Barbados Bolivia Surinam	Cambodia-Khmer Fiji Angola Ivory Coast Madagascar Malawi Mozambique Senegal Swaziland Guadeloupe Guyana Martinique	Cyprus Lebanon Malaysia N. Vietnam Cameroon Kenya Mauritius Morocco Réunion Sudan Tunisia Chile Costa Rica** Dominc. Rep. Ecuador El Salvador** Guatemala** Honduras** Jamaica Nicaragua** Panama** Uruguay	Burma China (PR) China (T) Ceylon India Indonesia N. Korea S. Korea Pakistan Philippines Thailand Turkey S. Vietnam Egypt Rhodesia S. Africa Argentina Brasil Colombia Cuba Mexico Peru	Abu Dhabi Bahrein Brunei Iran (also P) Kuwait Qatar Saudi Arabia Surinam Algeria (also I) Gabon (also I) Libya Nigeria Netherl. Antilles Trinidad + Tob. Venezuela

*/ Omitted from this list are 25 countries with N consumption less than 1000 tons/year.

**/ The six Central American countries as a group would be a category IV country if these countries could agree on a single large plant at a favourable location.

Table 2

Projects under Preliminary Planning (idea or proposal stage

Financing/Engineering approved & under Construction and Startup (1976)

(in thousands of tons)

Country/Project	Proposals	Advanced stage	Under construction + startup + operating
Indonesia			
Petrokimya			70 N
UGRI		180 N	
Gresik	200 N?		
Palembang (2 plants)			80 N
Pakistan			
Esso			(Oper.) 80 N
Lawood Hercules			160 N
Chittagong	160 N		
Fertilizers	imported acid based	60 P_2O_5	
(Jaffer Bros)		12 N	
FFC	120 P_2O_5		
	120 N		
Thailand			160 N
India			
SFC			)
CFI			) 550 N
FCL			)
3 more plants			(973 N
			286 P_2O_5
Sindri II		(127 P_2O_5	
Cochin		47 N	
Ramagunden;		) 460 N	
Gorakhpur		60 N	
Talcher		(215 N	
		115 P_2O_5	
Algeria	(300 N		
	70 P_2O_5		
Iraq	80 N		
3 more projects	(870 N		
	392 P_2O_5		
Libya			100 P_2O_5
Thailand	150 N (?) (small lignite based plant operated)		
Iran TPC	150 N ?		
South Korea			
Yongju	150 N		
South Vietnam	150 N		
Philippines	?		
Taiwan China	?		

Country/Project	Proposals	Advanced stage	Under Construction + startup + operating
Turkey			
Adiyaman			70 N
Samsun I+II		100 P_2O_5 / 35 N	100 P_2O_5
Mersin			150 N / 70 P_2O_5
ICSAS		170 N	
CUBRE		100 P_2O_5	
Iran			
Tsander	) 250 N		250 N(oper.
Shahpur			
Abris	250 N ?		
Guatemala	30 P_2O_5 ?		
Mexico			
Minatitlan			120 N
PEMEX I			130 N(oper.
PEMEX II		150 N	
Phos Acid			300 P_2O_5 (o
Colombia (2 projects)	(Venequela supplying gas)	60 P_2O_5	100 N (?)
Brazil			
Ultrafertil			120 N / 75 P_2O_5 / 50 N
Petroquimica (COPESUL)			
Fertisul	70 N / 70 P_2O_5)complex		
Bahia	150 N		
Peru			
Cuba	(Fertisa and Electrolysis was operating in 1969/70)		70 N ?
Chile	125 P_2O_5	Simcav / Humphrey))	180 N(Cienf
Argentina	170 N(gas based)		
new project	(Petrosur SAIC operated in 1969 200 tpd NH_3)		30 N
Fabr. Militares	(?) 200		
South Africa	80 N		
SASOL		170 N ?	
Afr. Explosives & Chem. Ind.	(? H_2SO_4 plant)		
Egypt	250 N. (Caire-Alexandria, El Alamei-gas)		
Helwan			100 N
Suez			
Riad			
Sudan ?	80 N		

Country/Project	Proposals	Advanced stage	Under Construction + startup + operating
Spain			
Calvo Sotelo (ENCASO)			100 N
E.SIDENSA(Avilés)			(140 N 50 P_2O_5
HUELVA		50 P_2O_5	50 P_2O_5
ASUR(Cartagena)	(NH_4NO_3)		(120 N 80 P_2O_5
Escombreres (Cartagena)	(NH_3 only 900 tpd not counted)		
Huelva			50 P_2O_5 ?
Yugoslavia			
Lamijska)			90 N
Pristina			
Zorka			150 P_2O_5
Ceylon ?		180 N ?	

	Demand 1969/70	1980	added consumption	Production 1969/70	difference surplus(+)	under const. & operating	Planned & early stage	excess on 80% utiliz.	Additional Production Capability needed (c)
Asia									
(Ceylon)		120		0	120	110	-	(-)32	32
Indonesia	165	(500)	+ 355	43	312	250	200	+ [illegible]	2[illegible]7
Burma	26	80	54	0	54	80	-	+ 10	[illegible]
Pakistan	370	900	+ 530	174	406	412	280	+148	[illegible]
India	1,300	3,600	2,2[illegible]	701	1,5[illegible](a)	2,305	1,2[illegible]	+1,[illegible]	1,[illegible]
Thailand	50	100	+ 50	14	36	-	150	+ [illegible]	[illegible]
North Korea	205	400	+ 195	205	(+)10	?	?	--	[illegible]
Taiwan	165	300	+ 135	195	(+)60	-	150	+180	[illegible]
South Korea	320	500	+ 130	356	(+)176	-	150	+2[illegible]	[illegible]
South Vietnam	122	250	+ 128	-	123	-	100	(-) 8	[illegible]
Philippines	71	150	+ 79	54	25	-	-	(-)25	[illegible]
China, P.R. of	2,500	5,400	+2,900	1,040	1,800	-	-	(?)	4,[illegible]
Near & Middle East									
Turkey	230	800	+ 570(b)	52	518	255	170	(-)178	5[illegible]
Spain	634			543				?	?
Yugoslavia	283			183				?	?
Iran	55	200	+ 145	28	117	290	500	(+)483	(+) 28
Latin America									
Central America	125	300	+ 175	24	151	-	-	(-)151	276
Mexico	390	1,050	+ 660	360	300	400	-	+ 20	370
Colombia	55	200	+ 145	50	95	100		(-) 15	70
Brazil	165	500	+ 435	6	429	170	220	(-)117	3[illegible]2
Peru	70	150	+ 80	23	47	70	-	+ 9	[illegible]
Cuba	187	400?	+ 220	0	220	180	-	(-) 26	256
(Chile 1975/80)	40	125	+ 85	100	(+) 15	-	170	+ 151	25
Argentina	35	175	+ 140	20	120	30	200	+ 128	131
Africa									
South Africa	150	400	+ 250	204	46	170	-	+ 30	[illegible]
Rhodesia	45	100	+ 55	23	32	-	-	(-) 32	[illegible]
Egypt	205	500	+ 235	103	162	100	250	+ 118	317
Sudan	40	100	+ 60	0	60	-	80	+ 4	100

Total: 9,[illegible]

(a) India (IFFP): Projects under construction and committed, Cochin I, Durgapur, Barauni, Ramagundam, Gorakhpur Expansion IFFCO (Indian Farmers)
(b) without Ptolemy
(c) Calculated as follows (+ means, surplus)
Demand 1980
- Production 1969/70
- Projects under construction and operating(at 80%)

Result: Leaving out the expected surplus in Iran, additional capability in Group IV countries needed will be about 9.67 mill. MT/Y
Assuming 80% utilization, this is equivalent to $\frac{9.67}{[illegible]}$ = 46 projects (assuming average capability of 210,[illegible] MT/Y).

Table 3

Balance Sheet Studies Projects period to 1980

(In thousands of tons of nitrogen)

	Consumption			Production	Known projects		Difference	Additional Production
	1970/71	1980	added consumption	1969/70	difference surplus(+)	under const. & operating	Planned & early stage	based on 80% utilis.	Capability needed (c)
Asia									
(Taylan)		120		0	120	110	-	(-)32	32
Indonesia	185	(500)	+ 315	43	312	250	300	+ 18	282
Burma	26	80	+ 54	0	54	80	-	+ 10	44
Pakistan	320	900	+ 580	174	406	412	280	+148	342
India	1,360	3,000	2,270	704	1,536(a)	2,385	1,259	+1,108	1,052
Thailand	50	100	+ 50	14	36	-	150	+ 84	66
North Korea	295	400	+ 105	295	(+)10	?	?	—	105
Taiwan	165	300	+ 135	195	(+)60	-	150	+180	120
South Korea	320	500	+ 180	356	(+)176	-	150	+296	124
South Vietnam	122	250	+ 128	-	128	-	150	(-) 8	250
Philippines	71	150	+ 79	54	25	-	-	(-)25	104
China, P.R. of	2,500	5,400	+2,900	1,040	1,860	-	-	(?)	4,360
Near & Middle East									
Turkey	230	800	+ 570(b)	52	518	295	170	(-)178	544
Spain	604			543				?	?
Yugoslavia	283			183				?	?
Iran	55	200	+ 145	28	117	250	300	(+)483	(+) 28
Latin America									
Central American	125	300	+ 175	24	151	-	-	(-)151	326
Mexico	350	1,050	+ 600	350	350	400	-	+ 20	370
Colombia	55	200	+ 145	50	95	100		(-) 15	70
Brazil	165	500	+ 335	6	489	170	200	(-)117	312
Peru	70	150	+ 80	33	47	70	-	+ 9	61
Cuba	187	4009	+ 200	0	220	180	-	(-) 36	256
(Chile 1973/80)	40	125	+ 85	100	(+) 15	-	170	+ 151	25
Argentina	35	175	+ 140	20	120	30	280	+ 128	131
Africa									
South Africa	150	400	+ 250	204	46	170	-	+ 90	60
Rhodesia	45	100	+ 55	23	32	-	-	(-) 32	77
Egypt	295	500	+ 235	103	162	100	250	+ 118	317
Sudan	40	100	+ 60	0	60	-	80	+ 4	100

Total: 9,0[illegible]8

(a) India (1977): Projects under construction and committed, Sindri I, Rangapur, Barauni, Namagundam, Gorakhpur Expansion IFFCO(Indian Farmers)
(b) Without Vitanga
(c) Calculated as follows (+ means, surplus)
Demand 1980
- Production 1969/70
- Projects under construction and operating(at 80%)

Table 4

List of Least Developed among Developing Countries a/

(ECOSOC [illegible])

(With Nitrogen Consumption less than 10[illegible] tons/year)

Africa	Asia & Occania	Latin America
Burundi	Bhutan	Haiti
Chad	Maldive	
Lesotho	Sikkim	
Mali	Western Samoa	
Nigeria	Yemen	
Rwanda		
United Republic of Tanzania		
Upper Volta		

a/ In table I

(a) Afghanistan is included under class 0 (small demand, small plant already in existence)

(b) Laos, Nepal, Botswana, Dahomey, Ethiopia, Guinea, Somalia and Uganda are included under class I (very small demand, only import indicated)

(c) Malawi is included in class II (small demand, mixing plants indicated)

(d) Sudan is included under class III (medium demand, mixing plants indicated)

II. Second Meeting

CONCLUSIONS AND RECOMMENDATIONS OF THE AD-HOC WORKING GROUP

UNIDO/FAO/WORLD BANK

(Meeting for Fertilizer Development Planning)

Second Meeting held in FAO, Rome, 21-23 February 1972

1. The classification of developing countries done during the first meeting in Vienna, was refined and brought up-to-date. The classification is now made for Asia, Africa and Latin America, for countries with large and medium consumption of nitrogen and large and medium consumption of phosphates by 1980. These six tables are attached as Appendix 1.

2. Suggested action in countries suitable for large (primary) and medium (satellite) size fertiliser plants was worked out and is given as Appendix 2.

3. In addition to direct fertilizer plant investments, the need for developing infra-structure, marketing, distribution and credit facilities is given in Appendix 4.

4. To ensure quick action, the Working Group prepared a suggested draft letter to the UNDP Resident Representatives requesting them to ascertain interest of the governments in pre-investment missions in countries identified as suitable for investment in fertilizer plants. This draft letter is attached as Appendix 3. It may have to be adjusted to the specific circumstances in each country. This draft letter is subject to modification and clearance by the respective organizations before being dispatched.

5. The Group has identified 25 countries with about 50 plants of various capacities to be implemented before 1980. The added production capability will be about 2.7 million metric tons of nitrogen per year and 1.8 million tons of P_2O_5 per year (about 4% of estimated total world production in 1980 of N and P_2O_5). Altogether about one third of the number of plants is expected to be of the satellite type, that is, based on either imported ammonia or imported phosphoric acid: the balance as full-size large fertilizer units.

6. The total direct investment for these plants - excluding infra-structure, marketing and distribution costs - is estimated to be about US $ 2,500 million.

7. The Group also suggested that the third meeting of the Group should be held in the World Bank in Washington for necessary further action, as well as follow-up of the recommendations contained herein. It was also suggested that this meeting take place in March/April 1972. The main purpose will be to review the results of the action taken according to Annex 2, as well as to study regional co-operation projects and the matter of countries producing primarily for export.

8. It is suggested by the Group that the cost of the meetings of the ad-hoc Working Group, as well as the proposed pre-investment missions to be undertaken by UNIDO/FAO be submitted as a package project for financing to World Bank through appropriate authorities. The estimated total cost of this package is around $ 500,000.

9. The Working Group expressed its gratitude to Dr. Saouma for his opening address and to Dr. Nehemia and Dr. Fischnich for receiving the Group. The Group also expressed its appreciation of the organization of the meetings by Dr. Hauck and Dr. Couston.

10. Working Group members attending during second meeting

M.C. Verghese	UNIDO
J.W. Couston	FAO
E. Decker-Boost	World Bank/IFC
R. Ewell	Consultant
F.W. Hauck	FAO
M.P. Benjamin	IBRD-FAO Co-operative Programme
B. Dittmann	UNIDO

LARGE & MEDIUM CONSUMPTION - N

('000 mt)

Region/Country	(1) Cons. 70/71	(2) Demand 1980	(3) Product. 70/71	(4) Installed Capacity (1 Jan. 1972)	(5) Additional capacity needed 1980 (2) - (4)	(6) Remarks
ASIA						
				LARGE (*)		
China (T)	154	300	157	350	(-50)	No add. plant
China (PR)	2,987	5,400	1,200	?	?	
Ceylon	58	120	0	0	120	1 plant (160)
India	1,460	3,600	832	3,138	462	3 x 160 or 200
Indonesia	183	? 500	45	350	150	1 large unit { Pusri C=220 (14 Petrok C=50
Iran	58	200	28	300	(-100)	surplus N 80
N. Korea	205	400	205	?	?	
S. Korea	356	500	356	430	70	no action
x Malaysia	60	125	26	40	85	Satellite ? Action
Pakistan(old)	352	900	177	530 (RF412)	370	2 large plants
x Philippines	119	(250?)	48	110	140	1 large unit. Action
x Thailand	63	200	10	30	170	1 large unit. Action
x Turkey	243	600	? 82	240 (RE255)	360	2 large units. Action ?
N. Vietnam	38	200	-	?	?	
S. Vietnam	70	200?	-	-	200	1 large unit. Taiwan Proj
				MEDIUM (**)		
Afghanistan	16	40	0	25	15	
x Burma	15	80?	15	150	(-70)	Export ? FAO Action
x Cyprus	15	30	0	0	30	Irrigation Action (FAO) + Unido A
x Iraq	19	50	6	55	(-5)	FAO - marketing A
Israel	32	60	27	65	(-5)	
Lebanon	19	40	14	14	26	Based on big Mit, imp.
Syria	26	40	0	35	5	Exist. small plants

(*) Large - over 100,000 tons N in 1980

(**) Medium - 20,000 to 100,000 tons N in 1980

Appendix 1 AFRICA
Table 2

LARGE & MEDIUM CONSUMPTION - N

('000 mt)

Region/Country	(1) Cons. 70/71	(2) Demand 1980	(3) Product. 70/71	(4) Installed Capacity (1 Jan.1972)	(5) Additional capacity needed 1980 (2) - (4)	(6) Remarks
AFRICA						
			LARGE (*)			
Algeria	40	120	20	550	430	Export
Egypt	300	500	109	230	270	Action I large unit UNIDO given assistance
Morocco	38	100	11	11	89	Imported Mt_3. Satellite plant. Action
Rhodesia	48	100	43	43	57	Imported Mt_3.(Satellite
S. Africa	181	400	200	400	0	-
Sudan	66	100	0	0	100	Action. UNIDO/FAO in.
			MEDIUM (**)			
Cameroon	12	20	0	?	?	Project under way?
Kenya	22	40	0	0	40	UNIDO team going + FAO Regional/Action underw
Mauritius & Reunion	14	20?	0	25	(- 5)	Exp. to Reunion (5 M co
Tunisia	16	30	0?	0	30	FAO Action going on
Zambia	12	30	37	25	5	
Nigeria	5	20	-	-	20	(Export plant?)

(*) Large = over 100,000 tons N in 1980

(**) Medium = 20,000 to 100,000 tons N in 1980

Appendix 1 LATIN AMERICA
Table 3

LARGE & MEDIUM CONSUMPTION - N

('000 mt)

Region/Country	(1) Cons. 70/71	(2) Demand 1980	(3) Product. 70/71	(4) Installed capacity (1 Jan.1972)	(5) Additional capacity needed 1980 (2) - (4)	(6) Remarks Nº Projects
LATIN AMERICA						
			LARGE (*)			
x Argentina	41	175	34	50	125	1 large unit. Action
x Brazil (cal.yr)	276	600	20	180	420	2 large units. Action
x Central America (5)	144	250	30	30	220	Action. 1 large unit
x Colombia	64	200	58	100	100	1 large unit. Action
x Cuba	159	500	5	160	340	2 large units. UNIDO ex Action
Mexico	438	850	397	570	280	1 large unit
Peru	101	150	33	35	115	1 large unit
Chile	42	125	124	?		$NaNO_3$ - supply
			MEDIUM (**)			
Dominican Rep.	23	40	-	0	40	SAFEL
x Ecuador	19	50	2	2	48	Mixing plants exist.
x Jamaica	15	25	0	0	25	Sat. plant
x Panama	15	25	0	0	25	Sat. plant
x Uruguay	13	20	0	0	20	Sat. plant
x Martinique - G	8	20	0	0	20	Sat. plant
Venezuela	28	60	10	235	(-175)	Export

(*) large = over 100,000 tons N in 1980

(**) Medium = 20,000 to 100,000 tons N in 1980

Central	30	70	16	Costa R.	Nicaragua	20	40	6
	15	30	-	Honduras	El Salvador	50	70	8
	2a	40	-	Guatemala				

Total: 144 - 250 - 30

Appendix 1
Table 4

LARGE & MEDIUM CONSUMPTION - P_2O_5 (processed phosphate only)

('000 mt)

Region/Country	(1) Cons. 70/71	(2) Demand 1980	(3) Prod. 70/71	(4) Installed capacity (1 Jan.[illegible])	(5) Addit. Capac. (2) - (4)	(6) Remarks
A S I A						
				L A R G E (*)		
China (T)	42	100	43	50	50	Satellite
China (PR)	574	1,200	572	?	?	?
India	461	1,300	229	,072	228 428	at least 2-3 large plants
Indonesia	50	150	-	0	150	2 large units, Action
Iran	37	80	-	50	30	phos acid surplus excluded
N. Korea	100	200	100	?	?	
S. Korea	124	250	140	150	100	1 large plant. A
Pakistan (old)	60	300	4	100	200	2 large plants
Philippines	69	150	39	50?	100	1 large plant . A
Thailand	36	100	0	0	100	1 large plant. A
Turkey	176	400	63	250	150	2 large plants. A
				M E D I U M (**)		
Burma	5	20	0	0	20	Sat. plant. A
Israel	14	25	16	25	0	
Lebanon (cal.year)	18	30	39	45?	(-15)	Exist. Satellite Plant
Malaysia	18	40	?	20?	20?	ICI Satell. Plant. Action
N. Vietnam (Cal.year)	63	100	63	?	?	
S. Vietnam	34	75	0	0?	75	1 large plant
Syria	12	25	0	0	25	Export plant? SSP?

(*) Large = > 80,000 MTY

(**) Medium = 20,000 - 80,000 MTY

Column (A)
Operating plants and plants under construction

Appendix 1
Table 5

LARGE & MEDIUM CONSUMPTION - P_2O_5 (processed phosphate only)

('000 mt.)

Region/Country	(1) Cons. 70/71	(2) Dem. 1980	(3) Prod. 70/71	(4) Installed capacity (1 Jan. 1972)	(5) Addit. Capacity (2)-(4)	(6) Remarks
AFRICA			**L A R G E (*)**			
Algeria ?	53	100	18	100	0	Exclud. (export 20 as H_3PO_4)
Egypt	45 (fert.yr)	100	65 (cal.yr)	140	(-40)	(6:1 ratio P_2O_5)
Morocco ?	44	100	99	125	(-25)	Export plant under consideration.
S. Africa	272	500	324	350 ?	150	
			M E D I U M (**)			
Kenya	29	60	0	0	60	1 large plant ?
Tunisia	28	60 ?	197 (cal.yr)	200	(-140)	Export acid plant ready (120) +120
Rhodesia	30	50	30	30 ?	20 ?	Satellite ?
Nigeria	?	20	0	0	20	Satellite

(*) Large - > 80,000 MTT

(**) Medium - 20,000 - 80,000 MTT

Appendix 1

Table 6 LATIN AMERICA

LARGE [illegible] CONSUMPTION - P_2O_5 (processed phosphates only)

('000 mt.)

Region/Country	(1) Cons. 70/71	(2) Dem. 1980	(3) Prod. 70/71	(4) Installed Capacity (Jan. 1 72)	(5) Addit. Capacity (2)-(4)	(6) Remarks
LATIN AMERICA			LARGE (*)			
Argentina	39	80	1	0	80	Action
Brazil	375	900	160	200	300	4 large plants. Action
Central America	46	125	2	15	110	1 large plant ? Action.
Colombia	61	125	9	50	75	1 large plant. Action
Cuba	92	250	0	0	250	2 large plants. Action
Chile	102	225	14	45	180	2 large plants. Action
Mexico	130	400	181	330	70	(surplus acid) 1 large plant
			MEDIUM (**)			
Ecuador	10	25	3	3	22	Satellite. Action
Martinique-G	7	20	0	0	20	Satellite
Peru	13	50	6	30	20	Idea of H_3PO_4 plant. Exp.
Uruguay	31	50	7	7	43	Satellite
Venezuela	16	50	11	40	10	

*) Large - > 80,000 MTY

**) Medium - 80,000 - 80,000 MTY

Appendix 2

Suggested Actions in Countries suitable for Large (Private) and Medium (Satellite) Size Fertilizer Plants

Country	Additional capacity needed N	Additional capacity needed P_2O_5	Probable1/ number of Projects N	Probable1/ number of Projects P	FAO Classific.	Letter	Remarks
Burma	(-70)	20	?	S	A B	Yes (?)	
Cyprus	30	-	S	-	C	No	FAO & UNIDO in touch
Indonesia	150	150	L	2L	B C	No, yes P_2O_5 only	
Iraq	(-5)	-	?	-	B	No	FAO marketing action only
S. Korea	-	100	-	L	B	No	FAO had follow-up
Malaysia	85	20?	S	S	C	Yes	
Nigeria	20 (export)	20	L	S	B	Yes	
Philippines*	140	100	L	L	B C	Yes	
Syria	-	25	-	(L)	B	Yes	
Thailand	170	100	L	L	B C	Yes	
Turkey	360	150	2L	2L	C	No	Close connections exist
Egypt	270	-	L	-	C	No	UNIDO in touch
Kenya	40	60	S	L(S)	B	No	FAO/UNIDO/IBRD in touch
Morocco	80	-	S	-	C	Yes	Only for N
Sudan	100	-	L	-	B	Yes	
Argentina	125	80	L	L	C	Yes	
Brazil	400	300	2L	3L-4L	B ? C	Yes	
Central America	220	110	L	L	B	No	FAO/CAPICA report exists
Chile	-	100	-	2L	C	Yes?	Special problems
Colombia	100	75	L	L	B C	Yes	
Cuba	360	250	2L	2L	C	Yes	(but IBRD excluded)
Ecuador	40	22	S	S	B	Yes	
Jamaica	25	-	S	-	B	Yes	
Panama	25	-	S	-	B	Yes	(UNIDO mission was there 2 years ago)
Uruguay	20	43	S	S	B	?	Special problems

1/ S = Satellites, L = Large plant

* Other countries are excluded from this list due to studies already underway or other reason

Action on all these countries:

- Desk study + file - FAO (Cousten, Mauck)
- Bank Economic Report - Benjamin
- Prepare country files - UNIDO/Verghese
- Check with Area Dept. IBRD/IFC - Decker-Beest
- Recheck demand forecasts - Ezell

Appendix 3

D R A F T

(letter to Resident Representatives of ..... countries)

Financing of Fertilizer Projects during the Second U.N. D.D.

Dear Mr. .....,

As you are perhaps aware the Second Inter-regional Fertilizer Symposium was held in September-October 197[illegible] in Kiev (U.S.S.R) and in New Delhi (India). UNIDO, FAO and the World Bank Group cooperated in this Symposium.

As a result of the extensive discussions and recommendations of this Symposium it became evident that although many developing countries were in urgent need of external finance to set up fertilizer projects, there were not enough projects suitable for consideration by International Financing Agencies. To discuss the problem and to take some positive joint action to aid the developing countries in this area, an ad-hoc Working Group of UNIDO/FAO/World Bank was organized and held its first meeting in UNIDO, Vienna, on 8-11 December 1971. The second meeting was held in FAO, Rome, on 21-23 February.

These meetings of the Working Group identified a number of countries where in the next eight years nitrogen and or phosphate fertiliser plants of various sizes could be established. The extensive discussions in these meetings took into account the present consumption of N and P_2O_5 in these countries (1970/71), made projections for demand up till 1980, reviewed the installed capacities and worked out the additional capacity needed by 1980. In addition to direct fertilizer plant investments, the need for developing the infrastructure, organizing distribution, marketing and credit problems as well as policies of respective Governments to increase crop production by use of fertilizers would have to be taken into account.

The ad-hoc Group has found that the country in which you are the Resident Representative is one in which assistance in developing fertilizer projects would be desirable. You are requested by this letter to ascertain from the appropriate Government authorities whether they will be willing to request such assistance.

If the Government is interested and official requests are received, UNIDO/FAO will be prepared to undertake feasibility/pre-investment missions lasting 4-6 weeks. This will be done after collecting all the existing data and reports and making desk studies. Such work may lead to projects suitable for appraisal by the World Bank Group, Regional Development Banks or private investors and other sources.

It is expected that the financing of such missions can be included in country programmes where this is possible, under the SIS programme or under the other budgets. The estimated cost of such missions is between US $15,000 to 30,000 depending on the length and composition of missions. As regards the timing of these missions, the ad-hoc Group felt that these should be undertaken in the next six months jointly by UNIDO and FAO on an urgent basis.

We shall be grateful to receive your early comments and the reaction of the Government to the above proposals.

Yours sincerely,

Appendix 1

FAO's Categories of Countries

(A) Countries which are still in need of basic technical and economic information on fertilizer use. For these, assistance would concentrate on experimental and demonstration work, followed by pilot schemes for fertilizer distribution;

(B) Countries which have (a) recognized the importance of fertilizers for the development of agriculture, (b) information on rational fertilizer use available, and (c) developed a sizable demand for fertilizers among farmers, but which, mainly because of inadequate infrastructure and deficiency of foreign exchange, cannot build up the fertilizer use on their own as quickly as it would be desirable;

(C) Countries with an already relatively efficient infrastructure but where (a) the lack of or insufficient foreign exchange for the purchase of fertilizers represents a major bottleneck in further development, (b) the infrastructure for distribution of fertilizers and other inputs still needs further improvement either in the country as a whole or in parts of it;

(D) Countries (a) which do not need any more foreign assistance in fertilizer use development, (b) which need assistance in fertilizer use development only in parts of the country, (c) which need assistance only for solving specific problems, for instance, building up a soil testing service, establishing a fertilizer unit in the Ministry of Agriculture, introducing fertilizer legislation, preparing an overall plan for long term fertilizer use development and eventually fertilizer production.

It is understood that in category (A), in countries which still have basic needs, the infrastructure for input supply is also non-existent or inadequate. On the other hand, the fertilizer experimental, demonstration and extension work has to go on indefinitely (as in all developed countries) also in categories (B), (C) and (D), but adjusted in number, intensity and type to the more advanced conditions.

There are also some countries which have been already producing fertilizers for some time but where a scientifically sound basis has not yet been laid concerning the types and quantities of fertilizers to be used on various crops and various climatic and soil conditions of the country.

Classification of Countries in need of Assistance in Fertilizer Use Development

A In need of basic technical and economic information	B Lack of infrastructure and/or foreign exchange	C Lack of foreign exchange further improvement of infrastructure	D Assistance only for specific problems (in some lack of foreign exchange
Asia Burma (26,17,20)* xKhmer Rep. (4,.5,.9) Laos (4,-,-)	**Asia** Afghanistan (15,-,-) (Burma) x(India) x(Indonesia) xIran (55,30,2) Iraq (10,4,.4) Jordan (.8,1,.5) xNepal (3,1,.2) (x)Philippines (71,64,38) Saudi Arabia (1,3,1) (x)Syria (20,8,.9) xThailand (50,45,11)	**Asia** (x)Ceylon (62,7,59) Cyprus (11,8,1) xIndia (1,007,[illegible]) xIndonesia (165,[illegible]) Malaysia (54,15,31) (x)Pakistan (325,[illegible]) x(Philippines) x(Thailand) (x)Turkey (231,231,14) Vietnam (122,[illegible],24)	**Asia** xKorea ([illegible],131,[illegible])
Africa xBurundi (.1,-,-) Central Af. Rep. (1,.5,.3) Chad (.8,.4,-) Congo P.Rep. (?,-,4) Dahomey (2,.5,2) Guinea (1,.5,1) xLesotho (.1,.4,-) Liberia (1,-,-) Libyan A.Rep. (?,5,.5) Malawi (5,1,1) Mali (.3,2,.5) Niger (.7,-,-) Somalia (3,-,-) Swaziland (4,3,.5) Tanzania (5,3,4) Togo (-,-,-) Uganda (?,1,1) Zaire (2,.4,1) Zambia (13,6,2)	**Africa** xCameroun (10,3,5) xEthiopia (?,-,-) (x)Gambia (.1,.1,.1) xGhana (1,1,2) xIvory Coast (4,2,7) Kenya (16,19,5) Madagascar (6,3,3) Mauritius (9,6,9) x Morocco (24,30,19) x Nigeria (5,6,2) x Sierra Leone (.5,.1,.3) Sudan (59,.3,5)	**Africa** (x)Algeria (30,39,25) (x)Egypt (262,50,2) x(Morocco) (x)Senegal (5,5,3) xTunisia (13,21,4)	**Africa**
Latin America Haiti (.6,.7,1) xBolivia (2,.7,.1) xParaguay	**Latin America** xCosta Rica (28,10,15) Dominican Rep. (20,1,3) xEl Salvador (35,16,10) (x)Guatemala (14,3,2) xHonduras (13,2,7) Jamaica (13,5,14) Martinique (5,6,7) Nicaragua (21,8,4) (x)Panama (14,-,-)	**Latin America** Cuba (179,115,104) Trinidad (5,.9,5) xArgentina (35,38,7) xBrazil (164,237,200) Chile (41,87,20) x(Colombia) (Peru)	**Latin America** Mexico (383,113,[illegible]) Uruguay (11,29,5)
Latin America Haiti (.6,.7,1) xBolivia (2,.7,.1) xParaguay	**Latin America** xCosta Rica (28,10,15) Dominican Rep. (20,1,3) xEl Salvador (35,16,10) (x)Guatemala (14,3,2) xHonduras (13,2,7) Jamaica (13,5,14) Martinique (5,6,7) Nicaragua (21,8,4) (x)Panama (14,-,-) x(Brazil) xColombia (54,[illegible],40) xEcuador (21,12,20) Guyana (7,1,2) xPeru (68,10,4) Venezuela (20,15,15)	**Latin America** Cuba (179,115,104) Trinidad (5,.9,5) xArgentina (35,38,7) xBrazil (164,237,200) Chile (41,87,20) x(Colombia) (Peru)	**Latin America** Mexico (383,113,[illegible]) Uruguay (11,29,5)

x = Ongoing FAO assisted fertilizer project

(x) = Fertilizer project terminated.

*(n,p,k) = Consumption in thousand tons N, P_2O_5, K_2O in 1969/70

Types of Action of FAO

1. Obtaining information on the most rational use of fertilizers on a variety of crops under different soil and climatic conditions by experimental work with fertilizers in combination with other inputs under normal farming conditions. The experimental results obtained are also used as a realistic basis for the overall planning of fertilizer use development and long term estimates.

2. Extending the information obtained through experiments to the advisory services to enable them to demonstrate the value of fertilizer use and related improved practices to cultivators. In addition, information in an appropriate form is given to the Government offices concerned and training is provided to field staff of the Agricultural Services.

3. Studying the economic factors affecting fertilizer use and improved practices and finding ways and means to overcome obstacles to their wide application. These economic studies are related to the farmers level and the economic aspects of the country as a whole.

4. Pilot Schemes for the distribution of fertilizers, as examples and incentives in such countries or areas where the supply facilities are not adequate. Depending on the situation, the pilot schemes can be on a small scale (up to 1,000 tons) or on a large scale (several thousand tons). The large scale projects can have a country-wide impact.

5. Infrastructure development to promote the use of fertilizers and other inputs by improving the marketing, organization, credit, storage and transport facilities. These developments are combined with the introduction of adequate quantities of fertilizers and possibly other inputs. Wherever possible, this should also lead to an orderly marketing of the agricultural produce.

6. Supply of relatively large quantities of fertilizers (and possibly other inputs) free or on easy terms. Countries which are able to absorb and distribute these quantities are not in all cases in need of experts from abroad.

7. Assistance in long term planning of fertilizer use development which might eventually lead to fertilizer manufacturing.

In general, the countries of Category (A) are in need of the project elements 1, 2 and 3 and during a later stage of project 4.

The countries in Category (B) either still need some limited assistance on the elements 1, 2 and 3, but have shifted emphasis to 4. Depending on the funds available, element 5 might be included.

Category (C) still needs element 5 but the most emphasis is placed on element 6. Elements 1 to 4 might still be needed but can be carried out in most cases by local staff.

Category (D) countries are usually still in need of element 6 and also of 7.

FAO is providing expert missions for the formulation of projects, review of projects and for review of specific subjects. In fertilizer use development there is an increasing number of joint missions with UNIDO.

FAO is increasingly carrying out seminars on fertilizer use development at various levels including extension staff but also administrators and planners.

FAO is giving general advice by way of correspondence, publications and individual discussions in the countries and in Headquarters.

Project Idea

Large Scale Project for Fertilizer Use Development

BACKGROUND

Considering the fertilizer use situation in most of the developing countries about a decade ago there was an apparent need to give assistance to the countries with the main emphasis on the technical aspects of fertilizer use, including experimental, demonstration and estension work and, to a very limited extent, assistance in fertilizer distribution to farmers. The technical activities have been carried out very successfully by FAO assisted projects. They have provided in most countries concerned a sound information on the most rational use of fertilizers and have also created a demand among the farmers. Unfortunately, in many cases, this demand could not be met or only to a very limited extent.

A bottleneck in fertilizer use development in about 30 countries at present is the inadequate infrastructure for distribution to the farmers, usually in connection with a lack of foreign exchange.

The pilot schemes for fertilizer distribution carried out by FAO in 25 countries up to now have necessarily to be limited to relatively small areas, mainly because the quantities of fertilizers available are usually only a few hundred tons. These pilot schemes have set examples and have a positive impact which, however, because of its limited scope, cannot be countrywide.

As a follow up project of a previous FFHC fertilizer project, including a pilot scheme in Ghana, a UNDP/SF project was introduced which concentrates systematically, besides its technical aspects, on building up an infrastructure for providing farmers with inputs, in this case mainly through building up and improving cooperatives. Among others, there are two cooperative experts and one cooperative consultant working in the project. Experience up to now has shown that the principle of the project is suitable to solve the fertilizer distribution problem in the long run. However, the quantities of fertilizers which could be made available are only sufficient for three selected project areas of a size of six agriculturally important districts.

It is know that some bilateral organizations have supplied larger quantities of fertilizers, mainly USAID, Germany, Norway. The main effect of these activities was to alleviate the foreign exchange situation of the countries. Most of them had no element in for the direct improvement of the infrastructure for the distribution of inputs.

The presence of an infrastructure and the availability of fertilizers are of course inter-related: if there is no fertilizer, there is no need for infrastructure, if there is no infrastructure, no fertilizer reaches the farmers. Therefore, the basic principle of future projects for providing the large numbers of farmers with fertilizers should be to make the fertilizer (and possibly other inputs) build up its own infrastructure for distribution to the farmers. By this, also the basis could be laid for the marketing of agricultural produce.

PURPOSE

The main purpose of the project is to improve the distribution of fertilizers countrywide by the gradual building up of the infrastructure for distribution of inputs. In combination and with a sound backing by agricultural and economic research and by improvement and coordination of agricultural extension activities.

DESCRIPTION

1. For this type of project, only countries should be considered which have reached the stage where a national breakthrough in fertilizer use is envisaged by the Government. Most of these countries have already obtained technical, economic and other assistance in fertilizer use development but would need a large scale follow up project which would have a lasting impact and effect. In FAO's categories, these countries would range under B and C.

2. The Governments concerned policy should be in line with the main objectives of the project.

3. The Government has to take initiative in this matter, however, depending on the political and economic structure, cooperatives and private enterprise should be brought in on a large scale.

4. The emphasis of the project should be on building up the infrastructure but these activities should be closely related to the ongoing activities on research and experimental work and extension activities.

5. The need for overall coordination, if not yet existent, calls for a fertilizer unit, normally in the Ministry of Agriculture.

6. Intensive training at all levels, including the planning and administration level, should be an important part of the project.

REQUIREMENTS

1. It should be realised that, up to now, the fertilizer distribution efforts in FAO's projects habe been much too small for most of the countries needs, because of limited funds. A countrywide project of the proposed type should have available as a main incentive sizable quantities of fertilizers which, in the countries of Group B and C, are usually also beyond the scope of UNDP projects. It can be estimated that for a project, fertilizer quantities of not less than 10,000 tons should be available (c.i.f. value of the fertilizer about $1 million).

2. Concerning equipment, it appears essential that for such a project the country obtains assistance for:

- Additional means of transport for the fertilizers.
- Building up the most essential storage facilities.

3. A minimum number of foreign experts would be essential for the execution of the project including training of local staff. They would be most urgently needed in the fields of overall organization and planning, coordination of the technical, economic and marketing factors, building up of cooperatives and other organizations, and carrying out the actual distribution of fertilizers through the channels build up for this purpose.

Appendix [illegible]

[illegible] 197[illegible]
[illegible]

UNIDO, IBRD and FAO Joint Discussion on Fertilizer [illegible]:

Opening Address
by
Edouard Saouma
Director
Land and Water Development Division

...

Gentlemen,

It is a pleasure to welcome the representatives of UNIDO and IBRD to this joint discussion on fertilizer use and production development in the countries, which had its first session in December last year in UNIDO Headquarters in Vienna.

We are convinced that this joint approach is not only essential but will lead to realistic developments for the benefit of countries which need help. This joint undertaking is also in line with the Agreement setting out Guidelines for Cooperation between FAO and UNIDO in the field of Industrial Development, which was concluded in July 19[illegible], and with the established cooperation between FAO and IBRD through the Joint Division and other activities. It is gratifying to note that in the field of fertilizer use and production, the cooperation between FAO and UNIDO has steadily intensified and now we hope to foster closer cooperation between FAO and IBRD in the fertilizer field.

The increasing and more differentiated requirements of the developing countries in the present decade, on the one hand, and the relatively limited means available on the other hand, call for a better coordination and rationalization of assistance activities.

I am sure you know that FAO and, more specifically, its Land and Water Development Division, in cooperation with other Divisions, has considered [illegible] in fertilizer use development as one of its major activities. This is based on the assumption that about 50 percent of the increase in food production in the future will have to come from the rational use of fertilizers. FAO is carrying out at present 30 field projects of different types in fertilizer use development, with financing from UNDP, [illegible] from member countries and the fertilizer industry.

The main purpose of FAO's activities, including those in fertilizer use development, is, of course, to increase agricultural production. Under the Regular Programme, FAO is carrying out an intensive training programme by way of seminars and meetings of different types and is collecting, evaluating and disseminating information for the guidance of member countries. One result of the work in the field and in Headquarters is the increase in demand for fertilizers and the increase

[illegible] concerned.

Regarding needs and possibilities [illegible] – a matter [illegible] of the [illegible] to the [illegible] which [illegible] to be available. We know that FAO [illegible] with the needs and [illegible] of [illegible] countries, [illegible] and we have to set priorities. I think that [illegible] facilities, the existing over-capacities in a number of [illegible] being taken into consideration. The idea of a regional approach [illegible], although [illegible] experiences, which have not been very [illegible], should [illegible] be overlooked. It seems [illegible] in such cases a regional [illegible] could be successful in the long run, only if [illegible] type of [illegible] existed, as in Central America for instance.

Concerning future activities in relation to the [illegible] of these discussions, I should like to emphasize that FAO will, of course, continue to work in its own field – fertilizer use development – and will [illegible] its activities within the limits of the means available. One outcome of [illegible] could be a closer co-ordination and cooperation of the three organizations [illegible]. The shift in emphasis from the technical aspects of fertilizer use to the improvement of fertilizer supply to individual farmers [illegible] will continue, as the lack of adequate facilities in this field [illegible] the major bottleneck to [illegible]. FAO [illegible] these fields by [illegible] scale supply projects. However, I should like to [illegible] of these projects [illegible] it is usually not big enough to solve the problems on a countrywide basis. What [illegible] now becoming necessary in an increasing number of countries, are larger scale projects to build [illegible] and countrywide [illegible] for the supply and distribution [illegible]

[illegible] which will hopefully lead to [illegible] of [illegible]. As the detailed project [illegible] will be [illegible] the course of this session. The scope of these projects is, [illegible] beyond the capacity of [illegible] and [illegible] Program [illegible] the [illegible] for this type of [illegible] in the future [illegible] to [illegible] and [illegible] of [illegible] organizations.

Continuing, I look forward to further close cooperation between our Organizations and I wish you every success in your deliberations.

III. Third Meeting

Minutes of the third meeting of the [illegible]
Working Group [illegible] FAO/World Bank on
Financing of Fertilizer Projects

1) The above meeting was held in UNIDO, Vienna on 20-21 April 1972.

2) The following were present at the meeting:

Mr. F. Becker-Boost (World Bank Group)
Mr. F.W. Pauck ([illegible])
Mr. W. Dittmann (UNIDO)
Mr. M.C. Verghese (UNIDO)
Mr. C. Keleti (UNIDO)

3) The meeting discussed the items given in the agenda attached to this minutes as appendix 1.

4) The members of the group met with Mr. N.K. Grigoriev, Director of the Industrial Technology Division and discussed future work of the group and venue of the next meeting.

5) Agenda item 4 "Finalise letters to the Resident Representatives"

The following sentences were proposed to be added to the draft letter finalised during the seventh session of the FAO/UNIDO Inter-Secretarial Committee:

(a) Page 1, 2nd para, last sentence

"and the third meeting again in UNIDO on 20-21 April 1972"

(b) Page 1, 4th para, after first sentence (addition at the suggestion of Mr. H. Fuchs - IBRD)

"Any expansion of existing facilities where appropriate, improving their performance, investment in marketing facilities or other fertilizer activities could also be considered for assistance"

(c) Page 2, last para

" - - - by letter and the initial response by cable. This will enable the working group of UNIDO/FAO/World Bank to proceed further in the matter in their next meeting scheduled for end of May 1972"

The finalised draft letter is attached as appendix 2.

6) Agenda item 2 "Finalize the format and contents of country data sheets"

It was agreed that UNIDO and FAO compile such sheets by the first week of May and these country data sheets will be sent along with the letters to the Res. Reps.

The following responsibilities were suggested:

(a) Actual production and consumption figures N,P and K - UNIDO (FAO statistics)

(b) Projections up to 1980 - UNIDO

(c) Summary results indicating needs of N,P and K - FAO

(d) Factors which will influence increased use of fertilizer in particular countries - FAO (Working group thought this may be prepared by FAO but was doubtful about sending it to countries)

(e) Existing studies in each country - UNIDO

7) Agenda item 3 "List of 10 - 11 countries to be selected for sending letters"

The working group considered the suggestions made by UNIDO and FAO for selecting the countries and decided that letters to the Res. Reps. of the following countries be sent to start with Africa: Kenya, Nigeria and Sudan, Asia & the Middle East: Burma, Malaysia, Philippines and Syria, Latin America: Argentina, Brasil, Colombia and Cuba.

8) Agenda item 4 "Time table for future work"

The following time table was agreed upon:

(a) IBRD clearance of the letter to the Res. Reps by 3 May 1972

(b) Letters with attachments dispatched to the Res. Reps. in the first week of May

(c) Replies from Res. Reps. by cable or letter end of May

(d) Fourth meeting of the ad-hoc working group (items to be considered - financing of missions, terms of reference, briefing of missions, composition, etc.) 30-31 May, UNIDO, Vienna

(e) Missions to countries, starting June and July 1972

9) Agenda item 5 "Composition of pre-investment missions"

It was tentatively agreed that the pre-investment missions should consist of a production expert(UNIDO), a marketing expert(FAO), and a financial expert (possibly suggested by the World Bank Group).

Depending on the timing and duration of these missions, staff members or consultants could undertake these missions. It was also proposed that three mission groups be organised, one for Africa, one for Asia and the Middle East and one for Latin America.

10) Agenda item 6, 7, 8 and 9, namely "Financing of the missions", "Revision of 1980 figures" "Regional and surplus countries questions" were decided to be discussed in the next meeting.

11) Agenda item 10 "Next meeting"

A copy of the cable sent to Mr. M. Fuchs of IBRD by Mr. E. Becker-Boost after consideration by the working group regarding the next meeting is given as appendix 3.

In this cable it is proposed that the fourth meeting of the working group be held in UNIDO, Vienna on 29-30 May 1972.

Appendix 1

A G E N D A

1) Finalise letters to the Resident Representatives

2) Finalize the format and contents of country data sheets to go with the above letters

3) The list of 10 - 11 countries to be selected for sending letters

4) Time table for future work

5) Composition of pre-investment missions

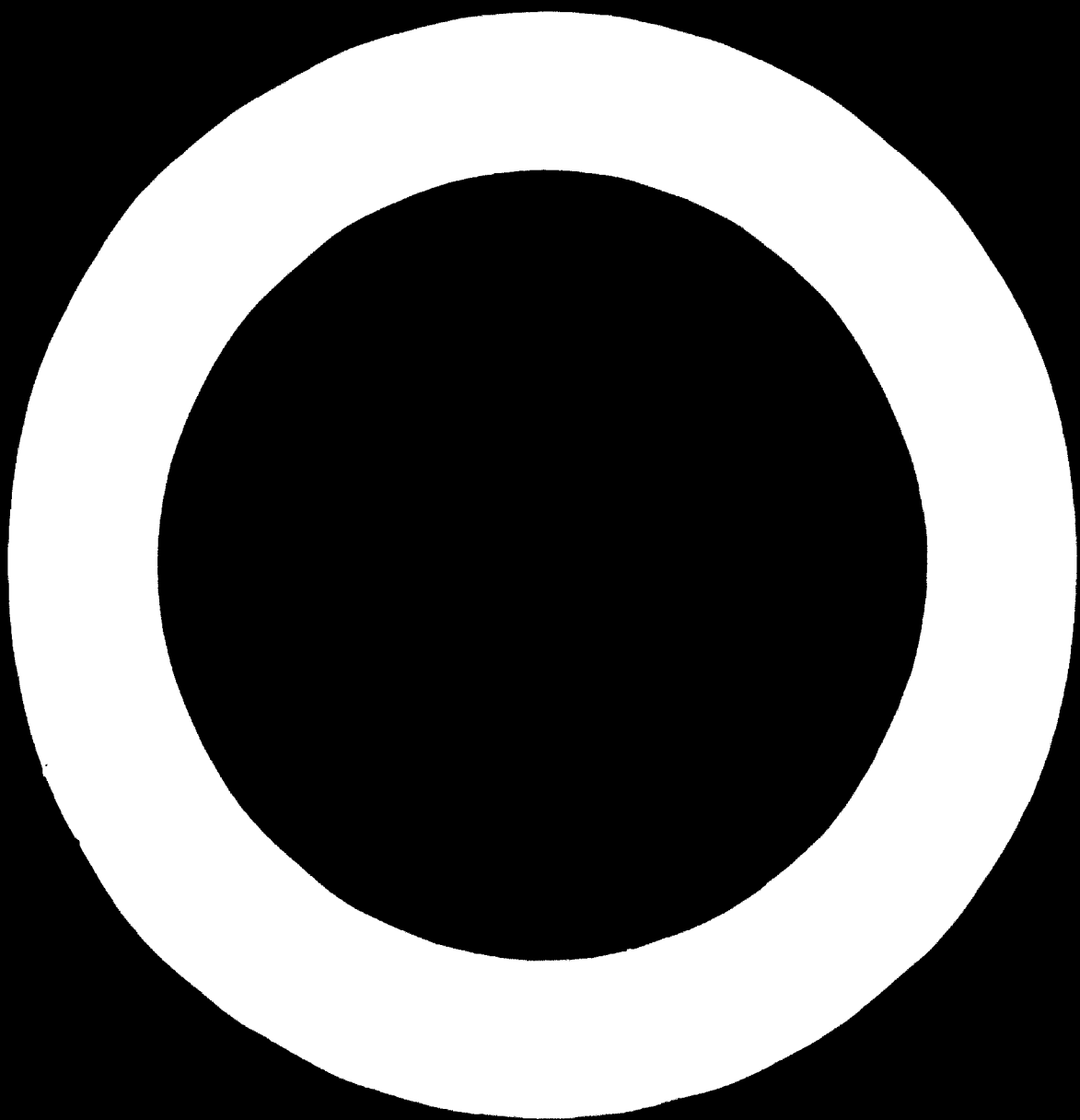
6) Financing of the missions

7) Revision of 1980 figures

8) Regional approach questions

9) Questions of surplus countries

10) Next meeting



appropriate Government authorities whether they will be willing to request such assistance.

If the Government is interested and official requests are received, UNIDO/FAO will be prepared to undertake feasibility/pre-investment missions lasting 4-6 weeks. This will be done after collecting all the existing data and reports and making desk studies. Such work may lead to projects suitable for appraisal by the World Bank Group, Regional Development Banks or private investors and other sources.

It is hoped that the financing of such missions can be arranged through appropriate UNDP resources. The estimated cost of such missions is from US$ 15,000 to 30,000 depending on the length and composition of the missions. As regards the timing of these missions, the ad-hoc group felt that these should be undertaken in the next six months jointly by UNIDO and FAO on an urgent basis.

A copy of this letter is being forwarded to UNDP, New York.

We shall be grateful to receive your early comments and the reaction of the Government to the above proposals by letter and the initial response by cable. This will enable the working group of UNIDO/FAO/World Bank to proceed further in the matter in their next meeting scheduled for end of May 1972.

Yours sincerely,

UNIDO FAO

..... Attached: Country data sheet

APPENDIX 1

INTERNATIONAL BANK FOR
RECONSTRUCTION AND DEVELOPMENT
1818 H STREET
WASHINGTON D.C. USA

MISC 6328 H. FUCHS AFTER MEETING GRIGORIEV CONSIDERING YOUR FIVE WE SUGGEST NEXT MEETING VIENNA OR ROME WEEK COMMENCING MAY 29 TO DISCUSS PRIMARILY TERMS OF REFERENCES FOR POSSIBLE MISSIONS INTENDED TO START JUNE JULY. REASON IS UNIDO'S INDUSTRIAL DEVELOPMENT BOARD MEETING AND PRECEEDING WORK GROUP BETWEEN MAY 11 JUNE 2 IN VIENNA. OUR TIME SCHEDULE ASSUMES IBRD CLEARANCE FOR RESREPS LETTER FIRST WEEK MAY AND EXPECT PRELIMINARY CABLE REACTION FROM RESREPS OF SELECTED ELEVEN COUNTRIES END MAY WASHINGTON MEETING SUGGESTED LATER IN JUNE FOR DISCUSSING WORK GROUP CONCLUSIONS AND RECOMMENDATIONS REGARDS-

BECKER-BOOST UNIDO VIENNA

IV. Fourth Meeting

Minutes of the Fourth Meeting of the Ad-hoc Working Group UNIDO/FAO/World Bank on Financing of Fertilizer Projects

1) The above meeting was held in UNIDO, Vienna on 1 and 2 June 1972.

2) The following were present at the meeting:

Mr. E. Fuchs(IBRD) afternoon of 1 June only
Mr. E. Becker-Boost(IFC, IBRD) in the morning of 2 June only
Mr. A. Sami El Darwish (IBRD)
Mr. F.W. Hanak (FAO)
Mr. J.W. Courteen(FAO)
Mr. B. Dittmann(UNIDO)
Mr. M.G. Verghese(UNIDO)
Mr. G. Keleti (UNIDO)

3) The meeting was opened by Mr. N.K. Grigoriev, Director of Industrial Technology Division, UNIDO, with an informal statement, in which he stressed the need of following up the work of this Group. He emphasized that the work is an important co-operative effort between the agencies and UNIDO about which mention was made in the sixth session of the Industrial Development Board now in session in Vienna. He also stated that similar approaches for other industrial branches are also contemplated.

4) The meeting then discussed the items given in the agenda attached to this minutes as appendix 1.

5) Agenda item 1:

Review of the letters and country data sheets sent out to 11 country resident Representatives - discuss follow-up action needed

During the review of the letters and country data sheets sent out to the 11 countries(Kenya, Nigeria, Sudan, Egypt, Burma, Malaysia, Philippines, Argentina, Brazil, Colombia and Cuba). FAO promised to clarify the value/cost ratios given in the country data sheets for Colombia

and Nigeria. It was also agreed that the country data sheets to be prepared in the future will contain value/cost ratio data for each main crop of the country concerned.

Regarding the required follow-up action, FAO will advise their regional and country representatives and FAO Liaison Office in UN Headquarters to follow up the letters to the 11 Resident Representatives. FAO will also advise the Permanent Country Representatives at FAO of the work. UNIDO will advise their Regional Field Advisers and the Meison office in New York and make contact with representatives to the Industrial Development Board, now in Vienna. A sample copy of the letters to the Resident Representatives is attached as appendix 2.

The Working Group considered additional countries for which action has to be taken. It was decided to write similar letters to the following six countries after reaction from some of the 11 countries was received. These countries are; Ecuador, Jamaica, Panama, Uruguay, Chile and the Arab Republic of Egypt. (appendix 3)

UNIDO will complete the country data sheets for which FAO will provide data needed to be included in these sheets. FAO will prepare briefing material for all selected countries (11 and 6). These materials will be kept in readiness until the first reaction was received from the 11 countries, financing of missions is known and missions are formed and ready to be briefed.

6) Agenda item 2:

Terms of reference for pre-investment missions - formats for formulating projects, production, marketing, financing

Regarding the terms of reference for pre-investment missions, certain main headings were drawn up for the guidance of preparing a final document, namely for fertiliser production expert, expert in the use and marketing of fertiliser and the economist who will be the financial expert. The

draft of these main headings is attached as appendix 4. It was agreed that the World Bank will revise these main headings and draw up a format for the report by the missions, after which the preamble and terms of reference can be worked out.

The World Bank also indicated that sample of feasibility or pre-investment study reports and assessment reports the Bank has made about certain projects would be made available to the Working Group as well as members of the missions for guidance and internal use.

7) Agenda item 3:

Composition of pre-investment missions

With regard to the composition of the pre-investment missions, it was decided that UNIDO should draw up a panel of names to be considered for the fertiliser production experts, FAO for the experts for use and marketing and FAO and World Bank for the economists. Due consideration will be given to the language requirements and whether the countries to be visited are considering primarily nitrogen, phosphate or satellite plants. The possibility of using staff members was also discussed by the group. The general opinion was that missions of 4 to 6 weeks would be too long to spare the services of staff members.

8) Agenda item 4:

Financing of the missions

World Bank expressed the feeling that due to recently imposed budgetary limitations, it may not be possible to finance the pre-investment missions from the Bank Group. However, the further work of undertaking these missions should not be slowed down because of the presently unknown source for financing. In any case, positive action with regard to financing of missions can not be initiated before the reaction from any of the 11 countries is received.

UNIDO was requested to send cables during the first week of July to remind the first 11 countries if no replies were received by then. UNIDO will advise World Bank and FAO of the positive and negative reactions. World Bank will then approach UNDP and indicate their strong interest in

these missions and raise the question of financing the missions. The missions when they are set up will be briefed by UNIDO/FAO/World Bank. An effort will be made to brief the missions and advise them to draw up their reports in a way, which can easily be compared.

9) Agenda item 5:

Regional approach question

The World Bank raised the point that there exists at present an interest in the West African region in setting up economically viable fertiliser projects as soon as possible. It was therefore decided, that letters to 4 countries, namely Cameroon, Gabon, Ivory Coast and Togo should be sent out by the middle of June (letter to Nigeria has already been sent). A slightly amended letter is attached as appendix 6. This letter will not have to be cleared again by the agencies concerned but will be signed by UNIDO and FAO. Although missions are intended to be sent to 4 countries, FAO will make a desk study on future trends in consumption and marketing for the West African region. It will be noted that the list given as appendix 5 contains many of the less developed among the developing countries. It was also pointed out that, if necessary, an expert in fertiliser use, marketing, transport and infrastructure, provided by FAO could go as an advance member of the mission and make necessary investigations in the 4 countries plus additional countries if necessary. In order to carry out this regional project, the report of the mission to Nigeria (if it takes place) will be cross linked with those of these 4 countries in order to give an overall approach to the West African region.

10) Agenda item 6:

Question of surplus countries

Although no detailed discussion on this item took place, it was pointed out by Mr. Becker-Boost(who had returned from attending the meeting of the International Superphosphate and Compound Fertiliser Manufacturers Association(IEMA) in France) that the consensus in the IEMA meeting was that the supply/demand position is about in balance in the world and that the prices of fertilisers have improved in the world market.

The question of surplus countries was therefore not particularly important at this time, and could be taken up at a later meeting.

11) Agenda item 7:
Next meeting

It was agreed that, unless the reaction of some of the 11 countries to which letters were sent becomes available and the financing source for one or two missions crystallizes, there may not be the necessity to have another meeting immediately. However, it was pointed out that a fertilizer marketing meeting is being held in White Springs, Virginia, USA, 13-14 June 1972 and that many important producers are planning to attend. It will be useful to hold a restricted meeting of the Ad-hoc Working Group in IBRD to appraise the producers' organizations of the work of this Working Group. It was also stated that this meeting in June is mainly to keep the representatives of producers informed of the work of the Group. It was therefore decided, that the World Bank will request Fertilizer Industry Advisory Committee(FIAC), NITREX, International Potash Institute(IPI), International Superphosphate and Compound Fertiliser Manufacturers Association (ISMA), Tennessee Valley Authority(TVA) and the Sulphur Institute in Washington as well as Mr. A. Bruce Harland of UNDP, New York, to attend a meeting in IBRD in Washington, D.C., on 15 and 16 June 1972. It was made clear that every effort will be made by the World Bank to point out the importance of the proposed pre-investment missions to UNDP and that the presence of Mr. Harland at this meeting is considered important.(It was reported that Mr. Harland will be on vacation in July and August.) The members of the Working Group from UNIDO and FAO will endeavour to participate at the proposed Washington meeting.

The Group felt that the question of financing the missions is not so important at this juncture. Further, feelers will be made to the producers' representatives whether they can contribute experts to any of these proposed missions. At a later stage the question of supply of fertilizers, other inputs and seeding programmes will also be raised. After it is known that an interest for missions on the part of some of the 11 countries already contacted exists, the financing of 1 or 2 missions can be arranged. Another meeting of the Ad-hoc Working Group will be convened to finalise the terms of reference, the briefing material, the required format of the reports, etc., in due course.

APPENDIX I

AGENDA

Fourth Meeting of the Ad-hoc Working Group

UNIDO/FAO/World Bank on Financing of Fertiliser Projects

(UNIDO - Vienna, 1 - 2 June 1972)

1. Review of the letters and Country data sheets sent out to 11 Country Resident Representatives. Discuss follow-up action needed.

2. Terms of reference for pre-investment missions - formats for formulating projects, production, marketing, financing.

3. Composition of pre-investment missions.

4. Financing of the missions.

5. Regional approach question.

6. Question of surplus countries.

7. Next meeting. (Continuance of the ad-hoc working group to watch over the progress of pre-investment missions and the results thereof.)

APPENDIX 2

UNITED NATIONS NATIONS UNIES

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION

[illegible] VIENNA, AUSTRIA
[illegible]
[illegible]

REFERENCE: 6063/11

Financing of Fertiliser Projects during the Second United Nations Development Decade

As you are perhaps aware, the Second Interregional Fertiliser Symposium was held in September/October 1971 in Kiev (USSR) and in New Delhi (India). UNIDO, FAO and the World Bank Group co-operated in this Symposium.

As a result of the extensive discussions and recommendations of this Symposium it became evident that although many developing countries were in urgent need of external finance to set up fertiliser projects, there were not enough projects suitable for consideration by international financing agencies. To discuss the problem and to take some positive joint action to aid the developing countries in this area, an ad-hoc working group of UNIDO/FAO/World Bank was organised and held its first meeting in UNIDO, Vienna, on 9-11 December 1971. The second meeting was held in FAO, Rome, on 21-23 February 1972 and the third meeting again in UNIDO on 20-21 April 1972.

These meetings of the working group identified a number of countries where in the next eight years nitrogen (N) and/or phosphate (P_2O_5) fertiliser plants of various sizes could be established. The extensive discussions in these meetings took into account the present consumption of N and P_2O_5 in these countries (1970/71), made projections for demand up till 1980, reviewed the installed capacities and worked out the additional capacity needed by 1980. In addition to direct fertiliser plant investments, the need for developing the infra-structure, organising distribution, marketing and credit problems as well as policies of respective governments to increase crop production by use of fertilisers, would have to be taken into account.

UNITED NATIONS NATIONS UNIES

The ad-hoc working group has found that the country in which you are the Resident Representative is one in which assistance in developing fertiliser projects would be desirable. Any expansion of existing facilities where appropriate, improving their performance, investment in marketing facilities or other fertiliser activities could also be considered for assistance. You are requested by this letter to ascertain from the appropriate Government authorities whether they will be willing to request such assistance.

If the Government is interested and official requests are received, UNIDO and FAO will be prepared to undertake feasibility/pre-investment missions lasting 4-6 weeks. This will be done after collecting all the existing data and reports and making desk studies. Such work may lead to projects suitable for appraisal by the World Bank Group, regional development banks or private investors and other sources.

It is hoped that the financing of such missions can be arranged through appropriate UNDP resources. The estimated cost of such missions is from US-$15,000 to 30,000, depending on the length and composition of the missions. As regards the timing of these missions, the ad-hoc working group felt that these should be undertaken in the next six months jointly by UNIDO and FAO on an urgent basis.

A copy of this letter is being forwarded to UNDP, New York.

We shall be grateful to receive your early comments and the reaction of the Government to the above proposals by letter and the initial response by cable. This will enable the working group of UNIDO/FAO/World Bank to proceed further in the matter in their next meeting scheduled for end of June 1972.

Yours sincerely,

S. Quijano-Caballero
Director
Technical Co-operation Division
UNIDO, Vienna

J.P. Wright
Assistant Director General
Development Department
FAO, Rome

..... Attachment: Country Data Sheet

APPENDIX 3

List of six countries to which letters have to be written

(after notification from the first 11 countries is received)

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]
6. Egypt, Arab Rep. of

TS 6063/11

1 June 1972

APPENDIX 4

GUIDE LINES

PRE-INVESTMENT MISSION REPORTS

I. Fertilizer Production Report

1. Products to be made (a. for internal use, b. for export)

2. Capacity of plants

3. Raw materials to be used

4. Processes to be adopted

5. Capital costs (working capital included)

6. Production costs

7. Man power requirements

8. Existing fabrication facilities especially industrial spare parts, for civil construction, etc.

9. Location

10. Time schedule for setting up the production part of the project

II. Export in Use and Marketing

1. Development of fertiliser consumption

2. Estimated supply and demand, 1980
(including seeding programme)

3. Agronomic aspects of fertiliser use development

4. Obstacles for higher fertiliser consumption
Distribution (Government
Co-operatives
Private

5. Factors affecting fertiliser use development
policies activity
Credit
Ware housing
Transport

6. Possibility for export for fertilisers

7. Farm
value/cost relationship
credit and marketing systems

III. Economist - Financial Expert

1. Government policy
- Planning objectives with regard to agricultural production
- Economic incentives
- Price policies
- Support programmes
- Subsidies
- Taxes, etc.

2. Financing
Funds for investment (60% debt, 40% equity)
National interest rate (average 9%)
Debt: 4 years grace + 11 years of repayment
Funds for financing distribution and farmers credit
collective prospects

III. Economist - Financial Expert

2. Financing (cont'd)

Funds for seeding programmes

Foreign exchange, local cost

Financial projections, liquidity, debt service (including working capital)

Cash flow

Internal rates of return and economics based on consistent international price assumptions

3. Effect on economy

- National income
- Export earnings
- Import savings
- Direct and indirect benefits

4. Economic feasibility

(1) Missions to keep open options for better solutions if any (better than existing studies or projects)

(2) Leader of missions to study overall management, ownership, organization, overall time schedule and follow-up actions.

APPENDIX 5

LIST OF WEST AFRICAN COUNTRIES

Group I

Central African Republic
Cameroon*
Chad
Congo (People's Republic of)
Dahomey
Gabon*
Ivory Coast*
Niger
Togo*
Upper Volta
Zaire

Group II

Ghana
Nigeria
Sierra Leone

Group III

Mali
Mauritania
Senegal

y/ Slightly amended letter to be written as given in Appendix 6.

ANNEX 6

UNITED NATIONS NATIONS UNIES

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

LERCHENFELDER STRASSE 1, A-1070 VIENNA, AUSTRIA
P.O. BOX 707, A-1011
TELEPHONE: 46 606 TELEGRAPHIC ADDRESS: UNIDO TELEX: 7500

REFERENCE: TS 6063/11

Financing of Fertilizer Projects during the Second United Nations Development Decade

As you are perhaps aware, the Second Interregional Fertilizer Symposium was held in September/October 1971 in Kiev (USSR) and in New Delhi (India). UNIDO, FAO and the World Bank Group co-operated in this Symposium.

As a result of the extensive discussions and recommendations of this Symposium it became evident that although many developing countries were in urgent need of external finance to set up fertilizer projects, there were not enough projects suitable for consideration by international financing agencies. To discuss the problem and to take some positive joint action to aid the developing countries in this area, an ad-hoc working group of UNIDO/FAO/World Bank was organized and held its first meeting in UNIDO, Vienna, on 9-11 December 1971. The second meeting was held in FAO, Rome, on 21-23 February 1972 and the third meeting again in UNIDO on 20-21 April 1972.

These meetings of the working group identified a number of countries where in the next eight years nitrogen (N) and/or phosphate (P_2O_5) fertilizer plants of various sizes could be established. The extensive discussions in these meetings took into account the present consumption of N and P_2O_5 in these countries (1970/71), made projections for demand up till 1980, reviewed the installed capacities and worked out the additional capacity needed by 1980. In addition to direct fertiliser plant investments, the need for developing the infra-structure, organizing distribution, marketing and credit problems as well as policies of respective governments to increase crop production by use of fertilizers, would have to be taken into account.

UNITED NATIONS NATIONS UNIES

The ad-hoc working group has found that the country in which you are the Resident Representative is one in which assistance in developing fertilizer projects would be desirable. Any expansion of existing facilities where appropriate, improving their performance, investment in marketing facilities or other fertilizer activities could also be considered for assistance. You are requested by this letter to ascertain from the appropriate Government authorities whether they will be willing to request such assistance.

If the Government is interested and official requests are received, UNIDO and FAO will be prepared to undertake feasibility/pre-investment missions lasting 4-6 weeks. This will be done after collecting all the existing data and reports and making desk studies. Such work may lead to projects suitable for appraisal by the World Bank Group, regional development banks or private investors and other sources.

It is hoped that the financing of such missions can be arranged through appropriate UNDP resources. The estimated cost of such missions is from US-$15,000 to 30,000, depending on the length and composition of the missions. As regards the timing of these missions, the ad-hoc working group felt that these should be undertaken in the next six months jointly by UNIDO and FAO on an urgent basis.

A copy of this letter is being forwarded to UNDP, New York.

We shall be grateful to receive your early comments and the reaction of the Government to the above proposals by letter and the initial response by cable. This will enable the working group of UNIDO/FAO/World Bank to proceed further in the matter in their next meeting scheduled for end of June 1972.

Yours sincerely,

S. Quijano-Caballero
Director
Technical Co-operation Division
UNIDO, Vienna

J.F. Yriart
Assistant Director General
Development Department
FAO, Rome

P.S. In view of the desirability and need for regional co-operation we have sent identical letters to Nigeria, Gabon, Cameroon, Ivory Coast and Togo.

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

1818 H Street, N.W. Washington, D. C. 20433, U.S.A.

Area Code 202 - Telephone - Exchange 36.60 - Cable Address - INTBAFRAD

V. Fifth Meeting July 7, 1972

TO: Participants

FROM: Erich H. Becker-Boost

SUBJECT: UNIDO-FAO-IBRD/IFC Fertilizer Working Group - Fifth Meeting, Held in Washington, June 15/16, 1972

REPORT

SUMMARY AND CONCLUSIONS

1. The Working Group discussed the financing of preinvestment missions with UNDP and worked out guidelines for mission reports, as well as for the selection of consultants.

2. The mission financing with UNDP funds (SPF) is considered possible if the required Government requests would be well founded. UNDP will now advise their Resident Representatives accordingly. The first missions, under the special supervision of the Working Group, could be launched probably in September.

3. West African joint projects might have to be handled soon due to the present activity of equipment suppliers whose objectives are not always in line with what might be optimal for these countries, and also initiated by Cameroon's request for Bank assistance.

4. Members of the Working Group and industry representatives acquainted each other and other IBRD staff members with the objectives of their organizations.

I. INTRODUCTION

5. As agreed during the Fourth Meeting which was held in Vienna on June 1 and 2, the Working Group met in Washington on June 15 and 16. The major objectives of the meeting were:

(a) to get the Working Group acquainted with other Bank departments and with UNDP and industry representatives, and

(b) to work out an outline for mission reports, as well as guidelines for the selection of consultants for the intended preinvestment missions.

Participants July 7, 1972

6. Please find attached, as also distributed to the participants at the meeting:

Annex 1 - Agenda

Annex 2 - List of Participants

Annex 3 - Cable from Mr. Abdel Rahman

Annex 4 - Additional Demand for N and P_2O_5 Fertilizers in 1980

Annex 5 - Updated 1980 Demand Forecast for N Fertilizers

Annex 6 - Outline of Mission Reports

Annex 7 - Qualifications Required for Mission Members

7. The Working Group regretted that Messrs. B. Dittmann, M. C. Verghese, and W. Hauck were unable to attend according to Mr. Abdel Rahman's cable which is attached as Annex 3.

8. The meeting brought together for the first time World Bank Group staff, representatives of other international agencies (UNDP, UNIDO, FAO) and of other organizations and industry (TVA, ISMA, Sulphur Institute, and Cardinier).

9. Seven departments of IBRD were represented. Other industrial representatives who had been invited, such as MINEX and the Potash Institute, regrettedly were unable to attend (see minutes of June 1-2 meetings, page 5).

10. At a luncheon hosted by Mr. William S. Gaud, Executive Vice President of IFC, Mr. Gaud emphasized IFC's role as a catalyst to bring together interested foreign investors with local groups and hoped that IFC would be able in this way to contribute to the implementation of fertilizer plants, and the objectives of this Working Group.

11. Since the last meeting's minutes were not unanimously accepted by the participants, it was decided, at this time, to clear this memorandum with Messrs. Buell, Couston, and El Darwish/Carmignani, representing the Working Group and Mr. Chavez. However, Mr. Chavez was already on leave. The minutes appear more elaborate since some recipients of this memorandum may not be acquainted with the role of the various organizations which are actively involved in the fertilizer sector.

12. Mr. Fuchs welcomed the participants, especially those from industry and outside organizations, and reminded us that this was probably

the first attempt in any industrial sector, UNIDO, the Bank and IFC aimed at identifying industrial projects. The idea for such cooperation started here in Washington in December of 1971 at a meeting with Mr. Abdel Rahman. Mr. Fuchs admitted that the Bank Group could do more in the fertilizer sector, although having executed more than a dozen fertilizer projects with at least five more projects on hand, but he also said that such a statement probably holds true for every sector.

II. PRESENTATIONS OF OBJECTIVES OF ORGANIZATIONS REPRESENTED AT THIS MEETING

13. Mr. El Derwish mentioned that the Bank was currently involved in two lines of activities:

(1) country sector work, and

(2) cross-country industry branch review.

14. The World Bank Group's activity and its methods of approach and appraisal techniques were then outlined by Mr. Carmignani who referred to Mr. McNamara's speech on the objectives of industrialization. Mr. Carmignani emphasized the trade aspects, the importance of economic return to a country compared to financial profitability, and the effect of untying aid which would enable increased trade in the fertilizer sector between LDCs.

15. During a discussion of Mr. Carmignani's talk, the cooperation between regional organizations and bilateral lenders, was stated to need strengthening. It was also stated that supplier credits often are contradictory to the wishes of the fertilizer exporters in the donor or guarantor countries, but there seems to be no way to prevent such an ambiguity in aid policy.

16. Mr. Raymond Fuell sketched the organization of UNIDO (about 1,000 people working in four substantive divisions) and he said that UNIDO has about a $35 million budget per annum, including contributions from UNDP, and additional finance is available in certain cases, such as Special Industrial Service (SIS) funds. However, Mr. Chavez remarked that SIS funds were meant for emergency cases only which must be approved on a project by project basis, and are restricted to $50,000 per project, or 6 man-months. The Fertilizers, Pesticides, and Petrochemical Industries Section, for which about seven professionals are now employed, is headed by M. C. Verghese, who together with Mr. Fuell, arranged the two Interregional Fertilizer Symposiums, the first one being held in 1968 in Kiev and the second one in September-October 1971 in Kiev and New Delhi. On the latter occasion, the need for cooperation between UNIDO, FAO and the Bank Group and other multilateral lenders became obvious. Missions have to be manned with outside consultants.

17. UNIDO has published, among others, a Fertilizer Industry Manual for LDCs; very recently a book on Economic Project Appraisals; and up to now, six booklets of the "Fertilizer Industry Series," covering specific geographical areas, and production procedures; UNIDO has also published a report by a working group in 1968 on factors inhibiting the growth of the fertilizer industry in LDCs. After all of this work, the question has been asked as to whether and how the conclusions and recommendations and booklets have been followed up, or how their execution can be fostered. Probably none of the projects in the fertilizer sector so far handled by UNIDO have lead to a "bankable" project.

18. UNIDO has also assisted Togo since 1971 in setting up a demonstration plant for TSP manufacture but Mr. Ewell said that Togo subsequently has withdrawn from the project of establishing a large plant. (Recently, Spectra is said to have signed a contract with Togo on a large scale TSP plant, this information, however, has not been confirmed.)

18. Mr. Couston (FAO) continued the meeting by explaining FAO's activities with regard to fertilizers. He presented its work in two parts:

(a) The Regular Programme, and

(b) The Field Activities.

19. Under the Regular Programme FAO produces various publications, for example, the "Efficient Use of Fertilizers" and most recently "Effects of Intensive Fertilizer Use on the Human Environment." Some are yearly, such as the Annual Fertilizer Review of Statistics on World Production, Consumption, Trade and Prices. Thanks to the cooperation of TVA in making their facilities available, the 1970 edition of the Review was processed by computer. This along with the assistance of the FAO/FIAC Ad Hoc Working Party on Fertilizer Statistics, which reviews the figures provided to FAO by governments, has made it possible to release the Review earlier than in the past.

20. He said that FAO's fertilizer work in the field was also begun in the 1950's first with the assistance of UNDP and subsequently of the fertilizer industry, donor governments and non-governmental organizations who support the Fertilizer Programme under the FFHC. The FFHC was launched in 1960 with the view of mobilizing other than government funds for agricultural development projects.

21. UNDP assistance consists of either providing a TA expert to advise a government on fertilizer use problems or a team of experts to carry out a project over a number of years. These projects in the field of fertilizers are generally concerned with experimentation and building-up

the research facilities and capacities of the country. Such projects also include fellowships for the training of nationals in the various disciplines involved in the project so that they may take it over after FAO assistance is terminated. Mr. Couston mentioned the Agricultural Research Institute in Iran and the joint UNIDO/FAO Fertilizer Project in Pakistan, as examples.

22. In the FIAC Fertilizer Programme, begun in 1960 with the industry support, the emphasis is on fertilizer demonstrations in farmers fields, training of extension staff, pilot schemes on fertilizer distribution and credit and assistance in infrastructure and administrative development for the efficient and timely handling of fertilizers. Mr. Couston said that there is little use demonstrating the use of fertilizers to farmers if they cannot get them and the pilot schemes based on a quantity of gift fertilizers over three years are designed to make fertilizers available on time in the farmers' villages. The money from the sale of the fertilizers is used to build-up a revolving fund for serving the same groups of farmers in following seasons and the experience gained for improving the national distribution and credit system. In that fertilizer use by farmers depends on whether or not it pays, the economics of fertilizer use, including policy aspects, are included in all fertilizer projects.

23. Over the years FAO has assisted more than 50 countries in fertilizer use development and at present projects are operational in about 25, with a number more on the waiting list. Work has not begun in these countries because of the limitation of resources. As of January 1971, the value of UNDP-supported projects, including recipient government counterpart funds amounted to $2.03 million, and those under the Fertilizer Programme to $1.75 million only, taking into account donor contributions.

24. The Fertilizer Programme was first supported exclusively by the fertilizer industry through FIAC (Fertilizer Industry Advisory Committee) representing about 80% of the western world fertilizer companies, which has a Liaison Officer, Dr. A. Kattge, in FAO. Owing to the success of the Programme, donor governments have been contributing directly to it since the second year and now account for about two-thirds of its resources.

25. FIAC has four subsidiary groups. Their members are representatives of the donors to the Fertilizer Programme and FAO staff. These are the ad hoc Working Party on Fertilizer Statistics already mentioned, a Technical Sub-Committee to advise on technical matters and an ad hoc Working Party on Fertilizer Marketing and Credit, which is engaged in case studies on marketing in a number of countries to obtain information for a general guide on the subject, particularly for use in developing countries. The other group is the ad hoc Working Party on the Economics of Fertilizer Use, which amongst other things, is charged with making economic appraisals of

fertilizer use in countries requesting to take part in, or already phased-out of the Fertilizer Programme, with the purpose of determining how to best use FAO's limited resources and to ensure proper follow-up on those already spent. Mr. Couston is the Chairman of this Working Party.

26. In the discussion, Mr. Darnell explained in some detail the Bank's function as related to FAO's work and to the agricultural sector; answering frequent questions, he emphasized that IBRD in principle can only finance, and has only financed, fertilizer supplies to LDC if the fertilizer could be considered a production expenditure in connection with projects (for instance, the fertilizers needed for seeding programs) or when it is needed as an agricultural input. In one case, the seeding operation for building up an agricultural bank has been financed by World Bank funds.

27. Mr. Becker-Boost concluded the morning meeting with a talk on:

(a) the fertilizer investment activity as forecasted up to 1980, and

(b) the objectives of the Working Group.

28. The investment in fertilizer plants is based on the difference between the forecasted 1980 consumption, and the 1972 estimated installed capacity, see Annexes 4 and 5.

29. This gap between 1980 demand and 1972 local capacity could be filled by either increased imports or additional production capability, or both. The optimum solution would have to be found by detailed analysis on a country by country basis, considering the financial and economic return on investment, the raw material situation, trade aspects, including regional cooperation and other issues.

30. In LDCs, including Socialist Asia, about 10 new fertilizer plants or expansions per year would be needed by the Working Group. To encourage fertilizer projects (in a broad sense), the Working Group has listed about 25 developing nations which already have, or are forecasted to have, a consumption/production gap which is large enough to support at least a satellite plant, or full size production plants, for N and P_2O_5 fertilizers.

31. Countries in which the Bank Group already have fertilizer projects, or have close relationships with the fertilizer industry or government departments concerned, such as India, Indonesia and Turkey, or have initiated studies (Thailand), and countries in which UNIDO and FAO are deeply involved, have not been included in the list of countries which follows. The Working Group also has initiated to send out further letters to four African countries to prepare the grounds for possible regional West African projects (Togo, Cameroon, Gabon and Ivory Coast).

32. These countries to which letters to the UNDP Resident Representatives have been sent are the following:

Country	Basic Plants N	Basic Plants P_2O_5	Satellite Plants N	Satellite Plants P_2O_5
Argentina	x	x		
Brazil	x	x		
Colombia	x	x		
Cuba	x	x		
Philippines	x	x		
Sudan	x			
Kenya		x	x	
Nigeria	x1/			x
Burma	x1/			x
Malaysia			x	x
Syria	x1/			x

1/ if exports would be possible

33. Mr. Becker-Boost allayed the industrialists' fears about "massive" investment plans for LDCs, by showing that all LDCs, including Socialist Asia, even with the lowest 1980 consumption figures, would still be needing more than $1,000 million per year value of finished fertilizer ($N + P_2O_5 + K_2O$) imports which compares to about $850 million in 1969-70. Direct plant investment in all LDCs would require an additional $500 million per year and would take a great portion of the net flow of financial resources to developing countries. Investment for other sectors such as utilities, transport, agriculture (seed, marketing, pesticides, irrigation) would require additional funds of at least the same order of magnitude (may be up to twice as much). Therefore, recurring and investment capital by 1980 for the direct and indirect fertilizer sectors would be about $3 billion per annum.

34. This again indicates the need for careful preinvestment studies, and it also hints at the necessity for private industries' involvement, in addition to government and multilateral and bilateral sources of finance. At this meeting, therefore, representatives of the fertilizer industries were invited to acquaint themselves further with the tasks of this group. Mr. Becker-Boost's February talk on N fertilizers to NITREX members regrettably showed no substantial positive reaction so far, but at IFIA's May 1972 Conference, his speech on the phosphatic industry at least brought some of this meeting's guests to this "forum."

35. As to the timing of such a program: if during 1972 missions, under the UNIDO-FAO flag, could complete some of the preinvestment studies, the implementation period might be spread out from 1974 to 1979. Satellite plants would probably not be operational before 1975 and full fledged units not before 1978, which again stresses the need for at least 10-year forecasts.

36. Mr. Field gave a detailed analysis of the consumption forecast as used by the Working Group (Annex 4). For the countries now selected, he gave the forecasted N fertilizer consumption (Annex 5) which are the revised figures as compared to Annex 4.

37. Mr. Coleman, President of the Sulphur Institute which is the trade association of the World sulphur producers, including LDCs, many of which being large fertilizer producers as well, said that he welcomed the invitation to come to this meeting -- the first such invitation after 24 years of his stay in Washington. However, he expressed the industrialists' concern that governments in LDCs would be much more interested in building plants rather than in developing the markets which he felt would be more important. Industrialists could only be attracted if sufficient marketing facilities and organizations were available.

38. A heated discussion followed about the reason for faults and failures experienced by some private industries in LDCs with a special emphasis on oil companies. Mr. Coleman said that if this source of finance (the oil companies) would not be available, it would be difficult to be replaced.

39. Mr. Windridge, representing ISMA, confirmed basically the interest of the industry to participate in discussions of future demand and supply patterns, and he suggested that the Bank should sponsor a Working Group for demand forecasting to which ISMA could probably contribute their considerable resources of information. Mr. Windridge said that the establishment of the Working Group would, by himself and by major members of ISMA, be considered an excellent undertaking. He said that ISMA does already have consultative status with various U.N. organizations, and consultative status with UNIDO has been applied for. Explaining the various means of operating for ISMA (technical meetings and annual conferences) their future objective might focus on establishing regional committees, which would then have even better grounds for cooperation with our group. Much of ISMA's work is being done within the so-called "Raw material Committee" which includes ammonia, potash, rock phosphate, sulphur and maritime transport subcommittees, and we could probably consider a continuous interchange of information.

40. In this discussion, Mr. Windridge, however, said that ISMA, being a non-commercial organization could not pass on to their members any direct proposals about projects in which we might need assistence in management, or technical or marketing experience, or would suggest direct investment; however, ISMA's General Secretariat would have means to make such project ideas known to their members. The general actual climate, he believes, for cooperation possibilities in new ventures is poor.

41. Mr. McCune, representing TVA, confirmed this opinion and continued with some explanations of TVA's role in LDCs' fertilizer industry. He

said that the about 1,000 people, including 200 professionals employed by TVA would continue to be prepared to make projects and similar studies as long as they are not in competition with U.S. consulting firms. He also stressed the point that assessment of marketing costs and investment needed for infrastructure, should be given high priority. With this respect TVA also works with FAO.

42. Mr. McCune mentioned again new technologies, primarily developed for LDCs, and more specifically the use of urea-containing solutions as an intermediate for finished fertilizer production such as it is tried in Argentina. This includes a granulator instead of a prilling tower.

43. A model on fertilizer supply optimization to the East African Community (Kenya, Uganda, Tanzania) has been explained by Mr. [illegible]. He stressed the fact that such a model is suitable as a preliminary analysis tool but that its value of course is dependent on the quality of inputs of which many are needed. The basic figures in the model included are valid, he believes up to 1974, and a new model would be needed every three-four years. Therefore, such a computer model probably would not be sufficient for project analysis which requires much longer forecasts. In addition, the political issue in East Africa is obviously a very complicated one regarding the future cooperation among the three states. Mr. Stoutjesdijk also mentioned that they have used a fixed input model because a stochastic model would be very complicated. It is worthwhile to consider the introduction of probability analysis into such a model. The model would not allow one to calculate the projection of urea because CO_2 sources obviously are not available under realistic technical assumptions.

44. Mr. Jean Paul Gardinier then presented the idea of a West African fertilizer industry based on his personal experience in these countries. The project includes the so-called franco-phone Group of West African countries plus Ghana and Nigeria. There are several alternatives, for instance industrial countries could continue to supply fertilizer to West Africa which area has a consumption of about 100,000-250,000 tons per annum of nutrients ($N + P_2O_5 + K_2O$) which is used in a number of fertilizer types. The cyclical nature of the fertilizer industry creates price fluctuations which makes forecasting of the benefit derived from continued imports into these countries very difficult. There is also the problem of credits given by equipment suppliers for implementing plants in these countries in which a sufficient fertilizer market may not exist for an economic production.

45. Therefore, he proposes a plan of an integrated fertilizer industry with the plants located in different countries, depending on the raw material availability and the size of the markets. Each country would have a share of the total production facilities.

46. One example would be to install a phos acid plant in Togo, an ammonia plant in Nigeria or Gabon, and potash would be supplied from the Congo's existing plant. Finished fertilizer plants would be implemented in the Ivory Coast and Cameroon, and granulation units would be justified probably in Niger, Upper Volta, Chad and Central Africa, etc., with capacities of 10,000-30,000 tons per year of merchandise, or installing a number of smaller bulk blending plants could be considered. The development of marketing, storage and transport facilities would be an integrated part of such a project, as well as the promotion of consumption.

47. The climate among West African governments, Mr. Gendrier believes, is good enough to use the fertilizer industry as a vehicle for later close cooperation aiming at a West African common market. From this point of view, it is a good time to act and European countries, in addition, are interested in investing in Africa, he said.

48. When discussing this idea, which has been presented to the Working Group at an earlier meeting in Vienna, Mr. Chevinet consolidated his thoughts about the various aspects of such a regional project. He stressed the political problems as against the economic issues, for example, the problem of having big countries like Nigeria and Zaire on the one hand, and smaller consumer countries like Chad on the other side. He felt, and was supported by Mr. Fuchs, that a desk study should and could be prepared as a general overview regarding the West African situation, since sufficient data seemed to be available within IMF, FAO, and UNIDO, without having to go to all of these countries. He suggested, and the conclusion was reached, that the Working Group, with experts from TVA and FIAC and others, should undertake the study particularly since its financing would not be secured if outside organizations would have to be involved.

49. Mr. Chaves raised the question of whether West African governments had approved or supported such an idea. The answer was that at least Cameroon has approached the Bank, and that Gabon has approached IFC. Mr. El Derwish, from other experiences, said that any regional approach is a very time consuming affair and he wonders whether West Africa would be the best area to start in. As an alternative, he believes the Andean and Central American countries who consume more fertilizer, might be a better place to begin. However, the reason of selecting West Africa is a tiring problem: if we don't develop alternative plans for this area, then some countries supported by suppliers' credits might go ahead with either too small plants (Ivory Coast) or with plants without adequate raw material supply (Cameroon), and this would not be a reversible decision.

50. Finally, Mr. Couston explained the Industry Cooperative Programme and FIAC. He said that FIAC is an FAO-Committee and its members are appointed by FAO's Director-General. The Industry Cooperative Programme as opposed to this, is another group outside FAO, which pay for a Secretariat within FAO, and their purpose is to make FAO activities, particularly with

Participants July 7, 1972

regard to fund industries, known to the Group's members. The Fertilizer Industry has been going since 1964, the date of the first meeting of the Industry Group. Undoubtedly the FAO Fertilizer Programme has been a great success in developing markets. Means of increasing contributions to it by donor countries and others, Mr. Winkelmann indicated that within the next twelve months the programme will change its name and scope. It was Mr. Winkelmann's contention that, although the fertilizer companies did not wish to increase amounts of fertilizers by supporting the fertilizer programme, they still contribute to it although the reduction in export quantities went to other countries and countries from those considering the Programme. When questioned by Mr. Cousins, Mr. Winkelmann could give no reason why those contributing did not benefit as much as they thought they should.

51. Other discussants again mentioned the issue of comparing the economic benefits from imports versus local production. Another question was who takes the initiative of using the $1.7 million funds: the answer is FAO must receive requests from countries and they do have a waiting list, and whether FAO influences the governments requests or vice-versa, is a chicken and egg problem. However, the different regional fertilizer meetings and the regional offices of the Industry no doubt influenced governments in this respect.

III. FINDINGS OF MISSION

52. The Working Group (without outsiders) then discussed with Mr. Chaves the finalizing of the proposed missions. Initially he felt that we need "orientation" when selecting countries. Since UNDP had been advised belatedly about the sending out of letters to their resident representatives, they could not give them in time the background of our work, and Mr. Chaves intended to write letters to their resident representatives possibly before the end of June, giving such guidance. FAO, however, had sent information letters to UNDP (Mr. Heinemann), and also Mr. Nehemiah (FAO Coordination Officer) had been informed of such an intention. Mr. Couston also said that informative letters had been already sent in May to FAO's and UNDP's resident advisers, where applicable. UNDP would like to be convinced that the missions will carry out the objective of selecting "bankable projects" and if this were to be answered positively, Mr. Chaves would not foresee serious problems to raise the required funds. First the Governments must request assistance through Resident Representatives and missions must be approved by UNDP, based on concrete proposals, before any financing could be considered.

53. Governments would need to send the request in the form of a project document, including the justification, and they would be liable for providing their counterpart contribution. This all may take "a number of weeks" and although Mr. Chaves would think that by mid-July such a procedure could be completed, the Working Group does not believe (also considering the vacation season) that any action could be taken before August or September, which still would be a reasonable timing.

Participants **July 7, 1972**

54. Resources for such missions would be the IPF (Indicative Planning Funds). This special activity must be financed from unprogrammed funds. Some of the countries to which letters have been sent have already approved country program papers in January and June 1972 (Kenya, Malaysia, Philippines, Argentina, Colombia and Cuba). Approval for the other countries (Nigeria, Sudan, Burma, Syria and Brazil) is due in January 1973, or thereafter.

55. Mr. Chavez agreed with the Working Group that Syria, Sudan and Burma might not be a good choice to start with. Being asked whether UNDP could provide the Working Group with names of some countries which in UNDP's view would be promising examples, he offered to check into this question.

IV. GUIDELINES FOR MISSION REPORTS AND QUALIFICATIONS REQUIRED FOR EXPERTS

56. On June 16, Messrs. Cousten, Fuchs (part time), Becker-Boost, Carmignani and Darnell discussed the guidelines for mission reports which are attached as Annex 6. Based on the report on the last meeting in Vienna, we have also redrafted the qualifications required for members of the preinvestment missions as attached in Annex 7.

Attachments (7)

EBB:sg

Cleared with and cc: Mr. Fuchs
Mr. El Darwish
Mr. Carmignani
Prof. Darnell (UNIDO)
Mr. Cousten (FAO)

cc: Mr. Chavez (UNDP)
Mr. Verghese(UNIDO)
Mr. Dittmann(UNIDO)
Mr. Windridge (IAEA)

ANNEX 1
Page 1

UNIDO-FAO-IBRD/IFC WORKING GROUP MEETING

JUNE 15-16, 1972 IN WASHINGTON

SCHEDULE

Date: June 15

Morning Session: Room A-1030

Time	
10:00-10:10	H. Fuchs (Director, IBRD Industrial Projects Department): Opening Address
10:10-10:25	S. El Darwish/R. Carnignani: (a) Sector Studies (b) The World Bank Group's Role in the Fertilizer Industry
10:25-10:40	R. Ewell (UNIDO Representative): UNIDO's Role in the Fertilizer Sector
10:40-10:55	J. Couston (FAO): FAO's Activity Related to the Fertilizer Industry and Economics of Fertilizer Use. The Role of FIAC.
10:55-11:15	- Discussion and coffee break -
11:15-11:35	E. Becker-Boost: Objectives of the Working Group: Investment Activity Forecasted up to 1980
11:35-11:45	R. Ewell: Updated Demand Forecasts and Methods Used
11:45-12:30	- Open Discussion -
12:45-14:15	Luncheon (11 people) hosted by Mr. William S. Gaud, Executive Vice President of IFC (Executive Dining Room E)

Date: June 15 (continued)

Afternoon Session: Room A-1030

Time	
14:30-14:45	L.C. Windridge (ISMA): The Role of ISMA Members in LDC
14:45-15:00	Representatives of TVA, Sulphur Institute, and Potash Institute
15:00-15:15	E. Stoutjesdijk: A Model for Fertilizer Supply to East Africa
15:15-15:35	Coffee break and discussion about how to attract private industry for fertilizer investment in LDC
15:35-15:50	J.P. Gardinier: A Special Case: Proposal for a West African Cooperative Fertilizer Industry
15:50-16:30	Open Discussion (conclusion): Suggestions for Cooperation of Working Group with Private Industry in the Fertilizer Sector

Date: June 16

Morning Session: C-510

Time	
10:00	Working Group Meeting on:
	(1) Terms of Reference for intended missions
11:00	- Coffee break
	(2) Financing of Missions
	(3) Issues Left from Last Meeting, and
	(4) Supplementing Country List, and Justification
12:30	Luncheon (9 people) hosted by Mr. Hans Fuchs (Executive Dining Room G)

Afternoon Session: C910

ANNEX 2

PARTICIPANTS (TENTATIVE) FOR FERTILIZER WORKING GROUP MEETING - JUNE 15/16

Organization	Name	Thursday	Friday	Department
IBRD/IFC	B. Chadenet	(p.m. only)		Projects
	Hans Fuchs	x	x	Industrial Projects
	E. Franco-Holguin	x	x	Development Services
	Sani El Darwish	x	x	Industrial Projects
	Roger Carmignani	x	x	Industrial Projects
	George Darnell	x	x	Agriculture Projects
	E. Stoutjeskijk	x		Development Research Center
	F. Aguch (on behalf of Rainer Stockhan)	x		West Africa
	J. Hansen	x		Economics
	B. Varon	x		Economics
	L.P. Chatenay	x		Development Services
Working Group	Raymond Ewell	x	x	Representing UNIDO
	John Cousten	x	x	FAO
	E. Booker-Boost	x	x	IFC
Industry and Others	Kenneth Windridge	x		ISMA, London
	Don McCune	x		TVA, Muscle Shoals
	Jean Paul Gardinier	x		Entablies.Gardinier,Paris
	Russell Coleman	x		Sulphur Institute, Washington
	Arturo Chavez	x		UNDP - Technical Advisory Services Division, Industry Section

C
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ANNEX 3

INCOMING CABLE

DATE AND TIME OF CABLE: JUNE 12, 1972 0950

LOG NO. : 185 TELEX/13

TO : INTRAFRAD

FROM : VIENNA VIA U.N. NEW YORK

TEXT : MISC 8982 FUCHS

REUR TWO CABLES

AAA UNFORTUNATELY DUE TO FINANCIAL RESTRICTIONS SHORT NOTICE AND OTHER COMMITMENTS VERGHESE CANNOT ATTEND MEETING 15 JUNE

BBB UNIDO APPRECIATES YOUR INTEREST ITS FORMAL PRESENCE IN THE MEETING

CCC FOR THAT PURPOSE WILL REQUEST EMIL TO ATTEND MEETING ON OUR BEHALF AND WILL CONTACT HIM DIRECTLY

DDD WILL SEND IMMEDIATELY CABLE INVITING HARLAND AS PROPOSED

REGARDS

ABDELRAHMAN UNIDO VIENNA

ANNEX 4
Page 1

ASIA

(22 countries)

Large & Medium Consumption - N

('000 mt)

	Region/Country	(1) Cons. 70/71	(2) Demand 1980	(3) Product. 70/71	(4) Installed Capacity (1 Jan./72)	(5) Additional capacity needed 1980 (2) - (4)	(6) Remarks No. of projects
	ASIA						
					LARGE (*)		
	China (T)	154	300	157	350	(-50)	No add. plant, surplus 40 N
	China (PR)	2,987	5,400	1,200	?	3,500 ?	
	Ceylon	58	120	0	0	120	1 plant (160)
	India	1,460	3,600	832	3,138	462	3 x 160 or 200
	Indonesia	183	? 500	45	350	150	1 large unit
	Iran	58	200	28	300	(-100)	surplus 80 N
	N. Korea	205	400	205	?	150 ?	
	S. Korea	356	500	386	430	70	no action
x	Malaysia	60	125	26	40	85	Satellite? Action
	Pakistan (old)	352	900	177	530	370	2 large plants
x	Philippines	119	(2507)	48	110	140	1 large unit. Action
x	Thailand	63	200	10	30	170	1 large unit. Action
x	Turkey	243	600	? 82	240 ?	360	2 large units. Action ?
	N. Vietnam	38	200	-	?	?	
	S. Vietnam	70	200 ?	-	-	200	1 large unit. Taiwan assistance ?
					MEDIUM (**)		
	Afghanistan	16	40	0	25	15	
x	Burma	15	80 ?	15	150	(-70)	Export ? FAO Action
x	Cyprus	15	30	0	0	30	Irrigation Action (FAO) + Unido Action
x	Iraq	?19	50 (-80)	6	55	25/(-5)	FAO - marketing A
	Israel	32	60	27	65	(-5)	
	Lebanon	19	40	14	12	28	Based on liq. ammonia imports
	Syria	26	40 (-80)	0	40	0/40	Exist. small plant (Homs) project 130 N ?

(*) Large = over 100,000 tons N demand in 1980
(**) Medium = 20,000 to 100,000 tons N in 1980
x = Countries for which action has been suggested.

ANNEX I
Page 5

AFRICA

Country	(1) Cons. 70/71 Act.	(2) Demand 1980 Forec.	(3) Prod. 70/71 Actual	(4) Capacity 1972 Estim.	(5) Difference
		LARGE			
Algeria	53	100	18	100	0
Egypt (1)	45	100	65	140	(-40)
Morocco	44	100	99	125	(-25)
S. Africa	272	500	324	350 ?	150
		MEDIUM			
Kenya	29	60	0	0	60
Nigeria	7	20	0	0	20
Tunisia	28	60 ?	197	200	(-140)
Rhodesia	30	50	30	30 ?	20 ?

LATIN AMERICA

		LARGE			
Argentina	39	80	1	0	80
Brazil	373	500	160	200	300
Central America (2)	46	125	2	15	110
Colombia	61	125	9	50	75
Cuba	92	250	0	0	250
Chile	102	223	14	45	180
Mexico	130	400	181	330	70
		MEDIUM			
Ecuador	10	25	3	3	22
Peru	13	50	6	30	20
Uruguay	31	50	7	7	43
Venezuela	16	50	11	40	10

(1) Consumption in fertilizer year, production in calendar year

(2) Costa Rica, Honduras, El Salvador, Nicaragua, Guatemala

[illegible]

Table : Countries and Regions with Large and Medium Forecast Demand in 1980 for (unprocessed) Phosphatic Fertilizers

Large : over 50,000 MTY of P_2O_5
Medium : 20,000 - 50,000 MTY of P_2O_5

All figures in '000 MTY of P_2O_5
Excluding exportable surplus of phosphoric acid (Algeria, Morocco, Mexico, Iran, Tunisia)

Country	(1) Cons. 70/71 Actual	(2) Demand 1980 Forec.	(3) Prod. 70/71 Actual	(4) Capacity 1972 Estim.	(5) Difference
			L A R G E		
China (T)	42	100	43	50	50
China (PR)	574	1,200	572	? 700	? 500
India	461	1,300	229	1,072	228
Indonesia	50	150	-	0	150
Iran	37	80	-	30	30
N. Korea	100	200	100	? 150	? 50
S. Korea	124	250	140	150	100
N. Vietnam (1)	63	100	63	100 ?	?
Pakistan (old)	60	300	4	100	200
Philippines	69	150	39	50 ?	100
Thailand	36	100	0	0	100
Turkey	176	400	63	250	150
			M E D I U M		
Burma	5	20	0	0	20
Israel	14	25	16	25	0
Lebanon (cal.year)	18	30	39	45 ?	(-15)
Malaysia	18	40	?	20 ?	20 ?
S. Vietnam	34	75	0	0 ?	75
Syria	12	25	0	0	25

(1) Calendar years

LATIN AMERICA

(13 countries)

Large & Medium Consumption - N

('000 mt)

	Region/Country	(1) Cons. 70/71	(2) Demand 1980	(3) Product. 70/71	(4) Installed capacity 1970	(5) Additional capacity needed 1980 (2) - (4)	(6) Remarks No. of Projects
	LATIN AMERICA						
				LARGE (*)			
x	Argentina	41	175	34	50	125	1 large unit. Action
x	Brazil (cal.yr)	276	600	20	150	450	2 large units. Action
x	Central America 1/	144	250	30	30	220	Action. 1 large unit
x	Colombia	64	200	58	100	100	1 large unit. Action
x	Cuba	159	500	5	160	340	2 large units. UNIDO export Action
	Mexico	438	850	397	570	280	1 large unit
	Peru	101	150	33	35	115	1 large unit
	Chile	42	125	124	?	?	$NaNO_3$-supply
				MEDIUM (**)			
	...minican Rep.	23	40	-	0	40	SATEL
x	Ecuador	19	50	2	2	48	Mixing plants exist.
x	Jamaica	15	25	0	0	25	Sat. plant
x	Panama	15	25	0	0	25	Sat. plant
x	Uruguay	13	20	0	0	20	Sat. plant
	Venezuela	28	60	10	235	(-175)	Export

1/ Central American Countries:

	(1)	(2)	(3)
Costa Rica	30	70	16
Honduras	15	30	
Guatemala	29	40	
Nicaragua	20	40	6
El Salvador	50	70	8
Total	144	250	30

ANNEX 4
Page 2

AFRICA

(11 countries)

Large & Medium Consumption - N

('000 mt)

	Region/Country	(1) Cons. 70/71	(2) Demand 1980	(3) Product. 70/71	(4) Installed Capacity 1970	(5) Additional capacity needed 1980 (2) - (4)	(6) Remarks No. of Projects
	AFRICA						
				L A R G E (*)			
	Algeria	40	120	20	550	(-430)	Export
x	Egypt	300	500	109	230	270	(Action. I large unit. (UNIDO gives assistance-
x	Morocco	38	100	11	11	89	Imported NH_3. Satellite plants. Action
	Rhodesia	67	130	43	75	55	Imported NH_3 from Iran (Satellite)
	S. Africa	181	400	200	400 ?	0	-900 tpd NH_3 plant under construction
x	Sudan	66	100	0	0	100	Action. UNIDO/FAO involved.
				M E D I U M (**)			
	Cameroon	12	20	0	?	?	Project under way?
x	Kenya	22	40	0	0	40	UNIDO team going + FAO Regional Action underway)
	Mauritius + Reunion	14	20 ?	0	25 ?	(- 5)	Exp. to Reunion (5 N cons) Mauritius under construction
	Tunisia	16	30	0 ?	0	30	FAO Action going on
	Zambia	12	30	3 ?	25	5	
	Nigeria	5	20	-	-	20	(Export plant?)

(*) Large = over 100,000 tons N in 1980

(**) Medium = 20,000 to 100,000 tons N in 1980

14 June 1972

United Nations Industrial Development Organization

ANNEX 2
Page 1

TO: UNIDO/FAO/World Bank Working Group

FROM: R. Ewell

I have made a completely new graphical analysis of probable 1980 demand for N in the key countries in which the group has been interested. The new analysis incorporates the 1970/71 data which were not available when most of the demand forecasts were made and it also uses the new revised consumption figures for 1969/70 from FAO. Completely new graphs were prepared for all countries with some very interesting results, as follows (in thousand tons):

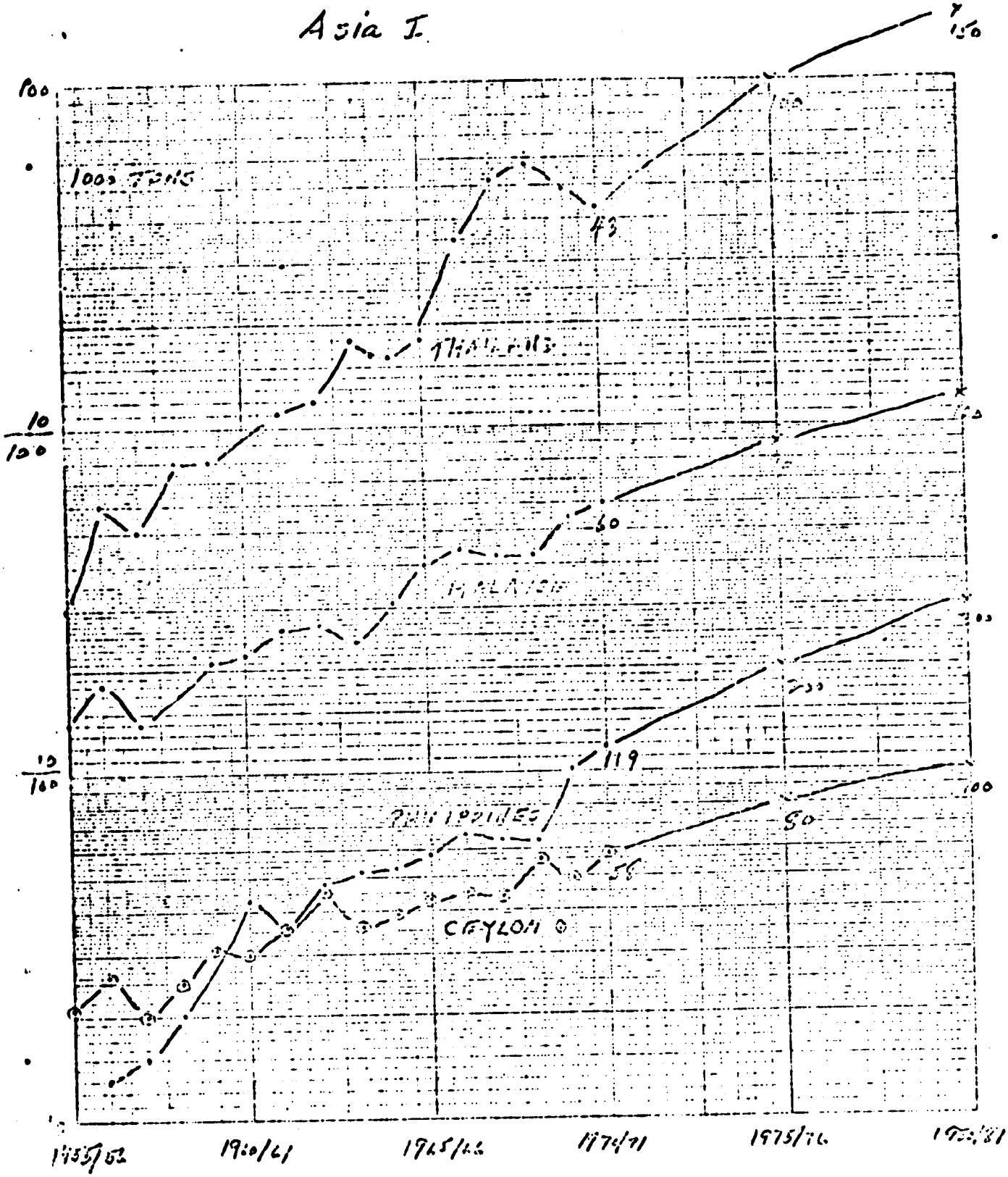
	Old forecast	New forecast	
ASIA			
China (T)	300	300	(no change)
China (PR)	5,400	5,400	(no change)
Ceylon	120	100	
India	3,600	3,600	(no change)
Indonesia	500	450	
Iran	200	200	(no change)
S. Korea	500	550	
Malaysia	125	120	
Pakistan (old)	900	900	(no change)
Philippines	250	300	
Thailand	200	150	
Turkey	600	1,000	
S. Vietnam	200	200	(no change)
Afghanistan	40	40	(no change)
Burma	80	50	
Cyprus	30	30	(no change)
Iraq	50	90	
Syria	40	50	
AFRICA			
Algeria	120	100	
Egypt	500	500	(no change)
Morocco	100	100	(no change)
Rhodesia	100	100	(no change)
S. Africa	400	400	(no change)
Sudan	100	150	
Kenya	40	100	
Tunisia	30	30	(no change)
Zambia	30	30	(no change)
Nigeria	20	20	(no change)
LATIN AMERICA			
Argentina	175	100	
Brazil	600	1,000	
Central America (5)	250	320	
Colombia	200	130	
Cuba	500	300	
Mexico	850	1,000	
Peru	150	200	
Chile	125	80	
Dominican Rep.	40	40	(no change)
Ecuador	50	100	
Jamaica	25	30	
Panama	25	30	
Uruguay	20	20	(no change)
Venezuela	60	60	(no change)

I plan to make a similar new analysis on 1980 demand for P_2O_5 within the next two weeks.

ANNEX 5
Page 2

Consumption of N

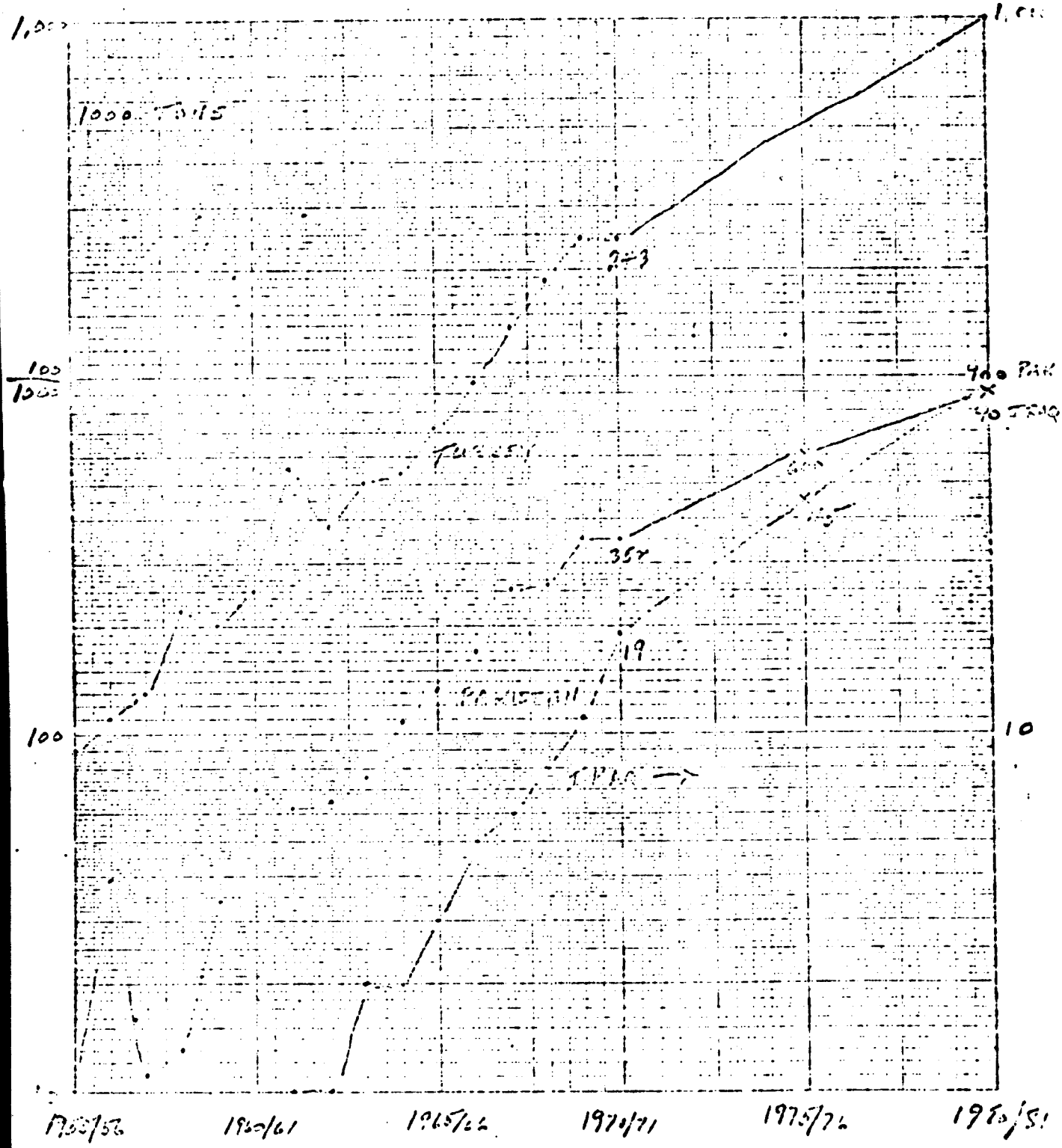
Asia I.



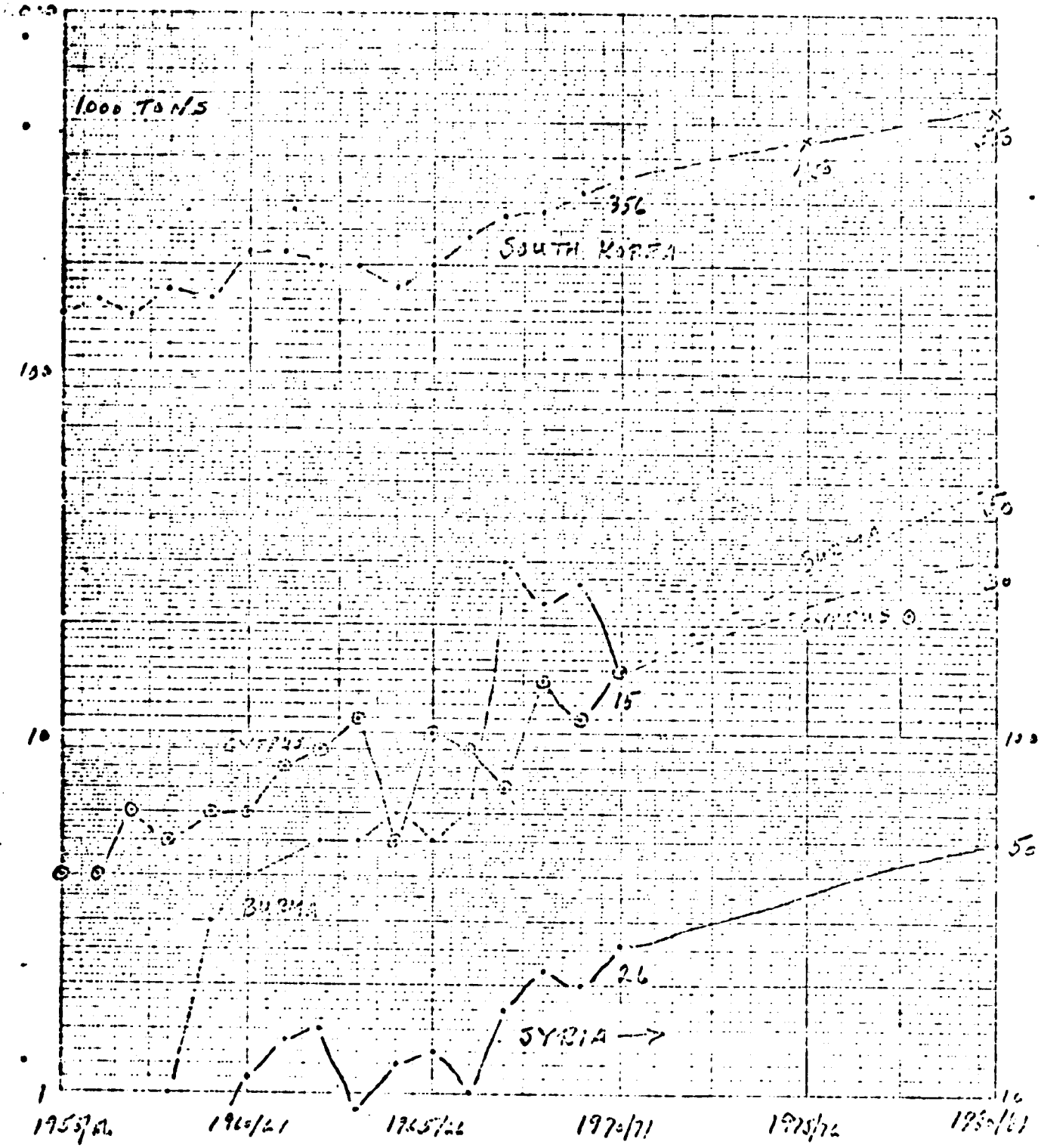
ANNEX 5
Page 3

Consumption of N

Asia II

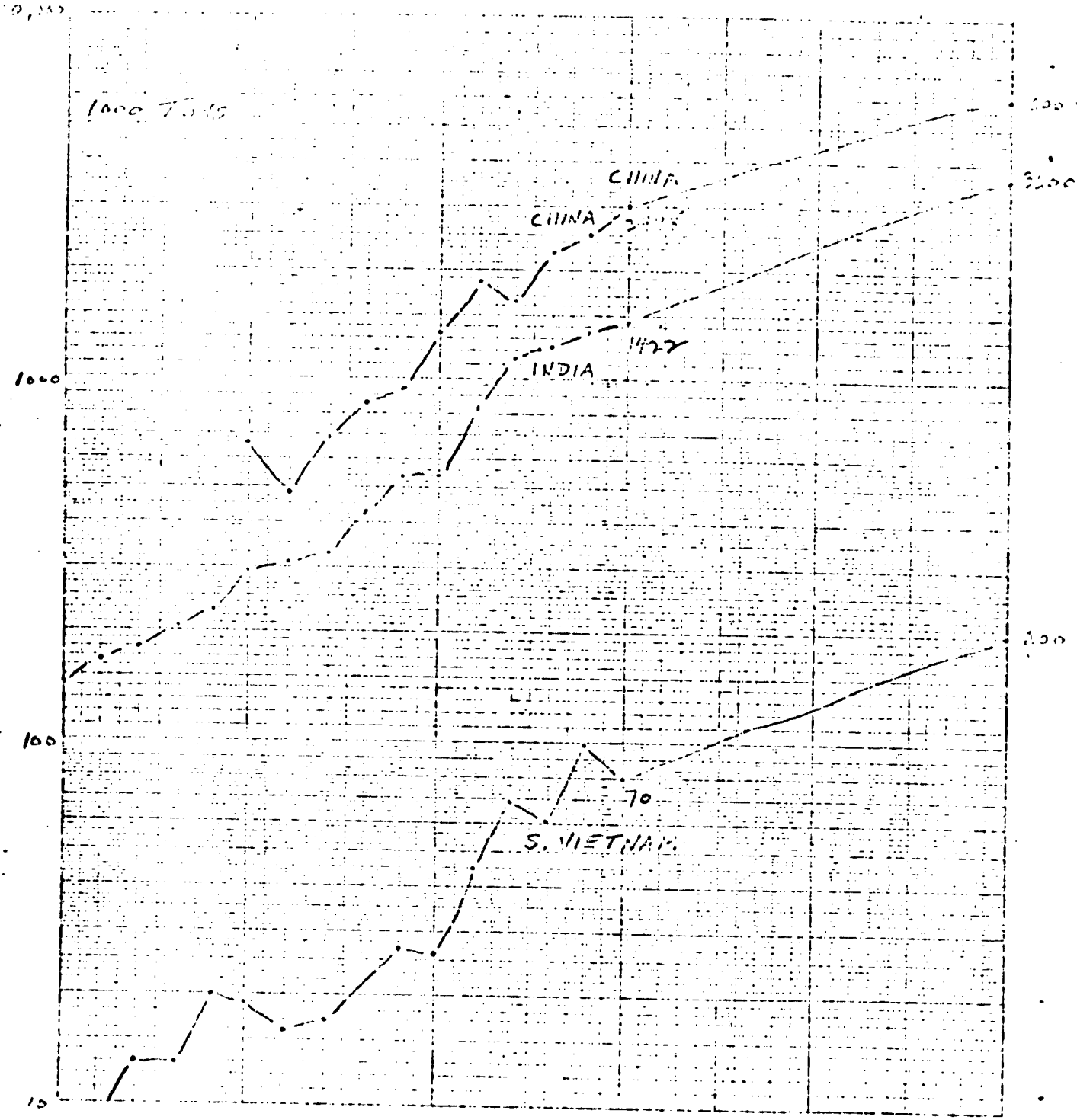


Consumption of N
Asia III



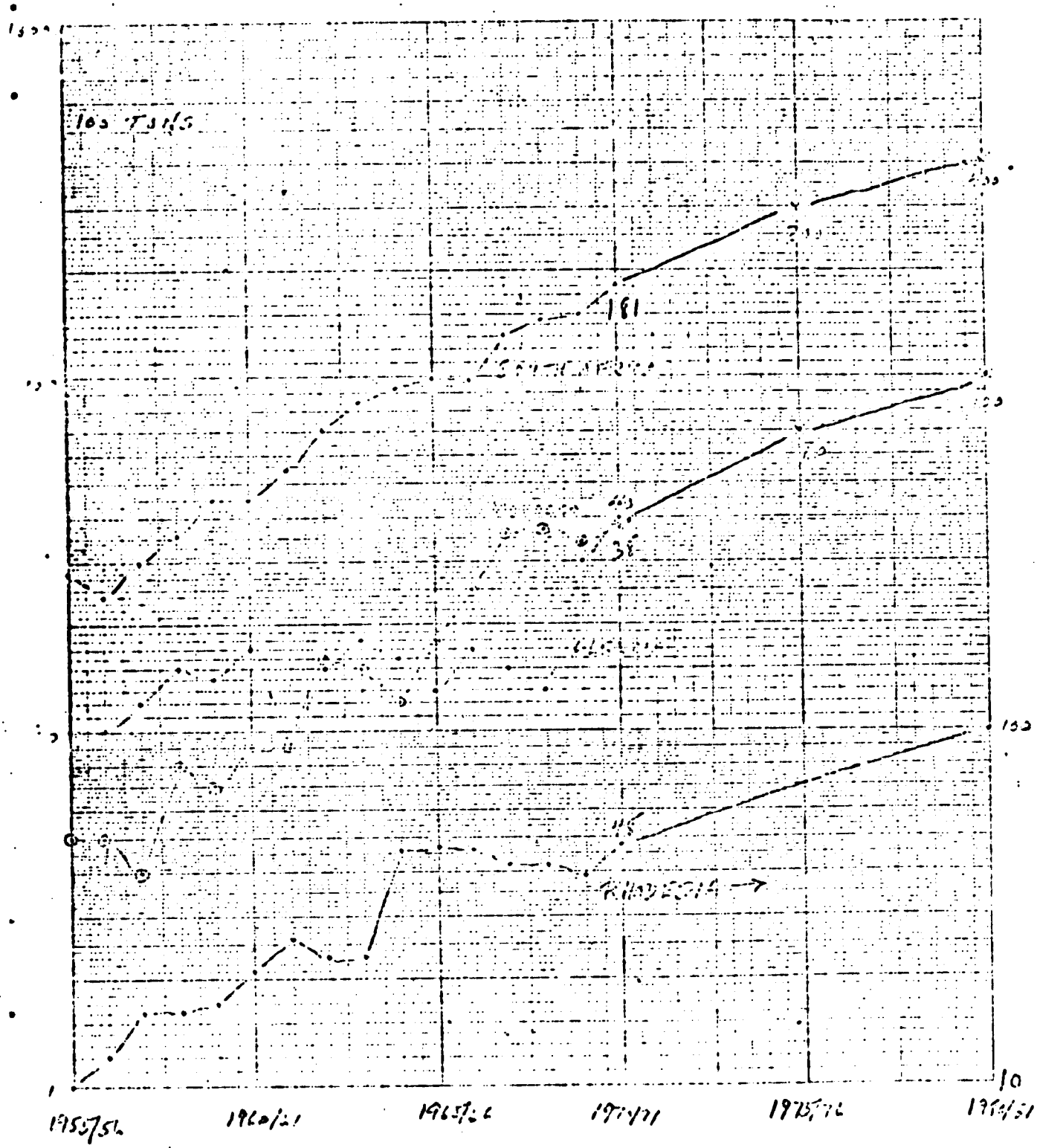
Consumption of N

Asia II



Consumption of N

Africa II



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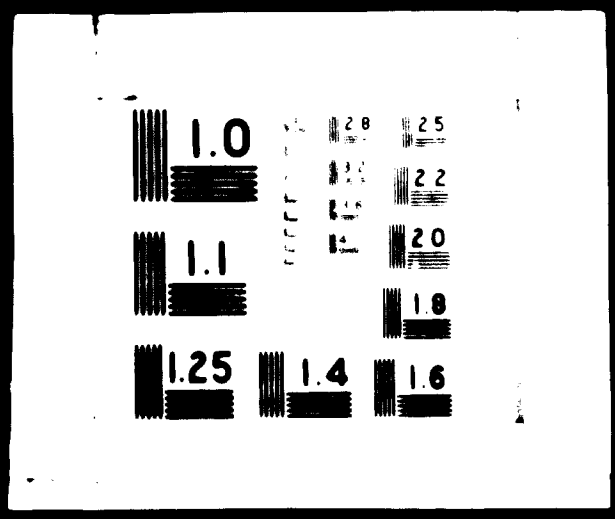
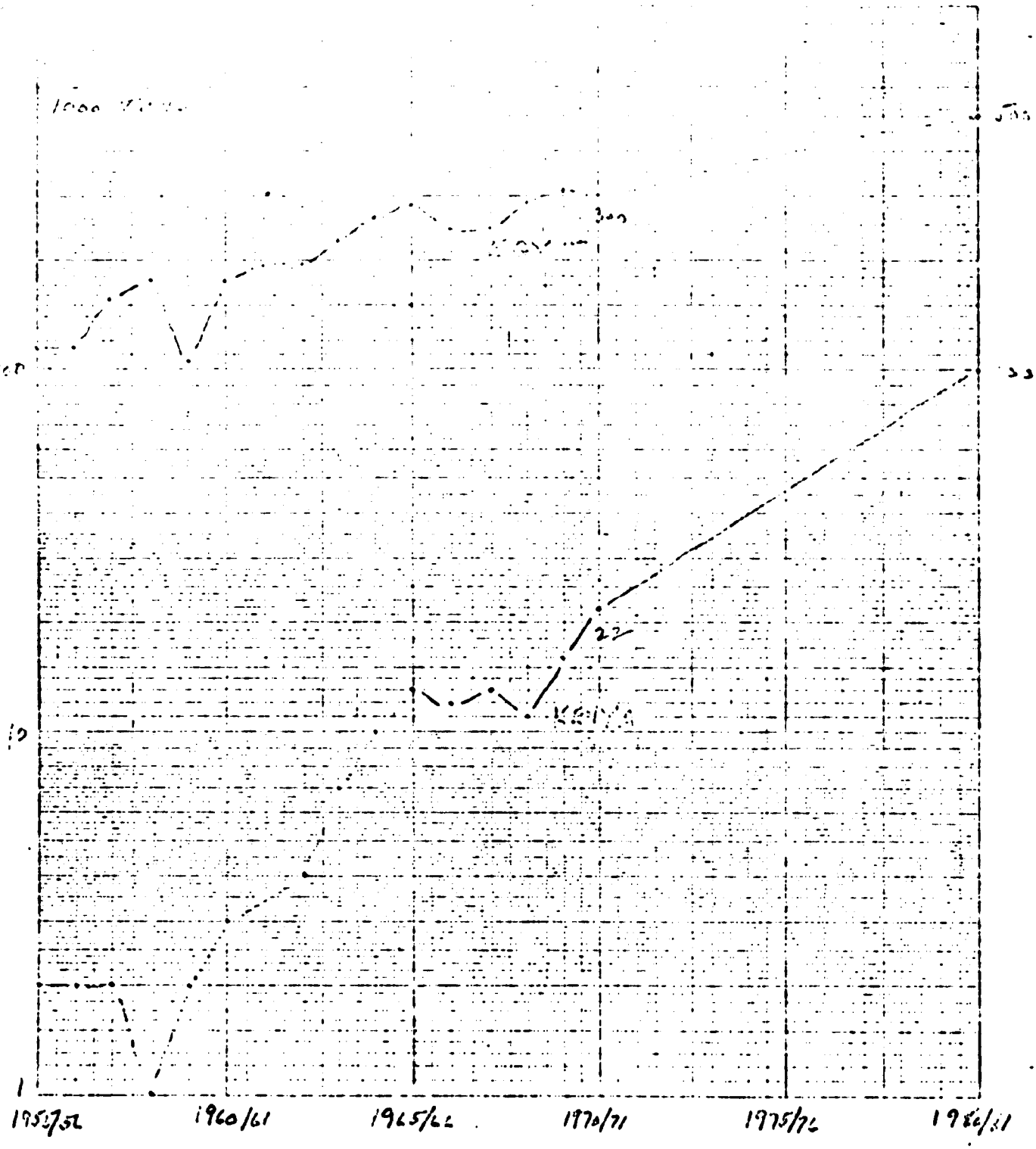
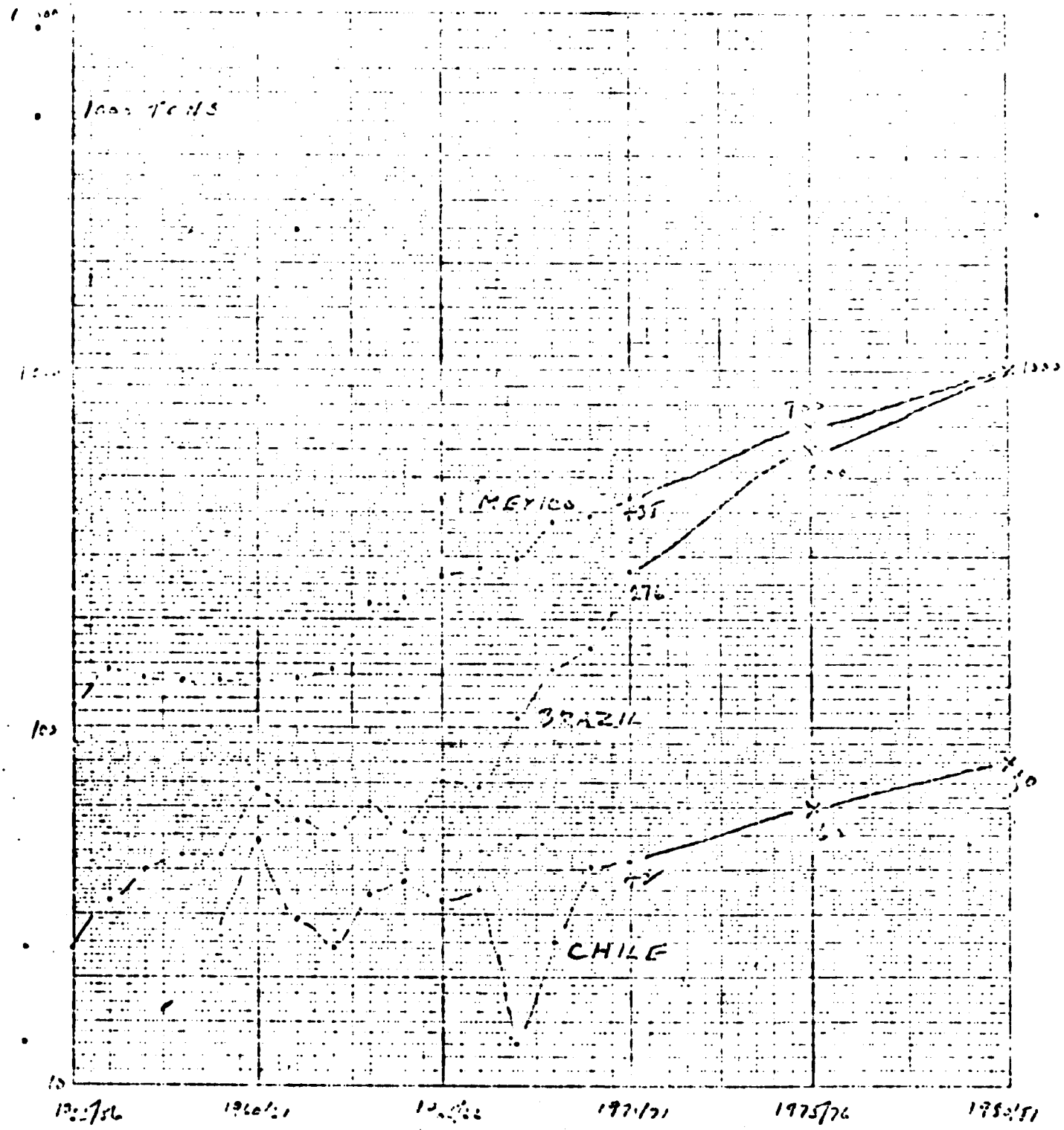


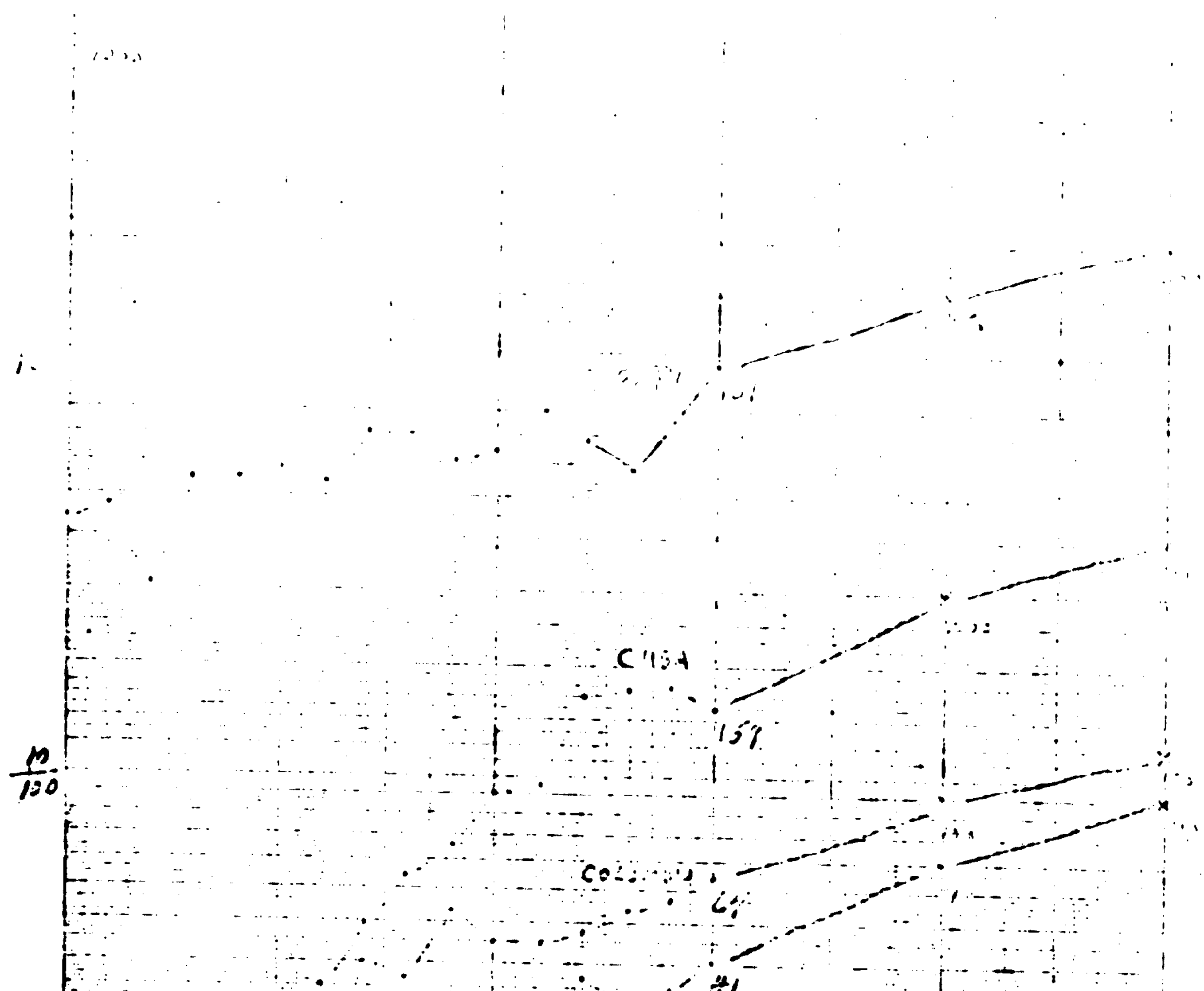
Consumption of N

Africa IL



Consumption of N
Latin America I




CUBA
157
COLOMBIA
64
41
ARGENTINA
10
100
1955/56
1960/61
1965/66
1970/71
1975/76

VI. Sixth Meeting

Minutes of the Sixth Meeting of the Ad-hoc Working Group UNIDO/FAO/World Bank on Financing of Fertilizer Projects

1) The above meeting was held in UNIDO, Vienna, on 23 and 24 October 1972.

2) The following were present:

Mr. Eric Becker-Boost (IFC, IBRD)
Mr. M.C. Varghese (UNIDO)
Mr. C. Meloti (UNIDO)

3) The meeting was arranged at short notice in view of Mr. Becker-Boost's presence in Europe. Although telephonic invitation was extended to FAO, neither Mr. Hauck nor Mr. Couston could be present. However, Mr. Becker-Boost will meet with Mr. Couston in Milan on 26 October to brief him on the outcome of the meeting. Neither Mr. Dittmann nor Prof. Ewell could be present due to the short notice and previous engagements.

4) The meeting then discussed the items on the agenda attached to the minutes as appendix 1.

5) Agenda item 1

Mr. Becker Boost gave a summary of the Executive Director's discussion in Washington D.C. on 16 and 17 October 1972 in IBRD relating to the subjects as follows:

a) The World Bank group indicated that the UNIDO expert, Mr. Cook's report on the fertiliser project in Sudan was a good one and if the Sudanese Government shows interest, the three member mission originally proposed, need not take place. The Bank felt that there were many items in the Cook report which needed elaboration and strengthening. The area group of the Bank

I did [illegible] be a good project for Bank financing after the Cook report is revised and the usual appraisal mission looks at the project. The Executive Director suggested that high priority be given to the Sudan project as the first one to be followed up as a result of the efforts of the UNIDO/FAO/World Bank Ad-hoc Working Group. The Executive Director also said that this should be further discussed in Vienna by Mr. Becker-Boost. Please see Agenda item 2 for the detailed discussions in Vienna. A Unidogram was sent to the Executive Director who at this time was in New York (appendix 2).

b) Regarding the approach to various countries in West Africa it was noted that only Ivory Coast showed positive interest in reply to the joint UNIDO/FAO letter. It was also noted that several other countries in the region were going ahead with plans to put up rather small and non-viable units. The Executive Director suggested that joint efforts should be made to harmonize the plans for the West African region and to discuss this in detail in the Vienna meeting. For details of this item see Agenda item 3 below.

6) Agenda item 2

Sudan

During the meeting in Vienna the report of Mr. R.P. Cook (UNIDO mission to Sudan) and the letter of the Resident Representative in Khartoum dated 5 August 1972 (appendix 3) were reviewed. It was felt that the meeting of the Ad-hoc Working Group along with Mr. Cook and the experts of the Bank should be convened to discuss in more detail problems such as transport facilities, economic return, financial resources, possible co-operation with nearby countries, etc. This meeting could be convened in IBRD in Washington from 27 November to 1 December 1972 or in Nairobi from 29 November to 5 December 1972. If the meeting is held in Nairobi it could take advantage of the presence of high level country participants in the FAO meeting which is being held there from 1 to 16 December on the

subject of "planning and organisation of fertilizer use and development" (FAO/DANIDA regional seminar). Two cables were sent by Mr. Becker-Boost to IBRD proposing the above alternatives. These cables are attached as appendices 4 and 5. It was also decided to send a cable to the Resident Representative of Sudan in Khartoum (in consultation with the UNIDO Africa Section) requesting him to explore with the Government of Sudan whether at a later stage when the project is found viable the Government will approach the Bank or other institutions for financial assistance. The copy of the cable is attached as appendix 6.

It was decided by the Working Group that the following actions be necessary before convening the next meeting either in Washington or in Nairobi.

a) UNIDO will explore the possibility of appointing Mr. R.P. Cook for a period of two weeks to prepare the background material necessary and to attend the meeting which will be a follow up of his mission to Khartoum under SIS or other financing. UNIDO will draw up the job description and terms of reference. Mr. Cook's availability will also be ascertained by UNIDO.

b) IBRD will issue a letter inviting the members of the Ad-hoc Working Group to the meeting either in Washington or Nairobi.

c) UNIDO and FAO will initiate steps for travel plans.

The Working Group then reviewed Cook's report and decided that more details and elaboration on the following points are necessary:

a) The report does not state the need for phosphate fertilizers in Sudan. This needs to be investigated with the help of FAO. FAO is requested to supply available data on Sudan to the Ad-hoc Working Group.

b) The consumption pattern of fertilizers in Sudan is made up of 20% of ammonium sulphate, 70% of urea and the balance of other

fertilizers. Cook's report suggests only the production of urea by total recycle process. If the consumption patterns is as given above consideration should be given to the "once-through" urea process and the neutralization of the residual ammonia with sulphuric acid to produce ammonium sulphate. In any case, the capital cost and production cost using this process should be compared with that for urea using the total recycle process.

c) The possibility of importing urea and ammonia solutions and building of a prilling tower to produce the required fertilizers until such time that the demand builds up to justify a viable large scale ammonia and urea plant. This has the advantage of smaller initial investment to start with and possibility of building up the market and back integration at a later stage.

d) The possibilities of interchange of raw materials and products with such neighbouring countries as Ethiopia and others should be considered.

e) Consideration should be given to possible partners in this enterprise, for technical assistance by expert personnel and even financial participation say from Kuwait, Romania, Yugoslavia, etc.

f) A more detailed financing plan has to be drawn up indicating financial resources and the economic return on investment. The economic justification should also be brought up.

g) Cook's report only considers naphtha as the raw material for ammonia production. The use of middle distillates or fuel oil using the partial oxidation or oxygen gasification should also be considered.

h) In Sudan as well as in neighbouring countries the requirement of oil products and the pattern of production in the refineries should first be investigated before deciding on the raw material to be used.

i) Cook's report suggests a 400 tpd ammonia plant which means that reciprocating compressors will have to be used. Possibilities should be explored whether the capacity cannot be increased to 600 tpd if some fertilizer finished materials or intermediates can be supplied to neighbouring countries such as Ethiopia. In this case, 600 tpd ammonia plant could be built as a single train unit which now is the most economic minimum scale plant.

j) Cook's report is in favour of a location at Port Sudan area. Evaluation of the location study whether the plant should be at Port Sudan or at Sennar should be done. Under such a location study the possibilities of putting up a pipeline from Port Sudan to Khartoum, possibilities of using oil tank wagons for transport of raw materials, etc. should also be studied.

7) Agenda item 3

Harmonization of plans for the fertilizer industry in West Africa

The situation in the West African region was reviewed by the Working Group country by country. See appendix 9 for present and projected consumption of fertilisers in the West African region.

a) Cameroon

There is at present a project sponsored by Kloeckner, Industrie-Anlagen GmbH, to produce single super phosphate and ammonium sulphate importing all the raw materials. The Working Group considered this as a very uneconomic and non-viable project.

b) Congo (Brazzaville)

The World Bank has put in US$ 70 million in the potash project which seems to have some difficulties.

c) Dahomey

There is no existing plant nor any plan to build one.

d) Gabon

The present consumption of fertilisers as reported in FAO's statistical book is nil. However, a feasibility study has been reported as being undertaken by SYBETRA (Syndicat belge d'entreprises à l'etranger) and Pierrefitte-Auby. At present there is a UNIDO mission to study the utilisation of associated gas from oil production.

e) Ivory Coast

There is an existing ammonium sulphate plant owned 35% by the Government and the rest by Salagitter with participation of A.P.C. (FRG). The production capacity of this company, called SIVOA is stated to be 60,000 toy of ammonium sulphate. There is a request to UNIDO to send an expert to study the possibilities of converting this plant to an NPK plant.

f) Nigeria

There is not much consumption and there are no existing plants. It is reported that Chemical Construction Company (CHEMICO) of New York is doing a feasibility study with the co-operation of the Export/Import Bank. Good possibility exists for an export oriented large fertiliser project using the off-shore gases located near Port Harcourt.

g) Togo

The Special Fund project for which UNIDO was executing agency has not been approved by the Government. Instead, the Government has asked SYBETRA to make a study for a large export oriented phosphate project.

h) Zaire

no comments.

The classification of the countries in this region can be made into two categories:

Important consumers	Important from the point of view of raw materials
Cameroon	Congo (Brazzaville)
Ivory Coast	Gabon
Congo (Brazzaville)	Nigeria
Dahomey	Togo
Zaire	

The Working Group decided that it will be most useful to hold a meeting entitled "Harmonization of plans for potential production and distribution of fertilizers in West Africa". The Working Group recommended the following steps to be taken:

Since the original joint letter of UNIDO and FAO was already sent to all the countries in this region except Congo (Brazzaville), Zaire and Liberia, such letters should also be sent to them. In addition, those countries which did not reply to the original letter such as Liberia, Dahomey, Cameroon Togo and Ivory Coast which had given a positive reaction, letters of follow up indicating the holding of such a meeting should be sent. The plan for the above meeting will be as follows:

a) Participation

Two participants each from the above eight countries are to be invited. The countries should also be requested to designate foreign engineering or contracting companies such as SYBETRA, Gardenier, Hoechst Jade International GmbH, CHEMICO, A.P.C., etc., who are active in their countries. Two participants from UNIDO, two from FAO and two from World Bank are to take part in the meeting. A total participation of about twenty is envisaged. ECA will also be invited.

b) Location of the meeting

Because of the existence of an IBRD office and a UNIDO Field Adviser, Abidjan in Ivory Coast is suggested as a venue of the meeting.

c) Timing

January 1973

d) Objectives of the meeting

(i) Screening and evaluation of five or six plants to be built in the region, avoiding duplication and over capacity.

(ii) Harmonizing distribution to consuming countries.

(iii) Harmonizing export oriented production in countries with natural resources.

e) Financing

One way is to request to send high level representatives at their own cost. As this may not evoke much interest, UNDP financing should be requested. The project should be cited as an inter-country project and an investment feasibility project and also for harmonizing fertilizer plans and choosing projects suitable for World Bank financing.

i) Duration

Five working days.

For the above meeting the following follow up actions are necessary:

a) UNIDO to prepare a project for UNDP financing.

b) Mr. Becker-Boost to explore Bank contribution towards the financing which may total up to US$ 20,000.

c) UNIDO to write letters under the joint UNIDO/FAO signatures to Resident Representatives of the eight countries to ascertain interest in such a meeting.

8) Agenda item 4

For the missions to countries which have indicated positive reaction namely Burma, Philippines, Syria and Colombia, reference was made to the cable sent to UNDP attached with this report as appendix 7. A reply has been received after the conclusion of the Working Group meeting which is attached a appendix 8.

9) Agenda item 5

Action for other missions to await further positive responses.

10) Agenda item 6

Financing of missions (see Agenda item 4).

11) Agenda item 7

Next meeting

As indicated before the next meeting of the Ad-hoc Working Group will be either in Washington from 27 November to 1 December 1972 or in Nairobi from 29 November to 5 December 1972 depending on the response of the Sudanese Government.

24 October 1972

ANNEX 1

AGENDA

24th Meeting of the Ad-hoc Working Group

UNIDO/WB/ World Bank on Financing of Fertilizer Projects

(UNIDO - Vienna, 23 and 24 October 1972)

1. Review and follow-up action of the Executive Director's meeting in IFDC Washington, 16 and 17 October 1972.

2. India - review of UNIDO expert Mr. C.P. Cook's report and letter from Resident Representative of India dated 5 August 1972.

   Follow-up action.

3. Harmonization of plans for the fertilizer industry in West Africa and then East Africa.

4. Investment-feasibility missions to Burma, Philippines, Syria, Colombia, Cameroon.

5. Action for missions to other countries if response positive.

6. Financing of missions.

7. Other matters next meeting.

ANNEX 2

Copy of UNIDO/GUM to:

23 October 1972

Mr. I.F. Abdel-Rahman
c/o UNIDO Liaison Office
United Nations Headquarters
New York (N.Y.)

Becker-Boost in Vienna discussing financing fertilizer projects particularly Sudan. Conveyed discussions you had in Washington IBRD and your decision to carry out Sudan assistance expeditiously. Called ..... Resident Representative as per attached copy. Kindly follow up with UNDP follow-up cable sent on 13 October. Mr. Cuijpers-Caillere to ..... Mr. Cohen (copy attached). If considered appropriate contacts with Sudan delegation to Headquarters may be helpful to push Sudan project. Grateful if the above is also shown to Mr. Nehemiah of FAO who is in New York for follow-up and if you feel appropriate also to Mr. Prance-Delguin IBRD representative to UN in New York.

In regard to harmonization of West African fertilizer projects the ad-hoc working group is discussing this question. Appreciate your supporting contacts with representatives of Cameroon, Ivory Coast, Nigeria, Togo and Ghana. Kindly cable further instructions.

N.F. Grigoriev
Director
Industrial Technology Division

ANNEX 3

Copy of letter from Resident Representative, Sudan

5 August 1972

Dear Mr. Quijano-Caballero,

Subject: Financing of Fertilizer Projects

Would you please refer to your letter TS 6003/11 of 29 May and your cable of 15 July on this topic.

As you are aware there is at present a UNIDO Consultant Mr. T.F. Cook, who is charged with advising on a proposed fertilizer factory for the Sudan attached to the Sudan Industrial Research Institute SUD-71. A copy of his term of reference, job description SUD-001-SSG(CF/ID) of 6 July 1972 is attached for easy reference. You will note that Mr. Cook's job also involves investment promotion and identifying sources of finance.

The position regarding the internal financing of the fertilizer project is obscure. In a recent study by the Japanese Consulting Institute, which Mr. Cook is also studying, the project is costed at £45,000,000. Of this total there is some £14,000,000 in local cost, together with 20% of foreign costs, which the Government usually bears, or £7,000,000. The Government would therefore, have to find £21,000,000 to finance its obligation for the project.

The project is scheduled to commence construction in 1974 and in the plan the local costs are put at £13,340,000. Despite the fact that the Japanese estimate is rather on the high side this amount would burden the Government to a considerable extent. Particularly in view of the fact that in the present budget 1972/1973 is being totally financed in its development component, £65,000,000 from foreign sources. Mr. Cook advised me that some suppliers may grant better terms than others for the waiver of some liability in foreign exchange at a later date.

.../...

APPENDIX 3 (page 2)

I feel therefore, that the question of a finance oriented mission is some what premature, but after Mr. Cook has done some additional work it should be possible to say if such a team were needed. I will keep you advised of developments.

Yours sincerely,

L. Cappelletti
Resident Representative

Mr. S. Quijano-Caballero
Director
Technical Co-operation Division
UNIDO
Felderhaus
Rathausplatz 2
A-1010 Vienna
Austria

APPENDIX 4

Copy of cable sent to IBRD Washington 23 October 1972

intbafrad
1818 hstreet
washington dc (usa)

misc 16259 cmc for hilton fuchs malone stop subject sudan fertiliser project stop unido has initiated via undp resrep khartoum to ascertain sudanese governments interest in fertiliser project stop for further project support suggest that you contact in ethiopia agricultural and industrial development =
p2/47=
bank and or extension project implementation department of agriculture ministry to find out whether they would favourably consider importing from sudan project urea feedstock and ammonia for bulk blending and dap plant as proposed in july report by unido mission to ethiopia stop regards

becker-beest unido vienna

APPENDIX 5

Copy of cable sent to:

intbafrad
1818 hstreet
washington dc (usa)

24 October 1972

misc 16322 ref 16259 .wo for hilton fuchs malone stop subject sudan fertilizer project stop referring my one and assuming positive sudan reaction we feel proposed evaluation meeting mentioned number one cable could be organized more effectively in nairobi following fao eastafrica fertilizer seminar december =
p2-
1 through 16 stop this would require less travel expenses and unidos field adviser and undp resrep both located sudan could probably attend nairobi meeting stop therefore suggest your considering this proposal and specifically whether ibrd office nairobi adequately staffed to assist such evaluation regarding economic return financial resources transport facilities =
p3
possible cooperation with intended ethiopian project etcetera stop believe also location like nairobi would reduce weight of bankgroups early involvement in procedure stop with view lengthy and difficult procedure for travel arrangements unido and fao workgroup members would appreciate your early reaction and informing unido and fao your conclusions stop=
p4/15/18=
proposed draft letters from bank to invite unido and fao mailed to you today regards=
becker-boost unido vienna+

APPENDIX 6

Copy of cable sent to :

undevpro
khartoum (sudan)

24 October 1977

misc 16334 cappelletti rayourlet 5 august financing fertilizer project. understand your concern financing government part of project. however on 16 and 17 october executive director unido discussed project based on cooks findings with worldbank washington and met interest in financing project other than government part please enquire if government ready to approach worldbank for financing and inform latest midnovember. if positive unido fao and worldbank with participation cook would undertake brief desk study late november on location of plant and raw materials and transport and choice of product and economic viability etc. if study promising worldbank would field appraisal mission. we advise to consult sudan agricultural research corporation and wish emphasize export of fertilizer to ethiopia for bulk blending project which was found feasible by recent unido mission-

maneck unido+

[illegible] 7

Copy of cable sent to:

13 October 1972

ciatpriorite

urdevpro

ny

unido 2819 comon refer discussions and minutes unido/fao/ world bank adhoc working group on financing fertilizer projects stop during last meeting washington dc which chavez attended financing preinvestment missions was discussed stop in reply to our joint unido/fao letters resident representatives burma colombia=

p2

philippines and syria indicated positive interest provided finances for missions can be found outside ipf stop we estimate cost each study no more than lols 40,000 stop preparing project documents for submission to resident representatives to obtain government endorsement stop meantime grateful your cabled advice whether undp willing finance these investment =

p3

feasibility studies under programme reserve stop positive results of studies expected to lead to world bank, regional bank or bilateral investment stop stop in order avoid losing momentum on efforts of three organizations in this matter we consider essential placing the missions in the countries before

year end stop believe copies=

p3/13=

of cables from these countries indicating favourable interest already in your hands=

quijanocaballero +

APPENDIX 8

Copy of cable from Mr. A.J. Aisenstat (New York Liaison Office) to UNIDO Vienna

2 November 1972

3170 quijanocaballero reference your cable 2819 to cohen. upon informal inquiry undp indicated positive interest in financing fertilizer projects missions after case by case examination to be undertaken upon receipt official request government. executive director suggests proceeding to elicit official requests=

aisenstat +

Appendix 2

Present and Projected Consumption of Fertilizers in the West African Region (Thousands of Tonnes of Nutrients)

Country	1970 - 1971			1979 or 1980 .		
	N	P	K	N	P	K
Cameroon	11.0	3.0	4.5	20[x] (23.5)	6.5	11.1
Congo (B)	3.1	-	4.0	1.5	0.5	4.0
Dahomey	2.0	0.7	4.0	1.5[o]	1.5[o]	3.0[o]
Gabon	0.3[x]	0.12[x]	0.27[x]	1.0	0.37	0.03
Ivory Coast	7.0	2.5	14.2	17.0[o]	13.0[o]	23.0[o]
Nigeria	5.5	7.0	0.6	20[x] (27.4)[o]	34.0[o]	19.4[o]
Togo	0.2	0.3	0.1	1.5[o]	1.5[o]	1.5[o]
Zaire	3.0	2.2	1.2	26.5	TOTAL	NUTRIENTS
TOTAL	33.5	16.62	28.87			

• Directory of Fert. Prod. UNIDO Est. 1973/74

x Est. UNIDO/FAO/World Bank Ad-hoc Working Group

o Est. 1975

VII. Seventh Meeting

Minutes of the Seventh Meeting of the Ad-hoc Working Group UNIDO/FAO/IBRD on Financing of Fertilizer Projects

1. The above informal meeting was held in UNIDO, Vienna, on 10 January 1973.

The following were present:

Mr. Erich Becker-Boost, IBRD
Mr. M.C. Verghese, UNIDO
Mr. C. Keleti, UNIDO

2. A tentative agenda was prepared which is attached as Appendix 1. The items of the agenda were discussed.

3. Agenda item 1)

In reviewing the work done after the sixth meeting, which took place on 23/24 October 1972, the following were highlighted:

a) As regards the proposed meeting on the harmonization of plans for the fertilizer industry in W. Africa (page 5, agenda item 3 of the minutes of the sixth meeting), it was agreed as directed by the Executive Director of UNIDO that an open meeting of the countries concerned in W. Africa may not produce the desired end result. It was therefore proposed that a small mission comprising of one UNIDO staff member and one IBRD staff member and possibly FAO should visit the W. African countries one by one and explain to the appropriate authorities the ad-hoc group's approach to the development of the fertilizer industry in the respective countries. If an unviable project is being considered, the mission should point out the defects of such a scheme and in countries like Nigeria, Togo, large export-oriented projects should be encouraged and in countries like Ghana, Cameroon and Ivory Coast, satellite plants could be put up. Steps will be taken by UNIDO to inquire from the Resident Representatives of these countries if such a small mission could visit for exploratory discussions some time in February 1973. Each organization taking part in the mission will have to find the finance for its member.

b) The letters written to the Resident Representatives of six countries(Burma, Colombia, Ivory Coast, Jamaica, Philippines and Syrian Arab Republic) dated 4 December 1972 were discussed. So far no replies have been received indicating official requests for investment feasibility missions. However, it was agreed that names of experts suitable to undertake the missions should be reviewed and kept ready.

c) The letter received from UNDP regarding their intention to review case by case, if requests for investment feasibility missions are received officially, was discussed.

4. Agenda item 2) Sudan

The status of the Sudan project was then reviewed. It was explained that Mr. R.P. Cook(UNIDO expert) has reviewed the proposal submitted by Pétrole Chimie to the Sudanese Government and detailed comments have been prepared. Copy of these comments and the covering memorandum is attached as Appendix 2. Mr. Cook is now in Khartoum as the Government wants his assistance in negotiating with Pétrole Chimie. Mr. Becker-Boost explained that he had a meeting with Pétrole Chimie in Paris on his way to Vienna and according to their plans, they are organising a meeting on 16 January 1973 to form a consortium to execute this project which will cost about US$56 million excluding financing costs. The information conveyed by Mr. Becker-Boost and the detailed study of Pétrole Chimie's proposal have led us to believe that the proposal, as it stands, is too costly and the ability of Pétrole Chimie to put together a consortium for financing, was doubtful. There is an indication from Khartoum that the Government may consider going for international bidding and other forms of financing. The two cables received from Mr. Cook on this subject are attached as Appendix 3. As an alternative to Pétrole Chimie's approach, it may be wise to send an economist/financial expert at the same time as Mr. Cook, who is a production expert, is still in Khartoum. The financial expert's terms of reference will be as drawn up before by the ad-hoc group and he could formulate proposals for financing the project,

while Mr. Cook finalises the technical aspects of the project. If necessary, a marketing expert could also be [illegible] UNIDO projects to inquire from the Resident Representative in Iran this approach is acceptable to the Government.

5. Agenda item 3) Ethiopia

UNIDO explained the work done by the UNIDO expert, Mr. Carter, in Ethiopia where a feasibility exists to put up fami[illegible] for a bulk handling and bagging project for fertilizers. As the World Bank and the AID Bank of Ethiopia are pushing [illegible] containing fertilizers, pesticides and seeds, the expert felt that fertilizer consumption will increase rapidly. The financing of this project will be around US$3 million.

6. Agenda item 4) Viet-Nam

Request for assistance to South Viet-Nam

UNIDO explained that a request for two experts, one in production and one in marketing, has been received from South Viet-Nam to [illegible] advise them on the location, capacity and production for a large fertilizer plant. This mission will take into account the report of Henderstam Partners (United Kingdom) report and TVA's report.

7. Agenda item 5)

Sulphuric acid from by-product gypsum

UNIDO pointed out that the sulphuric acid and the [illegible] project in S. Africa, built by Krupp on the know-how of Stickstoffwerke, Linz, has been successfully commissioned. Mr. Becker-Boost showed interest in this process since the World Bank is financing many wet process phosphoric acid plants where by-product gypsum will have to be disposed of. The projects in Morocco, Tunisia, Senegal and India(FACT - Phase II) are projects of this type. UNIDO agreed to request Stickstoffwerke Linz to give a detailed write-up on the process and the costs.

8. [illegible]

The problem of the phosphoric and ammonium phosphate and NPK project in [illegible], which the World Bank has financed partly, was discussed. A UNIDO expert, Mr. French, has returned recently from Senegal and reported that the plant [illegible] ammonia from France to the tune of about [illegible] t/y at a cost of approximately US$[illegible] c.i.f per ton. Ammonia [illegible] used for transport [illegible] oil [illegible] for exports. The possibility for putting up a small ammonia plant to meet the present and future demand was clear. It was suggested that if the UNIDO/IBRD mission goes to W. Africa, they could stop over in Senegal to have discussions.

9. Agenda item 7) Jordan

Mr. Becker-Boost explained that there is interest in a phosphoric acid project in Jordan, the details of which are given below.

350 tons of P_2O_5 per day as phosphoric acid in a plant is under consideration in Jordan at Aquaba, utilizing the low grade phosphate rock containing 25-27% of P_2O_5 which cannot be exported and therefore is priced at US$3 per ton which merely represents the transportation cost. The availability of this phosphate rock is approximately 485,000 tons/year and phosphoric acid, TSP plant and MAP plant are to be built to export the finished fertilizer products mainly to Pakistan. In addition to this, a sulphuric acid plant may be built provided that reasonably priced sulphur becomes available from either Iran or Iraq. The total project in which the sulphuric acid plant is included has been estimated at US$33 million. In the feasibility studies, ammonia was priced at US$50 per ton and sulphur was priced at US$22 per ton as an assumption. The finished products that are TSP and MAP, were priced at US$65 per ton(TSP) and US$110 per ton (MAP). The latter price is somewhat high and above current market prices.

One problem connected with this process is high chlorine concentration in the phosphate rock which results in slurry's containing 3,500 ppm of Cl_2. The other process difficulty is poor filtration characteristics for the gypsum when producing it as di-hydrate. Two parties have been involved in connexion with this project. One of them is Pritchard-Rhodes of the United Kingdom and the other is Rhône Progil of France who might be interested in taking a 40 % participation in this project. Mr. Becker-Boost

recommended that UNIDO investigate the possibility of offering services for this project in the two technical aspects mentioned above.

APPENDIX 1

TENTATIVE AGENDA

1. Review of work of UNIDO/FAO/IBRD Working Group, including W. African.
2. Status of Sudan project
3. Ethiopia
4. Viet-Nam
5. Sulphuric acid from gypsum (Stickstoffwerke Lima process)
6. Senegal
7. Jordan

APPENDIX 2

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

INTEROFFICE MEMORANDUM

TO: Mr. A. Mancek, Chief
Section for Africa,
Technical Co-operation Division

Date: 20 December 1972

FROM: M.C. Vergano, Chief
Fertilisers, Pesticides and Petrochemicals
Industries Section,
Industrial Technology Division

Ref: [illegible]

SUBJECT: SUDAN: Fertiliser Project

Mr. W.P. Cook, during the last three weeks (4-20 December 1972), has critically examined Pétrole Chimie's proposals to the Ministry of Industry and Mining(MIM) of Sudan dated 20 September 1972 to build a fertiliser complex along with the substantive section of UNIDO.

Fifteen copies of his detailed comments are attached herewith for transmission to the Resident Representative.

As desired by the Resident Representative, Mr. Cook's services are to go to Khartoum on 29 December 1972 from the UK(where he is due to be from 21-25 December 1972) to help in the discussions with Pétrole Chimie. Please advise the Resident Representative and confirm his concurrence.

While the substantive section fully endorses the comments of Mr. Cook on Pétrole Chimie's proposals, we would like to highlight the following points.

1. The adjusted capital costs given in Pétrole Chimie's proposals are about 25% higher than the best estimate made by Mr. Cook in his previous report No. 145 as well as the estimates in the Japan Consulting Institute report.

2. If the Sudanese Government is not irrevocably committed to Pétrole Chimie the Government will be well advised to go to international tenders and international financing. We had cabled the Resident Representative about this question but there has been no reply so far.

3. If the Government decides to go for international tenders, UNIDO will assist to find a suitable consulting firm or consultant to prepare detailed tender specifications and follow up the project and co-ordinate the consultants' work in Sudan. Mr. Cook can assist in the preliminary work.

4. If, however, the Government wishes to negotiate with Pétrole Chimie on the basis of the present proposals, Mr. Cook will keep in there discussions and get answers to questions and problems he has raised in his comments to get the best project for Sudan.

5. There is some disparity between the fertilizer consumption figures in Sudan, quoted in Mr. Cook's report No. 163 and those reported by FAO. These have to be reconciled.

6. It is difficult to understand why in Sudan's soils no phosphates are needed. We believe that in future with heavier N application, P_2O_5 will be needed. This question has to be investigated.

7. There is a possibility, even though remote, that consumption of N in Sudan may reach 90,000 tons by 1975/6 and 130 000 tons by 1980/81. This is the reason why the proposed plant capacity should be increased to produce 300,000 tons of urea per year (600 tons/day ammonia converted to 1,000 tons/day urea) instead of the present Mr. Cook's proposals of 200,000 tons of urea per year and Pétrole Chimie's proposal of 160,000 tons of urea per year. The additional production from a larger plant could be exported by but the advantages of a larger plant are:

a) economy of scale and use of the concept of a single stream, total energy;

b) perhaps the capital costs of the larger plant by international bidding will be the same as Pétrole Chimie's proposal for a much smaller plant;

c) reduction in electrical energy generation as the centrifugal compressors can use steam drive;

8. From an analysis of data so far available we agree that Port Sudan as the best location, virgin naphtha as the best raw material and urea by the total recycle process with 0.5% biuret (maximum) as the most suitable and economic product.

cc. Mr. Kathkhouda

APPENDIX 3

N2643 BN406(UNDP) KHARTOUM 120 10 0825- Date: 11 January 1973

ETAT
UNIDO VIENNA -

MISC 25 REFERENCE FROM COOK MIN HAVE DECIDED TO GO NO COMPETITIVE TENDER AND ARE IN PROCESS OF DETACHING THEMSELVES FROM FC. UNCERTAIN HOW COMPLETE AND RAPID THIS PROCESS WILL BE BUT DO NOT NOW EXPECT THAT NEGOTIATIONS ORIGINALLY ARRANGED FOR LATE JANUARY WILL TAKE PLACE STOP HAVE RAISED WITH MIN QUESTION OF PLANT SIZE AND HAVE STATED THAT COMPARATIVE COST DATA NEED CONFIRMATION BUT THERE MAY BE A CASE FOR LARGER PLANT STOP WILL TRY TO PERSUADE MIN TO DEFER ISSUE OF PRELIMINARY ENQUIRY NOW BEING PREPARED TILL QUESTION OF SIZE IS SETTLED STOP BECAUSE OF MIN DESIRE TO SEE SOME ACTION THIS MAY NOT BE POSSIBLE AND THEREFORE PROPOSE BASING PRELIMINARY ENQUIRY ON PLANT FOR THREE HUNDRED THOUSAND TONS A YEAR -

CAPPELLETTI UNDEVPRO +

APPENDIX 3 (page 2)

DATE: 8 January 1973

75612 UNO A
222122 UNO CH

UD1/O NZO1 XEM237 (UNDP) KHARTOUM 94/93 03 1515 =

UNIDO
VIENNA =

MISC 8 VERGHESE FERTILIZER SECTION IT DEVISION FROM COOK INITIAL DISCUSSIONS WITH HIM SUGGEST THEY ARE NOT FIRMLY COMMITTED TO PC. HOWEVER TWO VIEWPOINTS EXISTS STOP ONE READY TO START AFRESH BY GOING OUT TO COMPETITIVE TENDER OTHER INSISTING CONTINUANCE NEGOTIATION PC WHO ARE EXPECTED 20 JANUARY STOP HAVE STATED RESERVATIONS AND DOUBTS PC OFFER AND GIVEN COPIES MY COMMENTS TO HIM FOR CONSIDERATIONS STOP WILL MEET THURSDAY FOR FURTHER DISCUSSION HIM WHEN THEY HAVE STUDIED COMMENTS STOP MEANTIME HAVE BEEN ASKED PREPARE DRAFT PRELIMINARY ENQUIRY FOR POSSIBLE FRESH START

CAPPELLETTI UNDEVPRO

COL 8 20+

VIII. Eighth Meeting

[illegible]

[illegible]

1) The above informal meeting was held in FAO, Rome, on 18 and 19 October 19[illegible]. The following were present:

Members:
1) E. [illegible], UNIDO
2) J.[illegible] Cou[illegible]on (Chairman)
3) R. Dit[illegible]man, UNIDO
4) M. Hartigan, IBRD
5) M. [illegible]hieu, FAO (Alternate for Dr. Hauck)
6) R. [illegible], IBRD
7) M.C. Verghese, UNIDO
8) R. [illegible] (Observer), USDA

By invitation:
1) H. Braun, AGL
2) M. [illegible], FAO/IBRD
3) G. Perr[illegible]n de Brichambaut, FAO/IBRD
4) N. [illegible], ESS
5) M. Gosschalk, UNCTAD
6) J.P. Hrabovsky, AID
7) H.J. Mittendorf, AGS
8) R. Schulte, AGS
9) S. Zarqa, ESS

2) Mr. Cousten from FAO chaired the meeting.

3) The tentative agenda was discussed and approved. The Agenda is attached as Annex 1.

4) Agenda Item 1 - Review of work of the ad hoc Working Group

A statement was made reviewing the present situation of the work of the Group. Out of the 6 countries who indicated willingness to receive the pre-investment missions, namely Burma, Colombia, Ivory Coast, Jamaica, Philippines and Syrian Arab Republic, an official request has been only submitted by Jamaica to UNDP. UNIDO and FAO are still following up the matter with the other countries. With regard to the job description of the members of pre-investment missions, FAO and UNIDO agreed that the terms of reference of the FAO member on fertilizer use and marketing show that this expert would be an agronomist with marketing experience.

Disappointment was expressed about the response of the countries approached regarding the identification of potential fertilizer projects in them. Out of 2[illegible] countries approached, only 6 showed positive interest. Even in these cases the financing of the missions was the problem, since the Resident Representatives were not sure whether such financial allotment should be included in the indicative country programme figure or other sources. In one of the earlier meetings of this Group, strong recommendation was made that the Bank should finance missions to these countries which had indicated positive interest.

[illegible] the Bank did not have [illegible] available [illegible]

[illegible] of [illegible]

[illegible]

[illegible] paper supplied by UNIDO on Fertilizer [illegible] for the [illegible] ad hoc Government Consultation [illegible] requirements [illegible] The opinion was expressed that since the members and [illegible] had [illegible] time to study these documents carefully, a target date should be established [illegible] the comments should be sent to the originators of the papers. [illegible] the comments should reach the concerned institutions at the latest by [illegible] It was [illegible] agreed that the possibility of [illegible] should be organized as per the wishes of [illegible] review the approach to these studies [illegible] the Bank [illegible] in possibly the second week of January [illegible] in [illegible] The advice from the USDA [illegible] study would be circulated to members of the ad hoc Group in draft form as soon as it is available (probably the second week of January 19[illegible]).

During discussions of these papers, Table B' of the provisional World Bank Statistics, as well as the data on 1 or 2 countries were discussed. It was agreed that the difference in the grand total of the estimated consumption figures for 19[illegible] made by different Agencies need not be rationalized at this moment, nor it be brought to the specific attention of the FAO ad hoc Government Consultation on Fertilizers meeting next week (22-24 October 19[illegible]).

Two questions regarding the grouping of countries in the provisional statistics of the Bank, as well as the terminology for the tables used, were raised. [illegible] and UNIDO suggested that for comparability the UN/FAO classification of countries, based on the document ESS/Miscellaneous/[illegible], dated 9 December 19[illegible], be followed.

It was also agreed that in future the following standardized terminology be used for statistical purposes:

a) Projections: future values for a variable derived using only mathematical techniques - that is without adjustment for detailed knowledge which would modify the purely mathematical estimates. Not intended to be predictions of actual future values.

b) Forecasts: predicted future values for a variable, derived in whatever fashion.

c) Estimates: any values attached to a variable when the exact values are not known.

d) [illegible]

e) Demand [illegible] consumed if available.

f) Consumption requirements for [illegible] (or have been) consumed to achieve some stated [illegible].

6) Agenda Item 3 – [illegible]

The group agreed that these must be worked out, updating existing [illegible]

7) Agenda Item 4 – Methodologies behind projections and [illegible] [illegible].

The meeting briefly considered the alternative ways of approaching the estimation of consumption requirements for fertilizer in the developing countries. It was agreed that this can only be [illegible] satisfactorily through reference at the country level to the detailed state of the agricultural sector. Starting from a given set of developmental targets, such as a certain rate of growth of agricultural income, attainment of a given nutritional standard and/or certain income distribution objectives, the next step must be to disaggregate the agricultural sector. From the viewpoint of estimating potentially effective fertilizer use, the key divisions were said to be those between the "subsistence sector" and the "market sector" (cash crop sector), and then within each branch, the division between "irrigated" area and "non-irrigated" area. The types of crops grown importantly influences fertilizer requirements as does the potential for further irrigation. As a basis for estimation of future fertilizer requirements, a [illegible] appraisal of the possible improvements in the structure of the agricultural sector must first be made.

Methodologies behind the estimation of future fertilizer production and its investment implications were also discussed briefly. Discussion centred on realistic values for the key assumptions of capacity utilisation rates, production losses in intermediate conversion, and plant fixed investment costs. In view of the impossibility of precision, the use of sensitivity analysis was considered essential.

8) During discussions of tables N_1, N_2, N_3, P_1, P_2, P_3 and 1 + 2, in World Bank provisional statistics on fertilizer consumption, forecasts and plant investment, the Bank Group representatives flagged a number of matters for discussion, in response to which the UNIDO representative expressed the following views:

a) The same type of tables were prepared by the ad hoc Working Group during its first meeting and attached with the minutes dated 14 December 197[illegible] (Tables I, II and III which only need up-dating).

b) In table N_2 it may be better to report nitrogen production from existing facilities rather than ammonia to compare with tables on UNIDO studies.

c) The assumption that in developing countries utilization of production capacities will be only 70% is on the low side. Needed capacities should be calculated based on 60, 70 and 80% utilization.

d) The losses assumed from conversions of intermediates to finished fertilizers, namely 10-20% in case of nitrogen and [illegible]% only in case of P_2O_5 need revision and corrections.

[illegible]

[illegible]

[illegible]

b) Middle East - [illegible] countries

c) [illegible] - Morocco, Tunisia, [illegible]

d) [illegible] - [illegible], Senegal, Nigeria, Gabon

e) [illegible] Central America - Venezuela, [illegible] and [illegible].

The consumption levels of these regions are low but availability of gas and [illegible]. Export possibilities and economic benefits have to be worked [illegible] region.

10) Under Agenda Item 6, the following bilateral cooperation between supplier and customer countries were mentioned:

a) India with Iran, Kuwait, Iraq, etc.

b) Kuwait with Sudan and Turkey

c) Nigeria with Brazil

d) Trinidad and Tobago with Morocco and Europe

e) Algeria with Europe

f) Mexico with India.

11) No other matters were raised during discussions for record.

12) As mentioned in para 5 the next meeting (9th) may be under the World Bank Group auspices in Persia during second week of January 1974.

ANNEX 1

Agenda of [illegible] of the Ad-hoc Working Group
UNIDO/FAO/IBRD
18/19 October 1973, FAO, Rome
(In the chair representative of FAO)

1. Review of work of the ad-hoc working group
2. Harmonization of forecasts of N,P,K production, consumption and investments. Requirements until 1980-81.
   Discussions on following papers:
   a) UNIDO paper "Fertilizer production in the world from 1971-1980"
   b) FAO paper "Review of the current market situation, trends and prospects for fertiliser supplies and prices" (prepared for the ad-hoc government consultation on fertilisers, 22-24 October 1973)
   c) IBRD Studies on the same subject
   d) USDA World fertiliser supply, demand, trends with emphasis on supply prices.
3. Country and regional estimates for developing countries.
4. Methodologies behind projections and linkages to nutrition, food production, etc.
5. Regional possibilities based on consumption levels, raw material availabilities, economic benefit, etc.
6. Specific project possibilities for bilateral co-operation between supplier and consumer countries and review of existing and proposed bilateral agreements.
7. Any other matters.
8. Next meeting - venue - dates.

[illegible], [illegible]DA
Draft
10/3/7[illegible]

[illegible] World [illegible] Supply and [illegible] Pr[illegible]

The [illegible] have [illegible] ly in th[illegible] last year. The crucial question [illegible] will worl[illegible] a [illegible] rious constraint [illegible] agricultural [illegible] in the short (197[illegible]-7[illegible]) medium (1976-77), and long (19[illegible]) term? Alt[illegible]ly, are yield assumptions for meeting future world food needs [illegible] with projected fertilizer availabilities? To answer these [illegible], [illegible] analysis of short-, medium-, and long-term world fertilizer supply and demand is proposed. The analysis will be broken down by type of fertilizer (nitrogen, phosphate, and potassium) and country or region. The focus of the analysis will be on the supply side.

Th[illegible] analysis should be completed in roughly six [illegible]. Because of the short [illegible] involved, the study will depend primarily on existin[illegible] data [illegible], particular[illegible] TVA, FAO, and USDA (including FDCD country analys[illegible], Inputs and Finance Program Area of [illegible], and the ASCS fertilizer specialist, in addition to other consultants as required. The study will also utilize extensively computer programs developed by TVA to project future fertilizer production capacity, and to project and analyze future fertilizer supply and demand.

A brief [illegible] outline of the proposed project follows below.

R. Reidinger
Draft
10/3/73

Outline-World Fertilizer Demand and Supply

I. Demand-By type of fertilizer, yearly up to 1985, by country or region.

A. What are projected needs for major food and food grain crops by country, compared to present production?

B. What are the yield increases necessary to get that production, taking into account expected increases in area?

C. To obtain those projected yields, how much additional fertilizer is needed?
   1. What is the marginal yield response to fertilizer by country and crop?
   2. Where (in what countries) are fertilizer use returns the greatest for meeting world food needs?

II. Supply

A. Is fertilizer plant capacity sufficient to meet projected world fertilizer requirements?

B. Will fertilizer production from that capacity be sufficient?

C. In the short run how hard and at what cost (real and/or opportunity costs) can existing plant capacity be pushed to increase production to meet supply deficits?
   1. By increasing operating rates?
   2. By reducing industrial usage?
   3. By reducing losses?

D. In the long run, how will natural resource availability affect location, and economics of fertilizer production? Particularly, with regard to:
   1. Natural gas (for nitrogen fertilizers)?
   2. Phosphate rock?
   3. Potash?

III. Prices and Equilibrium

A. On the basis of supply and demand analysis, will fertilizer prices rise and how much?
   1. Absolutely?
   2. Relative to crop prices?

B. What has been the pattern of fertilizer price changes in the past?
   1. Absolute prices?
   2. Relative to changes in grain prices?

C. What will be the effect of natural resource shortages (natural gas and phosphate rock) on fertilizer production costs?

1. Short run curtailment and interruption of supply?
2. Long run increasing costs of exploitation?

D. What is the effect of fertilizer price increase on fertilizer demand and supply by country?

Note: On Part I, Demand:

Estimates of future grain production could be based on imperical estimates like TVA's, projected production from the world grain model, country and region estimates by ERS country analysists, world food budgets based on population, official USDA projections etc.

Note: On Part II, Supply:

TVA capacity data should be useful in estimating future fertilizer supply capability. TVA's capacity and supply-demand computer programs could also be used as a tool with other data sources. In particular, the computer programs can be used to estimate the effects on supply of various operating rates and levels of industrial usage.

IX. Ninth Meeting

Ad-Hoc Working Group on Fertilizer

UNIDO/FAO/IBRD-IFC

(IFC in the Chair)

Minutes of the Ninth Meeting, March 4-6, 1974

1. The participants convened in the World Bank Paris Office on March 4 at noon. Mr. Hartigan opened the deliberations of the Working Group after a lunch meeting, with the following participants present : Messrs. Becker-Boost, Vergh[illegible] and Dittmann of UNIDO, Couston and Hauck of FAO, Shields and Harre of TVA, and Hartigan and Voorheeve of IFC.

2. Agenda Item 1 : Introduction of participants and introductory review of recent work by their institutions.

The tentative agenda circulated beforehand, was adopted with the addition of two items : (i) Present Status of Pre-investment Missions and Future Programme and (ii) The World Food Conference (see Annex 1).

3. The participants had received a set of background papers on the World Bank fertilizer study. The chairman pointed out that these papers comprised the essential elements of the working notes used by the IFC staff in conducting the Bank Group study. A preliminary version of that study was now undergoing internal review in the Bank Group and a more final version might be available for distribution outside the Bank Group within a month.

4. UNIDO distributed three papers to the meeting :"Note on Demand for Energy and Oil Feedstocks for the Fertilizer Industry 1971, 1975 & 1980", a memorandum "World Food Conference, Rome, November 1974" dated 23 January 1974, and a note "Discussion with Dr. A.H. Boerma, Director General of FAO, 26 February 1974" by Mr. Abdel Rahman.
TVA distributed a summary of their study entitled "World Fertilizer Market Review and Outlook" which was presently being completed under contract to USAID. They advised that the full report would become available to the working group members within a few weeks.

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5. FAO informed the group of the establishment of the FAO Commission on Fertilizers in November 1973 with the terms of reference indicated in Annex 2.
The first session of the Commission is to be convened in July to consider its agenda (see Annex 2) and report its findings and recommendations for action to the World Food Conference to be held in November 1974. Mr. Couston is Secretary of the Commission.

6. TVA briefly described the nature of their study on the World Fertilizer Outlook. They suggested that IFC might wish to contact AID once this study is completed. AID has asked all US missions for information on fertilizer production in developed and developing [illegible] production bottlenecks. AID may be willing to share the information.

7. IFC briefly described the principal elements of the Bank Group study, in particular, the nature of the world fertilizer model which the Bank Group have developed. The model considers raw material costs, transportation and storage costs and capital costs, and seeks optimization in a least cost sense in satisfying world fertilizer demand. UNIDO suggested that a minimal-cost study would have little relevance for practical decisions, as the actual prices of raw materials are determined independently of cost considerations in the world market. IFC responded that the model has the facility to consider actual market prices also but that costs have initially been considered for analyzing economic comparative advantage.

8. UNIDO raised the question of the blending and mixing of fertilizers, which is separate from the consideration of primary nutrient fertilizer production. The Bank's model simply assumes that the former will take place wherever fertilizer is distributed. UNIDO concluded that it should therefore go forward in this matter with field missions without waiting for the Bank Group's strategy.

9. Agenda Item 2 : Review of trends in world supply/demand/trade

IFC described briefly its methodologies and findings in considering fertilizer supply and demand in 1980/81. Its conclusions about future probable supply and trade patterns and investment requirements were briefly discussed. In nitrogen the developing world would not be able to continue to look to the developed countries for reasonably priced nitrogen fertilizers. IFC raised the possibility of the developing world even achieving a net exporter status by 1980/81, at least in ammonia. In phosphates, a future trade pattern dominated by the US and North and West African producers was anticipated. IFC felt that

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net exporter status might again be possible for the developing world, at least in phosphoric acid.

It was felt that increased capacity utilization in existing developing world facilities was of highest priority. This can only be brought about by a programme of technical and financial assistance. Only a fraction of the energy released by the industrial nations' entry into fertilizers and priority access to these resources by the fertilizer sector should be expected. In order to avoid heavy reliance on fertilizer producers in the Third World, N. America and Western Europe will probably try to remain self-sufficient in fertilizers. UNIDO therefore felt that the price of raw materials is not the key to the fertilizer production strategy of developed countries.

10. UNIDO and TVA emphasized that perhaps 15 % of ammonia production goes into other uses than fertiliser production and that this production might vary at different stages of the price and supply cycle for fertilizers. For phos acid, the share is somewhat higher perhaps 25 % reflecting uses in detergents, animal feeds, etc. IFC concluded that it had if anything slightly underestimated such non-fertilizer uses, a fact which might be expected to strengthen its conclusions.

11. The group was told that a number of naphtha-based ammonia plants in Western Europe are lacking in feedstocks. OPEC could be advised to promote the supply of feedstocks to these plants in order to boost the present ammonia and urea output for supply to developing countries. However, refinery capacity may be a bottleneck.

12. Agenda Item 3 : Desirable investment alternatives in expansion of fertilizer supplies

IFC drew the Group's attention to its preliminary conclusions about the costs of various future supply alternatives. Since the general thrust of these conclusions was already familiar to the Group, discussion centered on the feasibility and practicability of various least cost alternatives. The clear desirability of fertilizers produced on the basis of low-cost raw material sources and economic locations and plant sizes was accepted ; the practibility of the necessary initiatives to bring these investments about, was questioned.

The Group felt that sales financing activities (export credit financing and/or import loans to consumer countries) would have to complement and possibly even precede, the establishment of new export oriented inve-

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[illegible] countries. It was suggested that capacity utilization in existing plants (Qatar, Saudi Arabia, Kuwait, Algeria, Venezuela [illegible] was constrained even now by the lack of confidence in the long term profitability of nitrogen fertilizer production. Investments to upgrade facilities and management were said to be constrained by the lack of sufficient incentive to carry them through.

Five elements were considered essential to any effective short and medium term programmes to expand fertilizer supplies in the developing countries: (i) export credit financing ; (ii) joint investments in new facilities ; (iii) intensive programmes of technical assistance and minor investments to expand output from existing facilities ; (iv) [illegible] and removal of bottlenecks to expanded fertilizer production and consumption in developing countries ; (v) programmes at all levels to ensure the most effective use of fertilizers within developing countries.

Participants saw the fertilizer problem as including also the need to [illegible] supplies for the next few months. The Commission on Fertilizers will gather the latest information on available supplies for the short run. The participants of UNIDO propose a plan of action to boost capacity utilization of the existing export oriented plants in Qatar, Saudi Arabia, Kuwait, Algeria, Venezuela and Iran.

Apart from technical assistance, it was thought necessary to encourage current production and future investment by export financing of fertilizer sales to LDC's. Bank Group financing, either of new plant investment or export-credit financing, was not seen as critical to a future strategy in many cases because LDC countries are able to secure the necessary funds themselves of course, to the extent that there is need for a package investment approach, involving other sectors and policy changes, Bank Group activity might be especially valuable.

13. Agenda Item 4 : Implications of Future Supply and Trade Patterns for Future International Prices of Fertilizers

IFC briefly explained its long-term forecasts of international prices as trend values based on underlying production costs in new and existing plants. The future predominance of export-oriented plants in the international markets was expected to bring a new plateau in prices tending to reflect, as minimum prices, average rather than marginal costs. UNIDO had reservations about such an approach to price forecasting, since it felt that in the past international prices for fertilizers had borne little relation to production costs.

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14. Agenda Item 5: Possibilities for Economic Use of Non-Petroleum Feedstocks

The meeting expressed the desire to have a study of the extent to which existing hydro-electric power capacities can be better utilized for ammonia production, and what the cost situation of electrolytic processes would be. Ghana, Afghanistan, Zaire and Iceland might offer possibilities. It was remarked that ammonia from coal has not yet proven to be widely attractive although it is believed to have substantial prospects in key countries such as India.

15. Agenda Items 6 and 7 : Present status of Pre-Investment Surveys, Missions and Future Program

Discussion centered on those activities most deserving of immediate action :

a) efforts to evaluate what can be done in selected countries to improve capacity utilization in fertilizer production facilities, both domestic market oriented and export oriented ;

b) efforts to better determine short-term supply sources for fertilizer imports into the developing world ;

c) intensified efforts for the better utilization of fertilizers in the agricultural sector, including the introduction of organic manures ; and

d) organization of missions to countries in which mixing/blending plants are necessary for the further processing of imported fertilizers. (See Annex 3)

The basis for country selection under (a) above was threefold : (i) significance of the problem of underutilization, in terms of potential additional output ; (ii) political acceptability of action ; and (iii) omission of countries for which the problems are already well-known. Feasibility studies have already been conducted by AGRAR TECHNIK for organic manure plants in Guinea and Yemen.

16. Agenda Item 8 : World Food Conference

The note for the record of the discussions with Dr. A.H. Boerma D.G. of FAO and Mr. I.H. Abdel Rahman, Executive Director of UNIDO, dated 26 February 1974 and the cable from Mr. Fischnich to Mr. Couston of 5 March were brought to the attention of the meeting (Annex 4)

Items a, b and c) of the note and the cable were discussed during the meeting and the minutes of the meeting of the ad hoc group reflects support of these items. As regards the Arab Industry Conference in Tripoli in April 1974, it was agreed that UNIDO and FAO, after further consultations, should present papers on the new capacities to be installed in the oil producing countries and on the Commission on Fertilizers established by FAO.

The work of the Ad-Hoc working group, the Tripoli meeting and the IFC/IBRD fertilizer study and the strategy evolved therefrom would be fed in as inputs for the first session of the FAO Commission on fertilizers and for the World Food Conference. Submissions to FAO from the various groups for the Commission meeting must be received by May 1, 1974.

17. Agenda Item 9 : Next meeting of the Working Group

It was proposed that the next meeting be held in FAO, Rome in the 2nd week of May 1974. The following items inter alia may be discussed :

a) Energy crisis and it effects fertilizer production.

b) The report on fertilizers and the strategy decisions of the Bank Group.

c) Papers to be presented to the FAO Commission on fertilizers in July 1974.

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7. of Pre-Investment Survey Missions

Advisory Group.

8. Conference.

9.

ANNEX 2

Future Consultation Arrangements

1. As requested by the 60th Session of the Council, the Consultation considered the desirability of establishing a standing inter-governmental FAO body on fertilizers and reviewed the draft terms of reference submitted by the Secretariat. The Consultation agreed with the need for a mechanism which would allow for an exchange of views between Governments, the fertilizer industry and non-governmental organization, on the subject of fertilizers on a continuing basis. It emphasized that a regular assessment of fertilizer production prospects and requirements was essential in order to avoid a repetition of the serious implications of limited fertilizer supplies which adversely affected food crop production programmes in developing countries. The Consultation stressed that this would be beneficial to both importing and exporting countries in that advanced assessments and planning would go a long way towards moderating fluctuations in demand, supplies and prices. In this connection, it was recommended that full use be made of the work carried out by the Working Parties of the Fertilizer Industry Advisory Committee (FIAC) and the Committee on Agriculture.

2. The Consultation recommended that a Commission on Fertilizers should be established under Article VI, para. 1 of the FAO Constitution. This Commission should be open to all Member Nations and Associate Members of the Organization. The Consultation further recommended that the proposed Commission have the following terms of reference:

(a) to review and analyse current production and consumption of, and trade in fertilizers, and to disseminate regularly information regarding the demand and supply position and its probable development in the medium and long-term ;

(b) to review the economic factors related to fertilizer use, with special reference to prices, distribution and trade ;

(c) to consider (in cooperation with UNIDO/FAO/IBRD-IFC Working Group on the Financing of Fertilizer Projects), measures to promote the expansion of production to meet estimated demand, with special attention to the expansion of production in developing countries, whenever feasible ;

(d) to consider any special difficulties which may exist, or may arise in relation to fertilizer production, consumption and trade ;

(e) to report and submit recommendations to the Director-General on policy issues arising out of its deliberations.

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3. The Consultation requested that the Director-General prepare a draft [illegible] the 61st Session of the Council providing for the establishment of a Commission on Fertilizers under Article VI, para. 1 of the Constitution and setting forth the Commission's Statutes.

4. The Consultation noted that representatives from inter-governmental organizations and international non-governmental organizations concerned with fertilizers would be able to participate in the work of the Commission in an observer capacity in accordance with the principles and procedures adopted by the FAO Conference. It was further noted that the work would be carried out in cooperation with UNIDO, UNCTAD and the World Bank Group.

5. The Consultation proposed that the Agenda of the first session of the Commission should contain the following items:

1) Review of current market situation, trends and prospects for fertilizer supplies and prices ;

2) Assessment of measures required in developing countries (a) to fully utilize existing capacities and (b) to expand existing capacities ;

3) Review of studies on availability and prices of raw raw materials in finished fertilizers in selected regions in order to determine the implications of long-term trends for developing countries ;

4) Study of maritime shipping capacities and freight rates.

It was stressed that item 2) warranted highest priority.

ANNEX 3

PROPOSED ACTION:

A - UNIDO

Activity 1:

IFRD-UNIDO Cooperative Programme

Evaluation missions for improving production in existing fertilizer plants (domestic use) in . the countries listed (Annex), with following objectives :

a) Determine degree of plant utilisation ;

b) Chances for debottlenecking and expansion of those facilities ;

c) Supply of feedstock (raw material, intermediate) to plants which suffer from supply problems ;

d) Determine assistance (technical and financial) required to overcome production problems ;

e) Determine needs + supply for spare parts ; financing ?
Spare parts pool ?

f) Determine need for financing (FE + local funds).

Time required : 3 missions each 2 men (UNIDO-IBRD),
1 week per country,
5-8 countries per mission,
Total duration : 4-6 months.

Timing : completed in October, 1974.

Costs (travel + subsistance) : about $ 80,000.

How should these missions be initiated ?

Activity 2:

. UNIDO-Fertilizer section

Identifying problems of the existing export oriented (N + P) fertilizer plants, such as :

a) Production and maintenance problems,
Massive technical assistance programme ;

b) Advice on additional installations ;

c) Export credit financing needs.

Costs : about $ 30,000 (10 x 2 men x 2 weeks each).

b - FAO (+ UNIDO)

Activity 1 - along the T.O.R. for the FAO Fertilizer Commission :

- Determine sources of finished fertilizer supply (immediate and medium term), FAO, Commission on Fertilizers.

availability, types, prices, quantity, storage, transport,

- Requires travel within Europe + some US traders (see attached preliminary list).

Time required : 1 man for 6 weeks

Expenses : travel + subsistance : $ 4,000

Timing : immediate.

- Up-date this information regularly (monthly ?) to be decided by the Fertilizer Commission.

Activity 2 (see attached pages)

Activity 5:

FAO: to intensify efforts in nutrients in the scarce and expensive mineral fertilizers in agriculture.

The various possibilities (placement of fertilizers, timing of application, combination of fertilizers with more efficient plant varieties, ground rock phosphate, slow and controlled release fertilizers) indicate a possible increase in plant nutrient utilisation of 20 % and more.

Proposal : consultation of experts to work out guidelines for better utilisation of plant nutrients in mineral fertilizers.

Time required : for consultation : 1 week + 4 consultant months.

Timing : soonest.

Expenses : $ 30,000

Activity 6:

FAO : to intensify assistance in promoting use of organic materials as fertilizers.

Possibilities (animal manure, green manure, mulch, compost, topsoil, recycled urban and industrial waste, Nitrogen-fixation) could provide the soils with plant nutrients but would also improve the physical properties of the soils for a better utilisation of mineral fertilisers. This approach also has an element of environmental protection.

Proposal : consultation of experts to work out realistic quidelines for the use of different types of organic materials as fertilisers.

Time required : for consultation : 1 week + 4 consultant months.

Timming : soonest

Expenses : $ 30,000

C - IBRD

Activity 7:

1. Reach agreement on conclusion of Bank fertilizer study and formulation of Bank policy.

2. Derive a list of large-scale fertilizer plants (N, P), location, raw material supply, markets (Export credit financing), and possibilities of investment.

3. Discuss this list in next ad-hoc working group meeting.

D - UNIDO-FAO

Activity 8:

1. Organise missions to countries for which mixing and blending or complex fertilizer, plants have been envisaged, along the lines of previous mission plans of the ad-hoc working group.

Time required : about 15 missions, 3 men each,
2-3 weeks per mission.

Costs : 30 man-months including 20 man month consultants time, travel + subsistance

Total cost : about $ 120,000

Financing from UNIDO-IBRD Cooperative Programme ?

Direct Bank Contribution ?

FAO-Fertilizer Commission financing ?

[illegible]

Discussion with Dr. A.H. Boerma, Director-General of FAO

26 February 19[illegible]

1. Dr. Boerma said that he had no particular problems to raise as regards co-operation between FAO and UNIDO.

2. I raised the question of the Food Conference and the areas of possible interest to UNIDO. Dr. Boerma's immediate reply was the question of fertilizers as the current situation and future prospects for the availability of fertilizers for [illegible] were very difficult.

3. [illegible] the Joint UNIDO/FAO/IBRD Committee which has been in operation for [illegible] suggested that, since the coming meeting of the Committee was on 4, 5 [illegible] in Paris, Dr. Boerma might be able to give certain directives to the Committee for any actions in this field. He agreed.

4. I suggested three areas for possible action:

a) The investment programme of fertilizers in the developing countries, which had been planned by the Committee but not supported either by IBRD or by UNDP, in order to prepare feasibility studies for specific projects. If funds were found, this could be reactivated and would lead eventually in the short-term to an increase in the production of fertilizers in the developing countries. An additional factor in the recent energy crisis is the interest of oil [illegible] countries in establishing large facilities for intermediate petrochemicals and fertilizers.

b) The question of better utilisation of un-utilized capacities in the existing factories of fertilizers in the developing countries. I mentioned that I knew specifically one case in Egypt and Dr. Boerma said that the same situation existed in India and other countries. An immediate programme to stimulate increased production could be established jointly by the three organisations.

c) The question of trade in fertilizers since some of the major producers are following restrictive policies and some of the consumers find it difficult to buy from the international market because of the lack of supply or the lack of information about prices and availabilities. An initial effort may be useful in the form of trade information which could be later extended to the question of trade practices.

5. The same arguments could apply with due modifications also to the question of pesticides and insecticides.

.../...

cc: Mr. Le Guay
Mr. [illegible]
Mr. [illegible]
Mr. [illegible]
Mr. Salomon
Mr. Eleish

Mr. Verhoeve

6. As regards the Conference itself, the Secretariat which has been established would actively prepare the basic material a large part of which would be done by FAO. The Preparatory Committee would finalise the agenda in June and, since time is short, the documents would be [illegible] directed rather than intensively comprehensive. Mr. Aziz from FAO is leading the FAO team and is also acting as Deputy Secretary General.

7. The current consultations in Rome with the agencies may indicate desirable contributions including that of UNIDO.

8. I mentioned the Arab Industry Conference in Tripoli in April and suggested that on that occasion a joint approach or recommendation by FAO and UNIDO would be helpful especially as regards the new capacities to be installed in the oil producing countries.

9. Mr. Boerma agreed with me that if necessary the tripartite committee may be invited to have more meetings or additional support to cover the above-mentioned questions.

10. I raised with Mr. Boerma the question of the Industry Co-operative Programme which is going to have its next meeting on 11-12 March in Rome and summarised my discussions with Mr. Friedrich. I told him that we expected to co-operate fully with the Programme but that for the time being any formalization of relations or the establishment of a liaison office in Vienna should better be postponed. Mr. Boerma mentioned that he had no comments on ICP's desire to expand to other fields and he thought that in general they were doing good work.

I.H. Abdel-Rahman

27 February 1974

UNITED NATIONS NATIONS UNIES

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

INTEROFFICE MEMORANDUM

X. Tenth Meeting

DATE: 3 February 1975

REFERENCE: TS 6063/11

10th Meeting of UNIDO/FAO/IBRD working group on fertilisers
29-3 January 1975, FAO, Rome

I participated in the above meeting on behalf of UNIDO. The provisional agenda and the list of participants are attached herewith.

1. Discussion of the World Food Conference resolution on fertilizers

The agenda item under this heading was discussed in detail. During the review of existing country and regional information and the methodology of supply and demand projections, it was found that neither the agencies in the UN family nor organisations such as the International Fertilizer Development Centre, NITREX, TVA, USAID, British Sulphur Corporation and other bilateral and trade organizations have a common methodology nor do they have an agreed definition of terms and therefore the projections for duture supply and demand vary very much. In order to develop a common methodology and definition of terms, the World Bank participants proposed that all the organizations doing this work send to them their methodology and the comments on definition of terms which they will put into the form of a report to be finalized by the next meeting of thie working group. In the meantime, during the first week of April, another meeting of the working group will be called to come out with agreed projections for supply and demand for 1980/81 and 1985/86 which has to be submitted to the Commission on Fertilizers meeting in June 1975. The proposal of the World Bank Group, the terms for which definitions have to be agreed upon and the World Bank projections for 1980 are attached herewith.

2. Agenda item 1(b)

In reviewing the assistance being provided to developing countries by UN agencies and bilateral agencies, it was found that there was a large amount of overlap. In order to reduce such overlap and improve the co-operation UNIDO/FAO and World Bank were requested to send to each other their proposed supporting activities and technical assistance projects for 1975. The proposal to call a meeting of all aid-givers in order to discuss the problems was also mentioned. UNIDO and World Bank and the International Fertilizer Development Centre made statements showing their activities.

3. Agenda item 1 (c), para.8

The question of development of improved mineral fertilizers to be supplemented with locally available plant nutrients and processing of organic materials were discussed by FAO. The International Fertilizer Development Centre and UNIDO stated their work in this field. It was agreed that during the April meeting of the working group this subject should be discussed in more detail and clarified.

4. Agenda item 2

The aims, objectives and financing of the International Fertilizer Development Centre were explained by Mr. McCune who is the Managing Director of this multi-national organisation for which the aid-giving countries are now only Canada and USA. More countries are expected to join. The major objectives of this Centre are research on improved types of fertilizers, re-cycling of waste materials and biological fixation of nitrogen. Mr. Carmignani, Chief of the Fertilizer Unit of the World Bank explained the Bank's approach on the development of the fertilizer industry. The Bank has already invested about one billion dollars in this industry and this will be accelerated in the coming years. Further, financing of projects in the efficient use of fertilizers and fertilizer promotion will also be undertaken in the future. NITREX which is a trade organisation of nitrogen-producing companies in Europe, was represented by FIAC - Fertilizer Industry Advisory Committee - who explained their methodology of projecting fertilizer supply and demand. The British Sulphur Corporation and the International Superphosphate Manufacturers Association's representatives explained the work they are doing.

5. Agenda item 3

It was agreed to hold the next meeting of the working group in Rome during the first week of April, followed by a second meeting in the World Bank office in Paris.

A detailed report on the meeting will be prepared by FAO and circulated to all participants and organisations.

cc: Mr. Becker-Boost
Mr. Afifi
Mr. Keleti
Mr. El Malfany
Mr. Buell

(Extract from WFC Resolution III - Fertilizers)

1. Recommends that during the current period of supply shortages and high prices, the international organizations and bilateral aid agencies significantly intensify their efforts to meet the needs of developing countries, particularly the least developed and those most seriously affected by economic crisis, through increased material and financial support to the International Fertilizer Supply Scheme and by stepping up their own efforts, so as to bridge the gap in supply as estimated by the Scheme from [illegible];

2. Calls upon developed countries, international agencies and others in a position to do so to extend assistance in the form of grants and concessional loans to enable developing countries to import urgently needed fertilizers and raw materials;

3. Recommends that FAO, UNIDO and IBRD jointly organize a programme to assist developing countries to improve the efficiency of their fertilizer plant operations coordinating with agencies providing assistance for this purpose;

4. Urges international institutions, developed countries and others in a position to do so to provide financial assistance, technical assistance, technology and equipment on favourable terms, to build required additional fertilizer production capacities in appropriate developing countries that possess oil and natural gas, phosphate rock and or other natural resources such as coal, in other developing countries where specific local factors justify such investments, and also to assist all developing countries with storage facilities, distribution services and other related infrastructures;

5. Requests that interested countries and parties actively explore the possibilities for setting up cooperative ventures in the fertilizer field among countries producing fertilizer raw materials, countries with established fertilizer production industries and fertilizer consuming countries with a view to the promotion of more economic and stable fertilizer production and supply systems, and to consider any other measures that may be needed to channel adequate investments into the fertilizer field;

6. Requests the FAO Commission on Fertilizers, in collaboration with the member states of the United Nations and the other international organizations concerned such as UNIDO and IBRD, to undertake as a matter of urgency an authoritative analysis of the long-term fertilizer supply and demand position in order to provide the elements of a world fertilizer policy which would include the overall aim of avoiding cyclical imbalances between supply and demand, help ensure that fertilizer prices are stabilized at reasonable levels and would enable developing countries to obtain fertilizers they need for their food and agricultural production;

7. Requests that all countries should introduce standards for ensuring fertilizer quality and policies and measures for the promotion of the most efficient and effective use of available fertilizers including the application of mineral fertilizers as well as alternative and additional sources of plant nutrients such as organic fertilizers, legume crops and other means of biologically fixing nitrogen and recycling of waste and combining fertilizer use with other improved agricultural practices; it also recommends that each fertilizer consuming nation call upon its citizens voluntarily to reduce non-critical uses of fertilizer toward making available more fertilizer for food production in developing countries.

8. Recommends the intensification of international efforts in the transfer of technical knowledge, particularly on the intermediate level, in order to increase production and to make more effective use of fertilizers, including the improvement of extension services and training of farmers in all countries, as well as research on methods to augment soil fertility and plant growth through the development of improved mineral fertilizers, greater utilization of locally available plant nutrients, of different types of organic fertilizers, biological fixation of nitrogen, on micro-elements, and on food crop varieties that are efficient in the uptake of plant nutrients from the soil.

([illegible] Resolution [illegible] - Fertilizers)

1. Recognizes that [illegible] the current period of supply shortages and high prices, [illegible] multilateral [illegible] agencies [illegible] to [illegible] of developing countries, particularly [illegible] affected by economic crisis, through [illegible] the International Fertilizer Supply Scheme [illegible] bridge the [illegible] the Scheme [illegible];

2. Calls upon [illegible] countries, international agencies and others in a position to do so to [illegible] assistance in the form of grants and concessional loans to enable developing countries [illegible] urgently needed fertilizers and raw materials;

3. Recommends that FAO, [illegible] and IBRD jointly organize a programme to assist developing [illegible] the efficiency of their fertilizer plant operations coordinating [illegible] providing assistance for this purpose;

4. Urges international institutions, developed countries and others in a position to do so to provide financial assistance, technical assistance, technology and equipment on favourable terms, to build required additional fertilizer production capacities in appropriate developing countries that possess oil and natural gas, phosphate rock and or other natural resources such as coal, in other developing countries where specific local factors justify such investments, and also to assist all developing countries with storage facilities, distribution services and other related infrastructures;

5. Recommends that interested countries and parties actively explore the possibilities for setting up cooperative ventures in the fertilizer field among countries producing fertilizer raw materials, countries with established fertilizer production industries and fertilizer consuming countries with a view to the promotion of more economic and stable fertilizer production and supply systems, and to consider any other measures that may be needed to channel adequate investments into the fertilizer field;

6. Requests the FAO Commission on Fertilizers, in collaboration with the member states of the United Nations and the other international organizations concerned such as UNIDO and IBRD, to undertake as a matter of urgency an authoritative analysis of the long-term fertilizer supply and demand position in order to provide the elements of a world fertilizer policy which would include the overall aim of avoiding cyclical imbalances between supply and demand, help ensure that fertilizer prices are stabilized at reasonable levels and would enable developing countries to obtain fertilizers they need for their food and agricultural production;

7. Requests that all countries should introduce standards for ensuring fertilizer quality and policies and measures for the promotion of the most efficient and effective use of available fertilizers including the application of mineral fertilizers as well as alternative and additional sources of plant nutrients such as organic fertilizers, legume crops and other means of biologically fixing nitrogen and recycling of waste and combining fertilizer use with other improved agricultural practices; it also recommends that each fertilizer consuming nation call upon its citizens voluntarily to reduce non-critical uses of fertilizer toward making available more fertilizers for food production in developing countries.

8. Recommend the intensification of international efforts in the transfer of technical know-how, particularly at the intermediate level, in order to increase production and to make more effective use of fertilizers, including the improvement of extension services and training of farmers in all countries, as well as research on methods to augment soil fertility and plant growth through the development of improved mineral fertilizers, better utilization of locally available nutrients, of different types of organic materials, biological fixation of nitrogen, and of micro-elements, and of food crop varieties that are efficient in the uptake of plant nutrients from the soil.

Tenth Meeting of IFDC FAO/World Bank Working Group

on Fertilizers

29 - 30 January 1975

FAO, Rome

9:30 a.m., Nigeria Room

(Chairman: Representative of FAO)

PROVISIONAL AGENDA

1. Discussion WFC resolution on fertilizers (copy attached)

   (a) Paragraph 6

   (i) Review of existing country and regional information, including coordination of data collection;

   (ii) Methodologies of supply and demand projections;

   (iii) Harmonization of world, country and regional projections of NPK supply, demand and investment needs up to 1980/81, 1985/86;

   (iv) Elements of a world fertilizer policy.

   (b) Paragraph 3

   (i) Review of assistance being provided;

   (ii) Identification of countries to be jointly assisted in cooperation with other agencies.

   (c) Paragraph 8

   (i) Development of improved mineral fertilizers;

   (ii) Locally available plant nutrients;

   (iii) Processing of organic materials for use as fertilizers.

   (d) Discussion of other paragraphs.

2. Other business

3. Next meeting - venue - dates.

10th Meeting UNIDO/FAO/World Bank Working Group
on Fertilizers

29 - 30 January 1975

LIST OF PARTICIPANTS

UNIDO

M.C. Verghese	Chief, Fertilizers, Pesticides and Petrochemicals

WORLD BANK

R. Carmignani	Chief, Fertilizer Unit
W.F. Sheldrick	Consultant
H. Stier	Economist, Fertilizer Unit

OECD

H. Schneider	Administrator (Development Centre)

Fertilizer Industry

A. Kwilik	Director-General, MITREX
D. Koch	General Manager, +Complex Fertilisers, MITREX
M. L'Uplattenier	Economic Analyst, MITREX
A. Seelinger	MITREX
A. von Peter	Director, International Potash Institute
W. Westhofen	Kali und Salz, A.G.
K. Windridge	Secretary-General, IFDA
D.G. Jones	Director, British Sulphur Corporation Ltd.
B. McCune	Managing Director, International Fertilizer Development Centre
E.E. Reidinger	Economist, USDA

FAO

M.F. Benjamin	ESC
J.W. Couston	AGS (Chairman)
T. Chan	Fertiliser Programme, AGL
M. Erus	ESS
F.W. Hauck	AGL
M. Kesseba	IPS
D. Rucker	AGS
R. Schütte	AGS
R.W. Steiner	IPS
K. Wiener	AGS
E. Szczepanik	ESP
S. Zarqa	ESS
M. Aspiras	AGS

a) Projections: future values for a variable derived using only mathematical techniques. That is without adjustment for detailed knowledge which would modify the purely mathematical estimates. Not intended to be predictions of actual future values.

b) Forecasts: predicted future values for a variable derived in whatever fashion.

c) Estimates: any values attached to a variable when its exact values are unknown.

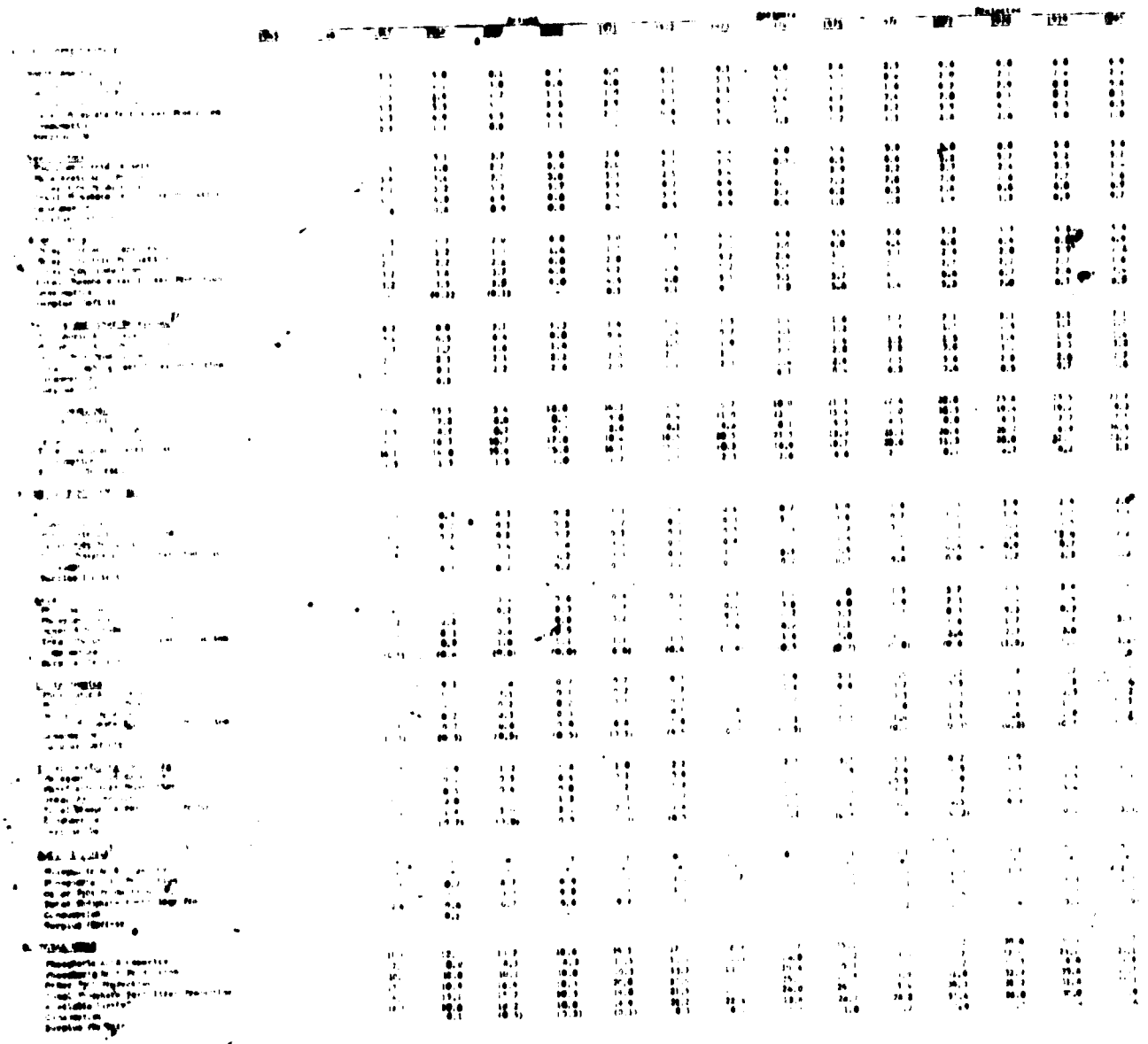
d) Consumption: actual amount consumed.

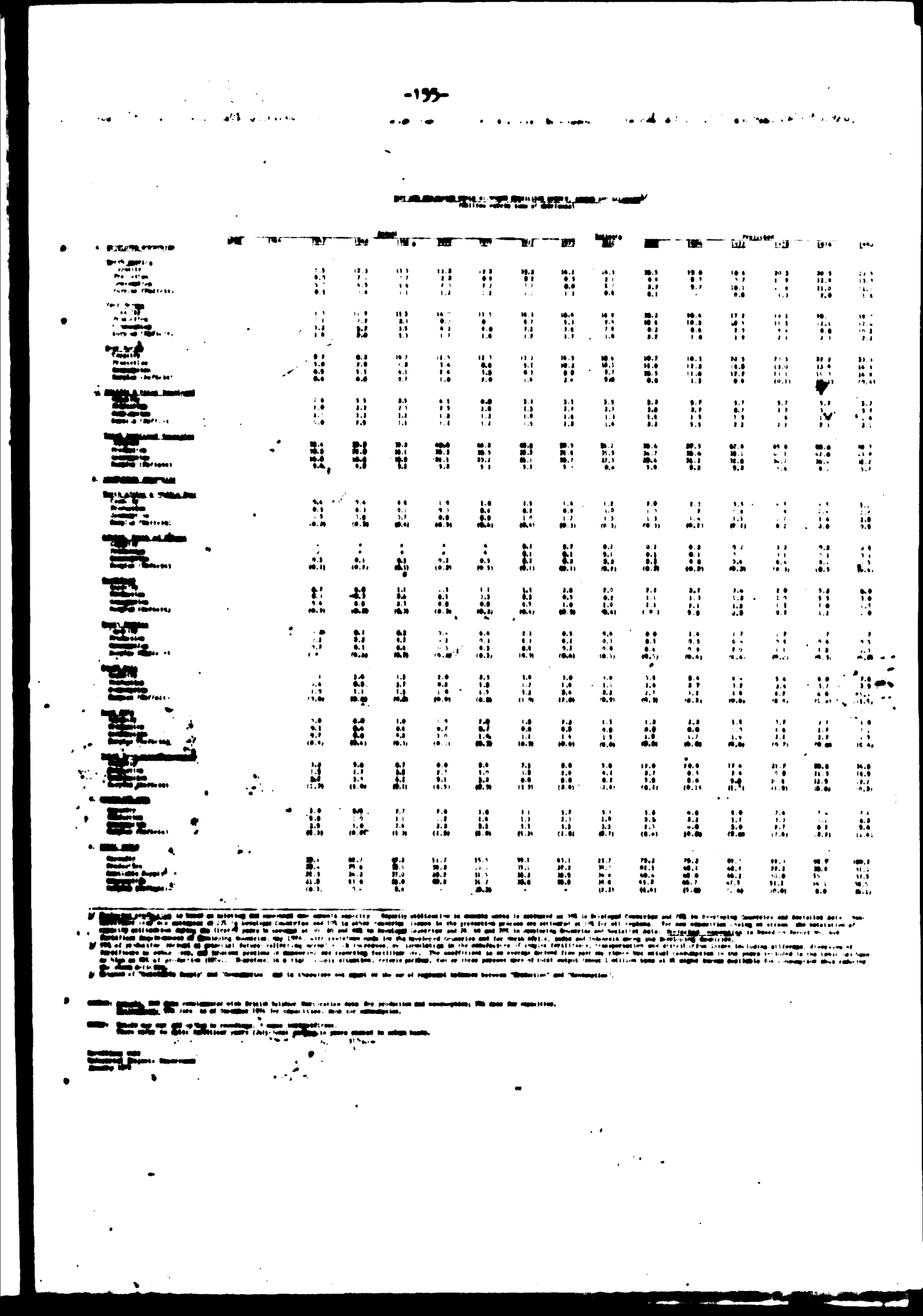
e) Demand: not to be treated as synonimous with "consumption". To be used only to describe the amount which would have been consumed if available.

f) Consumption requirements (or needs): amount which should be (or have been) consumed to achieve some stated objective.

---

1. Requirements
2. Effective demand
3. Shortfall/deficit
4. Supply/demand
5. Production
6. Capacity (installed design, name plate)
7. Nominal capacity
8. Rated daily capacity or rated annual capacity
9. Distribution
10. Delivery





WORLD BANK GROUP [illegible] OF [illegible] FERTILIZER [illegible]

(In Millions US$)

Country	Plant	Start-Up Date	Final Products	Estimated Total Cost At Start-Up	Bank Group	Total IFC	Other columns
ON STREAM							
Tunisia	[illegible]-Engrais	1965	TSP	14	3.5	[illegible]	[illegible]
Senegal	SIES	1968	[illegible]	12	9.5	[illegible]	[illegible]
Congo	CPC	1969	Potash (MEI)	95	30.0	-	[illegible]
Brazil	Ultrafertil	1970	NPK & Urea	105	11.3	[illegible]	[illegible]
India	Indian Explosives	1970	Urea	[illegible]	[illegible]	[illegible]	[illegible]
Pakistan	[illegible]-Hercules	1971	Urea	[illegible]	[illegible]	[illegible]	[illegible]
India	Zuari Agro Chemicals	1973	NP & Urea	75	[illegible]	[illegible]	[illegible]
Indonesia	[illegible] II	1974	Urea	[illegible]	[illegible]	[illegible]	[illegible]
TOTAL				[illegible]	[illegible]	[illegible]	[illegible]
%				(100)	[illegible]	[illegible]	[illegible]
APPROVED AND UNDER CONSTRUCTION							
India	Cochin II	1975	NPK	[illegible]	20	-	[illegible]
India	Gorakhpur	1975	Urea	23	10	-	[illegible]
Turkey	IGSAS	1976	Urea	130	[illegible]	-	[illegible]
Morocco	Maroc-Phosphore	1975	Phos. Acid/MAP	155	[illegible]	-	[illegible]
India	Nangal	1977	Urea	115	[illegible]	-	[illegible]
Pakistan	Multan	1977	NP & CAN	[illegible]	[illegible]	-	[illegible]
India	Trombay IV	1977	NPK	[illegible]	[illegible]	-	[illegible]
Egypt	Talkha	1977	Urea	135	[illegible]	-	[illegible]
Romania	Turnu [illegible]	1977	Urea/DAP	201	[illegible]	-	[illegible]
Tunisia	Gafsa	1977	Phos. Rock	[illegible]	23	-	[illegible]
TOTAL				[illegible]	[illegible]	-	[illegible]
%				(100)	[illegible]	[illegible]	[illegible]
UNDER APPRAISAL							
India	Sindri	1977	Urea	100	91	-	[illegible]
India	[illegible]	1978	Urea	221	104	-	[illegible]
Indonesia	Pusri III	1977	Urea	197	112	-	[illegible]
Bangladesh	Ashuganj	1978	Urea	245	33	-	[illegible]
Mexico	Guanomex	1978	Urea	[illegible]	30	-	[illegible]
TOTAL				[illegible]	[illegible]	-	[illegible]
%				(100)	[illegible]	[illegible]	[illegible]
OVERALL TOTAL				2,012	922	27.6	[illegible]
%				(100)	(36)	[illegible]	[illegible]
UNDER CONSIDERATION							
Sri Lanka	n.a.	n.a.	Urea	n.a.	Under formulation		[illegible]
Burma	n.a.	n.a.	Urea	n.a.	Under formulation		[illegible]
Philippines	n.a.	n.a.	Urea	n.a.	Under formulation		[illegible]
Jordan	Arab Chemicals	n.a.	Phos. Acid/MAP	n.a.	Under formulation		[illegible]
Egypt	n.a.	n.a.	Phos. Rock	n.a.	Under formulation		[illegible]
India	[illegible]	n.a.	NPK	n.a.	Under formulation		[illegible]
India	Rajasthan	197[illegible]	Phos. Rock	n.a.	Under formulation		[illegible]
India	[illegible]	1976/78	n.a.	n.a.	-		[illegible]
Pakistan	-	1978	Urea	[illegible]	Under formulation		[illegible]

1/ Loan plus equity capital financing.
2/ Total capacity after expansion.
3/ AID (1[illegible]), [illegible] (1[illegible]), [illegible] (13), Others ([illegible]).
4/ Bank of America ([illegible]).
5/ AID ([illegible]), Abu Dhabi ([illegible]).
6/ Arab Fund ([illegible]), Kuwait Fund ([illegible]), Abu Dhabi Fund (10), Lybian Bank (40), Govt. of Qatar ([illegible]).
7/ Pusri III plant capacity includes Pusri II.
8/ ADB, AID, [illegible], [illegible], Others ([illegible]).

Industrial Projects Department
December 197[illegible]

Rome, 20 January 19

THE DESIGN OF THE DUTIES OF A FERTILISER DATA CENTRE

A Proposal for an Interim Informal Role of the World Bank as a Prelude to the Discussion on the Creation (or the Strengthening) of such a Centre

Given that:

(i) The world load on fertilizer data collection has so far been carried out successfully by FAO and UNIDO with corresponding drain of their resources;

(ii) The World Bank disposes at the moment of some resources (staff and budget) to help attack the problem of fertilizer data centre and has already initiated some basic work to that extent;

(iii) There is a crucial need for a thorough review of world fertilizer data sources and projection methodologies and for developing an authoritative data centre where primary information on fertilizers will be assembled and processed to the benefit of all organizations concerned and the industry.

(iv) FAO, UNIDO and the World Bank have the duty to present the first commonly accepted fertilizer supply/demand projection to the FAO Fertilizer Commission in Rome in June 1975.

(v) There are various existing Data Centre as well as proposals for the creation or the strengthening of such a Data Centre.

The World Bank proposes that:

(i) It acts as a coordinator during the interim period (say the next 3 to 4 months) preceding the discussion of a commonly accepted world data centre;

(ii) to that extent, it will receive from the following organizations .... a summary of the status of their work on fertilizer statistics and an inventory of their data base and methodologies;

(iii) It will assemble and compare all elements related to data bases and methodologies (including terminology);

(iv) It will prepare a summary report on the state of the art in all organizations concerned and identify gaps and overlapping in information and present recommendations on the strengthening or establishment of commonly accepted data centre;

(v) It will sponsor and organize a meeting in Paris in the World Bank Office (during the first week of April 1975) to discuss the above report and the recommendations;

(vi) It will prepare a draft detailed agenda for such a meeting to be discussed by the participants and agreed upon not later than mid-March 1975.

XI. Eleventh Meeting

Meeting of the 11th Session of the Ad-hoc Working Group

UNIDO/FAO Study Group on Fertilizer

Rome, 1 - 4 April 1975

The 11th meeting of the Group was held in FAO, Rome, 1 - 4 April. The list of participants is attached as Annex II. The meeting expressed its disappointment that a representative of UNIDO did not attend as expected, and expressed the hope that UNIDO would attend all future meetings of the Group.

Mr. Coulston chaired and opened the meeting. The Provisional Agenda, attached as Annex I, was adopted without change.

The minutes of the 10th Meeting were adopted with the following amendments: Page 2, last paragraph, second and third sentences to read: "For certain countries (including India) it makes projections based on a model approach, taking into consideration some seven assumptions such as population, nutritional requirements, fertilizer response ratios, etc. Demand projections for another group of countries are based on trend analysis (straight line, parabolic, logarithmic, logistic). The final projection is made following the best fitting method and modified by other factors including judgement".

Page 3, sixth paragraph, last sentence replace "methodology" with "trend fit".

Page 4, second paragraph, second sentence, to read, "UNIDO pointed out that they have a publication 'Directory of Fertilizer Production Facilities, Part III, ECE Countries' containing data on fertilizer production and consumption in centrally planned countries, including forecasts to 1980."

Page 4, third paragraph, add a new sentence, "The World Bank also suggested a regional classification" after the second sentence and replace "the next" in the last sentence with "a future".

Page 6, second paragraph, last sentence, add "with suppliers" after contracts and "which would take into account the development of costs including those of feedstocks" after formula and delete the last five words of the sentence.

Under item 4 of the Agenda the Group agreed on estimates of regional and world consumption, capacity, production and supply of N, P_2O_5 and K_2O year by year from 1973/74 to 1980/81. It also agreed that the trend to be used to project consumption of the three nutrients to 1985/86. These data are attached as Annex III.

The N and phosphoric acid capacity data are for projects which have been contracted and raw material and financing secured. K_2O capacity are based on firm information on expansion of existing and investment in new production facilities.

Nitrogen capacity was defined to be nameplate capacity x 330 operating days with the following adjustments to account for phasing of new capacity coming on stream.

(a) First six months 20% of 70%

(b) Next 18 months 70% of 70%

(c) After 24 months 70% of 100%.

To obtain N available for fertilizer (supply) the following deductions from capacity were made.

(a) 5% for losses during primary production (NH_3)

(b) Technical N plus non-fertiliser use

(c) 5% for losses during manufacture of secondary products, transportation and storage.

Phosphoric acid capacity was defined to be nameplate capacity x 330 operating days of wet phos acid plants. To obtain P_2O_5 available for fertilizer for developed countries, Eastern Europe and the USSR, 10% was deducted for industrial use and 6% for losses. A 90% capacity utilization rate was used with phasing of new plants being taken as 30% of 100% the first year, 60% of 100% the second year and 90% of 100% the third and subsequent years. For developing countries no allowance was made for industrial use and 6% deducted for lossee. A 70% capacity utilization rate was used with planning of new plants being taken as 20% of 100% the first year, 40% of 100% the second year and 70% of 100% the third and subsequent years. Other phosphates were added to obtain total supply.

Potash capacity is based on marketable production of potash in 330 days. New projects in new countries are assessed in light of circumstances and prospects for sales. Potash production is not adjusted by region but only for the world by deducting 4% for industrial uses and 1.5% for losses to determine potash available for agriculture.

Under other business it was proposed by the representative of the World Bank that the Group meet in Washington possibly in October to up-date consumption and supply and discuss projection methodologies as was intended during the 10th Meeting of the Group, but for which time did not allow. It was requested that comments on the definition prepared by the Bank representatives be sent to him as soon as possible so that they could be revised, discussed and agreed on at the next meeting of the Group.

ANNEX 1

11th Meeting of ad-hoc UNIDO/FAO/World Bank

Working Group on Fertilizers

Rome, 1 - 4 April 1975

PROVISIONAL AGENDA

1. Opening of Meeting
2. Adoption of Provisional Agenda
3. Adoption of Draft Minutes of the 10th Meeting of the Group
4. Harmonisation of Country, Regional and World Projections of N, P_2O_5, K_2O Supply, Demand and Investment Needs Year by Year up to 1980/81 and 1985/86.
5. Other Business

ANNEX 2

LIST OF PARTICIPANTS

USA

R. [illegible] — Economist, Economic Research Service

IBRD

H. [illegible] — Economist, Fertilizer Unit

Fertilizer [illegible]

A. von [illegible] — Director, International Potash Institute
[illegible].M. — Corporate Planner, I.C.I., Agricultural Division
J. [illegible] — Senior Economist, I.C.I., Agricultural Division
G. [illegible] — Wirtsch-Dipl., Kali and Salz, AG
[illegible] — Economic Analyst, Nitrex, AG
K.F. [illegible] — ISMA

IFA

J.I. [illegible] — Senior Economist, International Fertilizer Development Staff

The Fert[illegible] Institute

W.C. [illegible] — Vice President, Member Services

[illegible]ersity [illegible] Scotland

G.R. [illegible] — Professor, School of Agriculture

FAO

D.F.R. P[illegible]er	AGS
J.W. C[illegible]on	AGS
R. D[illegible]l	AGL
N. Erus	ESS
F.W. Ha[illegible]	APP
W. Mathi[illegible]	AGL
J.A. Moll[illegible]	ESP
D.L. Rucke[illegible]	AGS
E. Szezep[illegible]	ESP
S. Zarqa	ESS

Table 1 **Nitrogen Phosphate and Potash Capacity, 1974/75 - 1980/81 Nutrients**

(million metric tons nutrients)

	1974/75			1975/76			1976/77			1977/78		
	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Developed market economies	35.62	15.76	17.16	36.52	17.33	17.70	40.02	17.33	17.32	[illegible]	[illegible]	[illegible]
North America	14.82	8.70	9.92	15.00	9.31	9.92	18.50	9.31	9.92	21.40	9.45	[illegible]
Western Europe	15.30	5.44	6.44	15.50	6.36	6.85	16.40	6.41	7.07	[illegible]	[illegible]	[illegible]
Oceania	0.37	0.23	-	0.37	0.23	0.03	0.37	0.23	0.03	0.37	0.23	0.03
Other Dev. Market Econ.	4.55	1.41	0.80	4.65	1.43	0.90	4.65	1.38	0.30	[illegible]	[illegible]	[illegible]
Developing market economies	8.28	3.53	0.50	9.55	4.28	0.50	12.00	6.44	0.50	[illegible]	[illegible]	[illegible]
Africa	0.39	1.00	0.50	0.39	1.35	0.50	0.39	2.14	0.50	[illegible]	[illegible]	[illegible]
Latin America	2.38	0.88	-	2.71	1.28	-	[illegible]	1.72	-	[illegible]	[illegible]	-
Near East	1.65	0.67	-	[illegible]	0.70	-	[illegible]	1.09	-	[illegible]	[illegible]	-
Far East	3.86	1.04	-	4.68	1.05	-	6.06	1.20	-	[illegible]	1.32	-
Centrally Planned Economies	22.26	5.88	11.15	24.48	5.05	11.58	27.01	6.14	12.25	[illegible]	[illegible]	[illegible]
Asia	4.93	0.06	0.15	5.04	0.07	0.15	6.39	0.15	0.15	[illegible]	[illegible]	[illegible]
Europe and USSR	17.33	5.82	11.00	19.44	5.88	11.40	20.59	5.99	12.10	[illegible]	[illegible]	[illegible]
World Total	65.52	25.41	28.81	70.55	28.26	29.75	79.73	30.41	30.67	[illegible]	[illegible]	[illegible]

	1978/79			1979/80			1980/81		
Developed Market Economies	44.42	16.60	18.62	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
North America	21.10	10.08	10.17	21.50	10.22	10.32	21.90	10.33	10.32
Western Europe	18.30	6.41	7.51	19.10	6.41	7.72	19.00	6.41	[illegible]
Oceania	0.37	0.23	0.04	0.37	0.23	0.05	0.37	0.23	0.06
Other Dev. Market Econ.	4.65	1.88	0.90	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Developing Market Economies	21.31	7.23	0.55	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Africa	0.98	2.94	0.50	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Latin America	4.62	1.72	0.05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Near East	4.52	1.08	-	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-
Far East	11.19	1.49	-	[illegible]	[illegible]	-	[illegible]	[illegible]	-
Centrally Planned Economies	30.64	6.14	13.25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Asia	5.74	0.15	0.15	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Europe and USSR	21.90	5.99	13.10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
World Total	96.37	31.97	32.42	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

1/ N, P_2O_5, and K_2O capacities are based on information up to the end of March 1975. [illegible] capacity is for [illegible] phosphoric [illegible].

[illegible] not all [illegible].

Prepared by UNIDO/FAO/World Bank Working Group on Fertilizers, 1 - April 1975

Table 2 **World Nitrogen Fertilizer Supply, Demand and Balance, 1974/75 - 1980/81, by Regions**
(million metric tons N)

	1974/75			[illegible]			1976/77			[illegible]		
	Supply	Demand	Balance	Supply	Demand	Balance	Supply	Demand	Balance	Supply	Demand	Balance
Developed Market Economies	22.1	[illegible]	+3.3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
North America	9.3	[illegible]	–	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Western Europe	9.9	8.1	+1.8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Oceania	[illegible]	0.2	–	0.2	[illegible]	–	[illegible]	[illegible]	–	[illegible]	[illegible]	[illegible]
Other Dev. Market Econ.	[illegible]	1.2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Developing Market Economies	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Africa	[illegible]	[illegible]	[illegible]	0.2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Latin America	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Near East	0.9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Far East	[illegible]	4.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Centrally Planned Economies	[illegible]	14.9	+0.2	16.0	[illegible]	–	[illegible]	[illegible]	[illegible]	[illegible]	15.4	–
Asia	[illegible]	4.2	-0.8	3.6	4.5	[illegible]	[illegible]	5.0	[illegible]	[illegible]	5.5	[illegible]
Europe and USSR	[illegible]	10.7	+1.0	12.4	[illegible]	[illegible]	13.2	12.2	[illegible]	[illegible]	[illegible]	+0.7
World Total	41.5	41.3	+0.2	[illegible]	43.9	+0.2	[illegible]	47.2	[illegible]	[illegible]	[illegible]	[illegible]

	1978/79			1979/80			1980/81		
	Supply	Demand	Balance	Supply	Demand	Balance	Supply	Demand	Balance
Developed Market Economies	27.0	22.4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
North America	12.7	11.2	+1.5	12.9	[illegible]	+1.2	[illegible]	[illegible]	[illegible]
Western Europe	11.3	9.6	+1.7	[illegible]	10.0	+1.7	12.1	10.4	+1.7
Oceania	0.3	0.3	–	0.3	0.3	–	0.3	0.3	–
Other Dev. Market Econ.	2.7	[illegible]	[illegible]	2.7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Developing Market Economies	9.6	11.9	-2.3	11.2	[illegible]	-1.9	[illegible]	[illegible]	[illegible]
Africa	0.4	0.7	-0.3	[illegible]	[illegible]	-0.3	0.6	0.9	-0.3
Latin America	2.1	2.8	-0.7	2.2	3.0	-0.8	2.3	3.2	-0.9
Near East	1.9	1.9	–	2.4	2.1	+0.3	2.6	2.2	+0.4
Far East	5.2	6.5	-1.3	6.1	7.2	-1.1	6.7	7.8	-1.1
Centrally Planned Economies	19.5	19.7	-0.2	[illegible]	[illegible]	[illegible]	22.0	22.2	-0.2
Asia	5.5	6.1	-0.6	[illegible]	[illegible]	[illegible]	[illegible]	7.1	[illegible]
Europe and USSR	14.0	13.6	+0.4	14.4	14.3	+0.1	15.5	15.1	+0.4
World Total	56.1	54.0	+2.1	59.2	57.3	+1.9	62.3	60.6	+1.7

Note: Figures may not add due to rounding

Prepared by the UNIDO/FAO/World Bank Working Group on Fertilizers, 1 - 4 April 1975

Table 3. World Phosphate Fertiliser Supply, Demand and Balance, 1974/75 - 1980/81 by Regions

(million metric tons P_2O_5)

	1974/75					1975/76				
	PAP	OP	TP	D	B	PAP	OP	TP	D	B
Developed Market Economies	10.63	5.40	16.03	14.10	+1.93	12.28	5.20	17.48	14.60	+2.88
North America	5.90	1.00	6.58	5.10	+1.48	6.31	1.00	7.73	5.40	+2.33
Western Europe	3.80	2.80	6.60	6.20	+0.40	4.29	2.70	6.99	6.40	+0.59
Oceania	0.18	1.40	1.58	1.60	-0.02	0.18	1.30	1.48	1.60	-0.12
Other Dev. Market Econ.	1.07	0.20	1.27	1.20	+0.07	1.08	0.20	1.28	1.20	+0.08
Developing Market Economies	0.90	1.00	1.90	3.78	-1.88	2.52	0.90	3.42	4.05	-0.63
Africa	0.50	0.30	0.80	0.33	+0.27	0.78	0.30	1.08	0.35	+0.73
Latin America	0.50	0.40	0.55	1.50	-0.95	0.63	0.30	0.93	1.60	-0.67
Near East	0.30	0.20	0.40	0.60	-0.20	0.42	0.20	0.62	0.65	-0.03
Far East	0.50	0.10	0.35	1.35	-1.00	0.69	0.10	0.79	1.45	-0.66
Centrally Planned Economies	4.00	4.02	8.02	7.30	+0.72	4.37	4.26	8.63	7.85	+0.78
Asia	0.04	0.92	0.96	1.60	-0.64	0.04	1.16	1.20	1.75	-0.55
Europe and USSR	3.96	2.90	7.06	5.70	+1.36	4.33	2.90	7.43	6.10	+1.33
World Total	15.53	10.42	25.95	25.18	+0.77	19.17	10.36	29.53	26.50	+3.03

NOTE: PAP = Phos Acid Supply - OP = Other Phosphate - TP = Total Phosphate Supply
D = Demand B = Balance

Prepared by the UNIDO/FAO/World Bank Working Group on Fertilizers, 1 - 4 April 1975

Table 3 (continued)

	1976/77					1977/78				
	PAP	OP	TP	D	B	PAP	OP	TP	D	B
Developed Market Economies	12.93	5.20	18.13	15.10	+3.03	13.50	5.10	18.60	15.60	+3.00
North America	6.90	0.90	7.80	5.70	+2.10	7.20	0.90	8.10	6.00	+2.10
Western Europe	4.59	2.70	7.29	6.70	+0.59	4.80	2.70	7.50	6.90	+0.60
Oceania	0.13	1.60	1.73	1.90	-0.17	0.13	1.60	1.73	1.90	-0.17
Other Dev. Market Econ.	1.19	0.00	1.19	0.80	+0.39	1.37	0.00	1.37	1.06	+0.31
Developing Market Economies	3.13	0.90	4.03	4.30	-0.27	3.46	0.96	4.42	4.25	+0.17
Africa	1.11	0.30	1.41	0.37	+1.04	1.52	0.30	1.82	0.75	+1.07
Latin America	0.75	0.30	1.05	1.70	-0.65	1.04	0.30	1.34	1.80	-0.46
Near East	0.61	0.20	0.81	0.70	+0.11	0.72	0.20	0.92	0.80	+0.12
Far East	0.71	0.10	0.81	1.55	-0.74	0.77	0.16	0.97	1.66	-0.79
Centrally Planned Economies	4.53	4.20	8.73	8.30	+0.43	4.43	4.20	8.79	8.70	+0.09
Asia	0.07	1.30	1.37	1.90	-0.53	0.09	1.30	1.39	2.00	-0.61
Europe and USSR	4.46	2.80	7.26	6.40	+0.86	4.50	2.80	7.30	6.70	+0.70
World Total	20.64	10.30	30.94	27.72	+3.22	22.09	10.20	32.29	28.96	+3.33

NOTES: PAP = Phos Acid Supply
OP = Other Phosphate
TP = Total Phosphate Supply
D = Demand
B = Balance

Table 3 (continued)

	1978/79					1979/80				
	PAP	OP	TP	D	B	PAP	OP	TP	D	B
Developed Market Economies	13.82	4.90	18.72	16.10	+2.62	14.06	4.80	18.86	16.60	+2.26
North America	7.37	0.80	8.17	6.30	+1.87	7.61	0.80	8.41	6.60	+1.81
Western Europe	4.85	2.50	7.35	6.80	+0.55	4.85	2.40	7.25	7.00	+0.25
Oceania	0.18	1.40	1.58	1.70	-0.12	0.18	1.40	1.58	1.70	-0.12
Other Dev. Market Econ.	1.42	0.20	1.62	1.30	+0.32	1.42	0.20	1.62	1.30	+0.32
Developing Market Economies	4.52	0.90	5.42	4.98	+0.44	4.76	0.90	5.66	5.47	+0.19
Africa	1.80	0.30	2.10	0.43	+1.67	1.94	0.30	2.24	0.47	+1.77
Latin America	1.14	0.30	1.44	1.90	-0.46	1.18	0.30	1.48	2.10	-0.62
Near East	0.71	0.20	0.91	0.85	+0.06	0.71	0.20	0.91	0.90	+0.01
Far East	0.87	0.10	0.97	1.80	-0.83	0.93	0.10	1.03	2.00	-0.97
Centrally Planned Economies	4.64	4.10	8.74	9.30	-0.56	4.64	4.00	8.64	9.70	-1.06
Asia	0.11	1.30	1.41	2.10	-0.69	0.11	1.30	1.41	2.20	-0.79
Europe and USSR	4.53	2.70	7.33	7.20	+0.13	4.53	2.60	7.23	7.50	-0.27
World Total	22.98	9.90	32.88	30.38	+2.50	23.46	9.70	33.16	31.77	+1.39

	1980/81				
Developed Market Economies	14.32	4.80	19.12	17.10	+2.02
North America	7.70	0.80	8.67	6.80	+1.87
Western Europe	4.85	2.40	7.25	7.10	+0.15
Oceania	0.18	1.40	1.58	1.80	-0.22
Other Dev. Market Econ.	1.42	0.20	1.62	1.40	+0.22
Developing Market Economies	4.96	0.90	5.86	5.86	-
Africa	1.94	0.30	2.24	0.51	+1.73
Latin America	1.27	0.30	1.57	2.20	-0.63
Near East	0.71	0.20	0.91	0.95	-0.04
Far East	1.04	0.10	1.14	2.20	-1.06
Centrally Planned Economies	4.64	4.00	8.64	10.10	-1.46
Asia	0.11	1.30	1.41	2.30	-0.89
Europe and USSR	4.53	2.70	7.23	7.80	-0.57
World Total	23.92	9.70	33.62	33.06	+0.56

NOTE PAP = Phos Acid Supply
OP = Other Phosphate
TP = Total Phosphate Supply
D = Demand
B = Balance

Prepared by UNIDO/FAO/World Bank Working Group on Fertilizers 1 - 4 April 1975

Table 4 **World Potash Fertilizer Production, Demand, Balance 1974/75 - 1980/81, by Regions**

(million metric tons K_2O)

	1974/75			[illegible]			[illegible]			[illegible]		
	Prod.	Demand	Balance	Prod.	[illegible]	[illegible]	Prod.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Developed Market Economies	[illegible]	[illegible]	+ 1.8[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
North America	[illegible]	[illegible]	+ 2.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Western Europe	5.40	5.70	- 0.30	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Oceania	-	0.29	- 0.[illegible]	[illegible]	[illegible]	- 0.2[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-
Other Dev. Market Econ.	0.60	[illegible]	- 0.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Developing Market Economies	[illegible]	[illegible]	- 1.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Africa	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Latin America	[illegible]	[illegible]	- 1.[illegible]	-	[illegible]	[illegible]	-	[illegible]	[illegible]	-	[illegible]	[illegible]
Near East	-	0.[illegible]	- 0.[illegible]	-	[illegible]	- 0.[illegible]	[illegible]	[illegible]	[illegible]	-	0.0[illegible]	- 0.0[illegible]
Far East	-	0.09	- 0.09	-	1.00	- 1.[illegible]	-	1.[illegible]	[illegible]	-	[illegible]	[illegible]
Centrally Planned Economies	9.35	7.7[illegible]	+ 1.61	10.35	8.[illegible]	[illegible]	11.10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Asia	0.15	0.60	- 0.55	0.15	0.65	- 0.[illegible]	0.15	[illegible]	[illegible]	0.1[illegible]	[illegible]	[illegible]
Europe and USSR	9.30	7.14	+ 2.16	10.30	7.50	+ 2.80	11.05	8.00	+ 3.05	[illegible]	[illegible]	+ 3.[illegible]
World Total Production	23.33	21.[illegible]8	+ 1.45	25.1[illegible]	22.97	+ 2.[illegible]	26.66	24.2[illegible]	+ 2.[illegible]	27.[illegible]	25.45	+ 2.[illegible]
Available World Supply	22.04	21.8[illegible]	+ 0.16	23.8[illegible]	22.97	+ 0.83	25.[illegible]9	24.2[illegible]	+ 0.[illegible]	[illegible]	25.45	+ [illegible]

	1978/79			1979/80			1980/81		
Developed Market Economies	[illegible]	13.63	+ 2.67	[illegible]	[illegible]	+ 2.[illegible]	17.[illegible]	[illegible]	+ 2.10
North America	9.10	6.00	+ 3.10	9.30	[illegible]	+ 2.[illegible]	9.50	[illegible].90	- 0.[illegible]
Western Europe	6.40	6.30	+ 0.10	6.70	6.50	+ 0.[illegible]	6.[illegible]0	[illegible].70	+ 0.[illegible]
Oceania	0.04	0.33	- 0.27	0.05	0.34	- 0.29	0.06	0.36	- 0.3[illegible]
Other Dev. Market Econ.	0.76	1.0[illegible]	- 0.[illegible]4	0.78	1.00	- 0.22	0.[illegible]0	1.10	- 0.30
Developing Market Economies	0.38	3.37	- 2.99	0.47	3.62	- 3.15	0.55	3.97	- 3.42
Africa	0.33	0.38	- 0.05	0.34	0.42	- 0.0[illegible]	0.35	0.46	- 0.11
Latin America	0.05	1.50	- 1.45	0.08	1.60	- 1.52	0.15	1.80	- 1.65
Near East	-	0.09	- 0.09	0.05	0.10	- 0.05	0.05	0.11	- 0.06
Far East	-	1.40	- 1.40	-	1.50	- 1.50	-	1.60	- 1.60
Centrally Planned Economies	12.25	9.55	+ 2.70	13.20	9.99	+ 3.21	14.30	10.43	+ 3.87
Asia	0.15	0.75	- 0.70	0.15	0.79	- 0.74	0.15	0.83	- 0.75
Europe and USSR	12.20	8.80	+ 3.40	13.15	9.20	+ 3.95	14.25	9.60	+ 4.65
World Total Production	28.93	26.5[illegible]	+ 2.38	30.50	27.95	+ 2.55	32.[illegible]	29.46	+ 2.[illegible]
Available World Supply	27.34	26.55	+ 0.79	28.82	27.95	+ 0.87	30.25	29.46	+ 0.79

Figures may not add due to rounding.

Prepared by the UNIDO/FAO/World Bank Working Group on Fertilizers, 1 - 4 April 1975

XII. Twelfth Meeting

MINUTES

TWELFTH MEETING OF THE UNIDO/FAO/[illegible] WORKING GROUP ON FERTILIZERS

1. The above meeting was held in the World Bank, Washington D.C., October 13 - 17, 1975.

2. The list of representatives present and the agenda for the meeting are attached.

3. The meeting was opened by Mr. G. Kalmanoff, Deputy Director of Industrial Projects, who welcomed the outside delegates and emphasized the importance that the World Bank placed on the collaboration that was now being achieved between the international agencies and the international industrial associations, particularly in producing a harmonized set of fertilizer statistics.

4. Mr. W. F. Sheldrick (World Bank), Chairman of the meeting, explained the basis for the selection of the items on the agenda. All the items covered issues which had been raised by the World Food Conference and/or the Commission on Fertilizers, and on which it was recommended that the international agencies collaborate and help to resolve. The agenda was very ambitious, containing two major sections, and it might be necessary for the Working Group to decide whether or not future meetings should continue in this form or be split into two sections, one of which would deal with purely technical or related problems and the other would deal with fertilizer statistics.

5. Agenda Item 1: New Forms of Mineral and Organic Fertilizers

(a) Mineral Fertilizers: The UNIDO paper on liquid fertilisers entitled "Study on Pilot Demonstration Plant for Liquid Fertilizers", was introduced by Mr. C. Kaleti (UNIDO). This paper was a follow up from a request made to UNIDO at the Second Interregional Fertilizer Symposium that there should be a review report on the progress made in the technology of liquid fertilisers. This report outlines the liquid fertiliser technology as it could be used in developing countries.

The conclusion of this discussion was that although liquid fertiliser should be of interest to developing countries, their application was more likely to be limited to specific areas rather than for general application. The need for specialized equipment for handling and applying liquid fertilizers - particularly pressure solutions - would be a major constraint to their use, although this could be overcome to some extent by working through cooperative ventures with co-ownership of equipment. Reference was made to reports from China of the production of aqueous ammonia in small scale ammonia plants and that such a technique might have applications in other developing countries such as Algeria, Brazil, Hungary, India, Indonesia, Mexico and the Philippines. FAO would be carrying out further studies on the application aspects of liquid fertilizers in developing countries.

(b) Organic Fertilizers: Dr. Hauck (FAO) introduced the discussion by summarizing the report on the FAO/SIDA expert consultation on organic materials as fertilizers. It was estimated that whereas the present contribution by organic wastes for fertilizers was probably about 10% of all fertilizers, there was probably the potential to raise this to 25%. There is very little economic information available, however, on the collection and processing of organic wastes as fertilizers and doubt was expressed as to whether or not there was in fact any surplus organic waste for further use as fertilizers. There are competing uses for this material such as fuel, animal feed, the construction of buildings, etc., and these often offer the farmer a more profitable use than as a fertilizer. Few major projects have been evaluated and, although none has been seriously considered by the Bank for financing, the Bank would be interested in economically viable projects for organic fertilizers. It was agreed that as a first step of a program to evaluate the more intensive use of organic fertilizers, it would be necessary to obtain some economic information regarding the processing and use of organic materials. Also, an overall study on the importance of the different types of organic fertilizers including their economic aspects on a worldwide basis should be carried out. FAO and UNIDO undertook to carry out this survey and it was also suggested that as most of the first hand experience on this subject is in India, information should be obtained from that source.

6. Agenda Item 2: New Technical Developments in Fertilizer Production

A paper was presented by Travis P. Hignett (IFDC) on Developments in Fertilizer Production Technology. Major trends in fertilizer production showed an increasing concentration of N, P_2O_5 and K_2O, and also a growing preference for compound rather than single-nutrient fertilizers. Although reduction in cost had been brought about by improvements in technology and increased scale of operations, increases in construction costs and raw material prices had offset the gains of improved technology. It was unlikely that further major technical advantages could be made to offset these increased prices.

High-analysis materials such as urea and ammonium phosphates are increasing and also relative to other less concentrated fertilizers. However, as ammonia used directly normally costs only about half as much as urea, further studies for using ammonia directly as a fertilizer seem justified.

There is also increasing need for controlled release nitrogen fertilizers and slowly soluble phosphates which will result in a more efficient use of nutrients. There is also a growing trend towards small secondary plants based on fertilizer intermediates. These are either bulk blending plants or granulation plants.

Mr. Sheldrick (World Bank) outlined the Bank's interest in new technical developments which might affect both current and long term projects. In particular, work on the production of ammonia from coal, by microbiological fixation, by electrolysis and from high temperature nuclear reactors, were mentioned. Although a natural gas shortage in certain parts of the world would accelerate the development of improved techniques for producing ammonia from other fossil fuels, none of the other methods mentioned offered any short term alternative for the production of ammonia.

As part of the discussion on ammonia production, a presentation was made by Westinghouse describing a new process they were developing for the production of hydrogen and which might be used as a future basis for ammonia production. The process is based on work carried out to develop a nuclear rocket system and known as the "Very High Temperat a Reactor for Process Heat". The Westinghouse hydrogen generation process is a two-step thermochemical cycle for decomposing water into hydrogen and oxygen. It is estimated that this hydrogen generation process provides overall thermal efficiencies approximately double those attainable by conventional electrolytive methods. Cost data presented also indicated that the process will be competitive with hydrogen produced by the gasification of coal based on coal costs predicted for the near future.

Other problems requiring technical investigations related to the beneficiation and processing of low grade phosphate rocks and also potash such as carnallite. Further long term work was required on the use of sulphur and magnesium as fertilizers.

7. Agenda Item 3: Specific Requirements of Fertilizers in Developing Countries

Dr. Masek outlined the need for careful selection of fertilisers to meet the specific needs of climate and soils. This included the specification of secondary and micro elements which can also play a decisive role in increasing agricultural production. Special consideration was needed for the most economical and practical methods of supplying fertilizers to developing countries, particularly the application of bulk blending and the use of liquids and granulated compounds produced in secondary production units. Most of the discussion on this paper centered around the preferred forms of nitrogen fertilizers and the best methods of applying them.

Urea was becoming the most important nitrogenous fertilizer, particularly in developing countries, and although it needed to be used with care, particularly on calcareous soils, generally this was considered to be a manageable problem. One outstanding problem regarding the use of urea is that it needs to be produced in a form more suitable for bulk blending and several processes are now available for doing this and a number of plants have already been commissioned. It was requested from IFDC that the Bank give special consideration to providing urea granulation

equipment in projects with which they are concerned, as this would assist the growth of improved products for bulk blending.

Much work needed to be done on the ways and means of reducing the solubility of urea to prevent loss by leaching. Slow release nitrogen products such as ureaforms and IBDU cost twice as much as urea and were unlikely to become alternatives. The efficiency of urea could be improved by making larger granules and by the use of coatings such as sulphur. These techniques greatly reduced the risk to the farmer. Farmer practices were also very important in this respect and a significant quantity of fertiliser is lost from the soil because they are applied at the wrong time.

With regard to establishing a fertilizer industry in developing countries, it was agreed that bulk blending units offered a convenient and economic method of doing this, but as the industry developed it is often necessary to proceed to secondary granulation units, as had happened in Brazil for example.

8. Agenda Item 14: Investment Costs for New Fertilizer Plants in Developing Countries

The Chairman explained that the main reason for discussion of this item was that the Commission on Fertilizers had requested that the FAO Secretariat of the Commission (Mr. J. Coulston), in collaboration with the other international agencies, should provide updated investment and production costs for the Commission. Prior to the meeting cost information prepared by UNIDO had been circulated. This was a paper entitled: "A Study of the Establishment of Nitrogenous Fertilizer Production in Developing Countries" by R. P. Cook and V. R. Vangala.

Generally, these costs were in line with recent TVA costs, but compared with data presented by the World Bank of total project costs, it was clear that great care had to be taken in the use of these costs. It was important, for example, that adequate allowance be allowed for site preparation, interest on capital during construction, working capital requirements, insurance, etc. It was also important that dates of estimates be clearly stated and also the basis for financial accounting. Otherwise, cost estimates could be very misleading, particularly if used without proper definition of the parameters involved. The additional costs of working in developing countries had also to be considered. Although the battery limit costs of plants was often taken as about 25% higher in developing countries than developed countries, the total project cost could often be very much higher, usually due to the increased cost of infrastructure. It was agreed that the Bank would provide fuller information to Mr. Coulston (FAO) and UNIDO based on actual projects which together with existing cost estimates would form a more realistic basis for both the investment cost of building new fertilizer plants and the cost of producing fertilizers in developing countries.

There was a general discussion on investment requirements in developing countries and Mr. Subash Mazumdar of the Consultative Group for Food Production and Investment (CGFPI) outlined the role of CGFPI to improve the flow of external resources to increase food production. Investment in fertiliser plants and also for the supporting infrastructure would form a major input to increase food production. Reference was also made to the role of OPEC in this field. UNIDO had been approached by OPEC to give technical advice on a scheme to produce fertilisers from flared natural gas which would be sold at cost to LDC's. OPEC would also help with marketing, infrastructure and credit. A meeting of OPEC countries was scheduled to be held later this year in North Africa to progress this issue.

Professor Ewell (Consultant to UNIDO) presented a paper on the future production and use of fertilisers. This paper emphasized the role of fertilisers in meeting future food requirements and proposed a method of projecting fertiliser demand to the year 2000. The capital requirements of the world fertiliser industry needed to meet estimated fertiliser demand in the year 2000 is estimated at $325 billion (at 1975 prices) between 1975 - 2000.

9. Agenda Item 5: Debottlenecking of Fertilizer Plants in Developing Countries

This subject has been discussed on many occasions, including the World Food Conference, Fertilizer Commission, etc., but the real issues involved were often misunderstood. The capacities of plants in developing countries were often limited by constraints in infrastructure, by political factors, and sometimes by plant design. There was no easy answer to this problem. Considerable work had been done by UNIDO staff and their consultants in delineating problems and giving advice to operators, but the ultimate benefit of this type of work could often not be realized unless there could be a follow-up investment program.

It was suggested that where there was a major constraint in a plant capacity that could not be remedied easily without major expenditure, it might be necessary to reclassify the capacity of the plant for statistical purposes rather than leave the impression that a plant was working inefficiently or that there was extra potential capacity that could be easily realised.

The Chairman described a major project in India which was mainly related to the debottlenecking of fertiliser plants. The Bank was proposing to lend $105 million out of $273 million on several different projects, some of which included increasing capacities of constraining feed materials, others related to power supply and effluent control. This type of project illustrated the major staff involvement and financial investment required to have any significant effect on this problem and serious consideration had to be given to whether or not it might be cheaper to invest in new facilities rather than attempt to debottleneck existing ones.

This problem had been discussed recently by the Commission on Fertilizers and it had been agreed that requests from developing nations for help on this type of problem could be coordinated by the Commission. It was agreed that there was a need for better information flow between the international agencies on this type of work as different agencies had sometimes been asked independently to work on the same problem and this was leading to duplication of work. It was agreed that it would be useful to circulate a newsletter perhaps two or three times a year outlining the activities of the various organizations in this and other fields. Information should be sent to Mr. Couston (FAO) on a regular basis, who could then disseminate to all. This would be followed by discussion at the regular meetings of the Working Group.

10. Agenda Item 6: Long Term Fertilizer Contracts

Mr. J. Couston (FAO) introduced this subject. Long term contracts had been discussed by the Commission on Fertilizers as a possible method of helping to reduce cyclical imbalances in the fertilizer industry. The issue had been raised at the Working Group meeting to get a range of views on the subject which might be helpful in the preparation of information for the Commission on Fertilizers.

It was felt that long term contracts had an important part to play but would not cover all situations. There had been some very unfortunate experiences in the past few years of contracts not being properly honored by both importing or exporting countries, although there were many other cases where the existence of long term contracts had helped both countries and companies to weather the recent difficult trading situation.

In considering the outline for a model contract, it was suggested this could be for a period of 3-5 years and contain a ceiling and floor price, both of which would have to be acceptable to seller and buyer. Selling prices would need to be indexed to both investment and operating costs. This would be a very difficult issue in view of the rapid rise that had occurred recently in investment costs. Whereas the actual price of DAP FOB Florida had recently dropped to $130 per ton, the cost of DAP from a new plant in Florida, to give an acceptable return on investment, would have to be about $200 per ton.

11. Agenda Item 7: Regional Developments

Considerable work is being carried out by the international agencies on regional development and a number of cases were discussed.

Dr. Hauck (FAO) outlined a recent study made by FAO/UNDP in Latin America in which he had participated. The supply/demand situation for the area had been reviewed and proposals made for multinational operations both in production and marketing. It was appreciated that the plans were

ambitious and there would have to be considerable collaboration between countries in the area before such a scheme could be realized. In some cases, it appeared that declared national plans might be antithetical to the proposals of the study. It is intended that the main study be followed up by investigation of the feasibility of specific projects.

Mr. Keleti (UNIDO) described the work of UNIDO and ESCAP in organizing a crash program on regional development in South East Asia. Many countries in the area had been visited and their fertilizer needs surveyed together with existing and potential production capabilities. Discussions had also been held with other international agencies and governments regarding these studies. Mr. Shaldrick (World Bank) described the work that the Bank was also doing on regional planning in South East Asia in collaboration with the other agencies such as UNIDO, IFDC, CGFPI. The Bank had constructed a computer fertilizer model for the area and was examining investment requirements for various levels of supply and demand, the utilization of raw materials within the area, and different forms of regional planning. It was intended to prepare a paper for the next meeting of the CGFPI which would demonstrate the benefits of regional planning.

The technique was also very useful within the Bank in helping to formulate lending programs on a country basis but also taking into account possible regional interactions. It was agreed that as the regional studies were of considerable interest to the international agencies and required good collaboration, the Working Group was a useful place to discuss them.

12. Agenda Item 3: Marketing and distribution of fertilizers

Increasing concern was being expressed that the marketing and distribution of fertilizers was in many countries becoming the major constraint to fertilizer use. In some developing countries, the increased price of fertilizers as well as infrastructural limitations had resulted in a fall in the rate of demand for fertilizers, and several developing countries in 1974/75 experienced a fall in absolute demand compared with previous years. A major effort was needed to stimulate farmer demand by increased extension work and farmer education, and investment was required for storage, transportation and secondary production units. Failure to provide these facilities could result in production constraints in some of the large primary fertilizer units now being erected in developing countries.

As part of the Bank fertilizer policy, it was intended that more emphasis should be placed on this subject, but it was appreciated that staff requirements for this type of work were often greater than for project preparation on production facilities. In this respect, it was necessary for a much greater degree of collaboration both within the Bank and between the international agencies. Mr. Shaldrick (World Bank) described a recent mission to Orissa in India and the preparation of a crash program to increase food grain production. A significant part of this project would be directed

towards extension work, fertilizer promotion, the improvement of storage and transport, etc. Members of the Bank/FAO Collaborative Program had also participated in the mission. The Bank is also preparing a marketing and distribution manual for use in developing countries, and it was hoped that this might be discussed at the next meeting of the Working Group.

As both FAO and UNIDO are also actively engaged in this field, it was agreed that it was necessary that work of the international agencies should be coordinated and that the Bank should be informed of situations where there were investment opportunities. It was also agreed that there was need for a collaborative program between the Bank and FAO on this subject and that arrangements should be made to progress this.

13. <u>Agenda Item 9. Fertilizer Capacity and Demand Projections</u>

The discussion and harmonization of fertilizer plant capacities and demand projections has become one of the most important functions of the Working Group and considerable progress has been achieved. The harmonized figures from the Working Group's last meeting had been presented to the Commission on Fertilizers as a basis for their meeting in June 1975.

The Chairman emphasized that in view of the complex and sensitive nature of this subject, it was necessary to respect confidentiality of certain information where this has been requested. The main object of the meeting on this occasion was to establish an agreed basis for capacity. Members of the Working Group presented and compared their figures for estimated actual fertilizer production/consumption/trade 1974/75. There was also a detailed plant by plant consideration of fertilizer capacities 1973/74-1980/81, and the revised figures from this discussion are attached.

A request for further action from this discussion was that UNIDO would provide fertilizer statistics for Eastern Europe for the next meeting.

14. <u>Agenda Item 10: Future Work Program</u>

Matters arising from the discussions and requiring further action are summarized below:

(a) Further studies would be made by FAO on the application of liquid fertilizers in developing countries;

(b) Economic review of the use of organic fertilizers and identification of projects (FAO/UNIDO);

(c) Further data would be provided to the Secretary of the Commission on Fertilizers and to UNIDO on investment costs (World Bank);

(d) A newsletter would be circulated regularly by FAO based on contributions from other agencies and co[illegible] the active projects of the various agencies (All Agencies);

(e) A plan would be prepared for collaboration on distribution and marketing problems (FAO/World Bank);

(f) Fertilizer statistics:

i. The data discussed at the meeting would be assembled and circulated until final agreement was reached (World Bank);

ii. Before the next meeting, background data would be prepared for discussion of new projects (World Bank);

iii. Further statistics would be provided on Eastern Europe (UNIDO).

15. Next Meeting

It was agreed that the meeting should retain its present form with a specified time set aside for each section. Members of the Working Group were then free to arrange whether to attend both or one section of the meeting. At the next meeting, the fertilizer demand situation would be reviewed.

The next meeting would be in Vienna with UNIDO as hosts and chairing the meeting. The provisional time for this meeting would be early April, but further consideration would also be given to whether or not it could follow the FIAC meeting in March so as to lighten the travel burden for members from the U.S.A. who attend both meetings.

16. Mr. Hans Fuchs, Director of Industrial Projects, World Bank, closed the meeting by emphasizing once again the importance of the work being done by the Working Group and he thanked the members for their attendance.

12th Meeting of the UNIDO/FAO/IFDC
Working Group on Fertilizers

Washington D.C.

October 13-17, 1975

AGENDA

1. New forms of mineral and organic fertilizers.

   a. Mineral fertilizers: Introductory paper by UNIDO on liquid fertilizers.

   b. Organic fertilizers: Introductory paper by FAO.

2. New technical developments in fertilizer production. Introduction by Bank.

3. Specific requirements of fertilizers in developing countries. Introductory paper by FAO.

4. Investment costs for new fertilizer plants in developing countries. Introductory paper by UNIDO.

5. Debottlenecking of fertilizer plants in developing countries.

6. Long-term fertilizer contracts.

7. Regional developments. Introduction by UNIDO/FAO.

8. Marketing and distribution of fertilizers.

9. Fertilizer statistics.

   a. Estimated actual fertilizer production/consumption/trade 1974/75.

   b. Fertilizer capacities 1973/74 - 1980/81.

   c. Methodologies for estimating fertilizer production.

   d. Terminology.

   e. Other statistical matters.

10. Future work program.

TWELFTH MEETING UNIDO/FAO/IBRD JOINT WORKING GROUP

October 13-17, 1975

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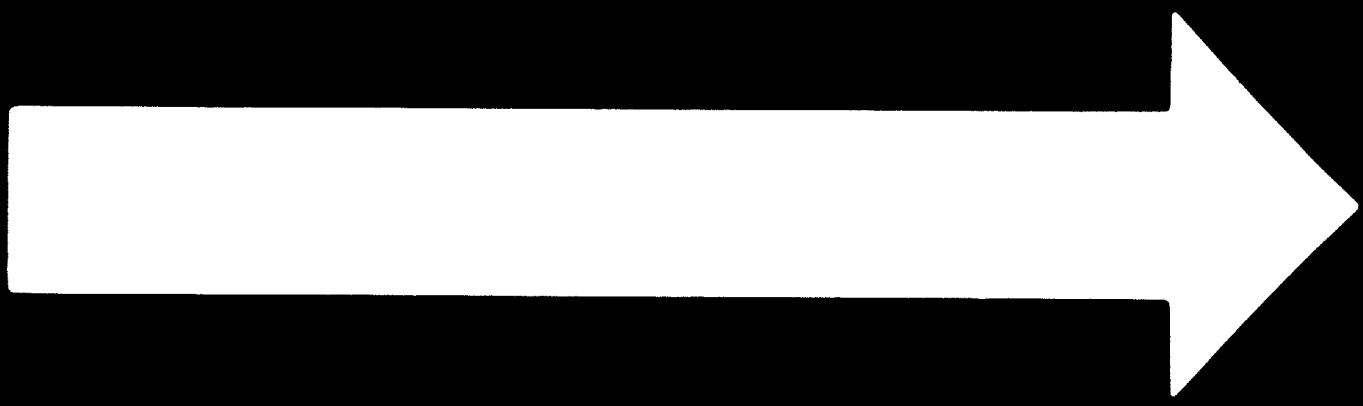

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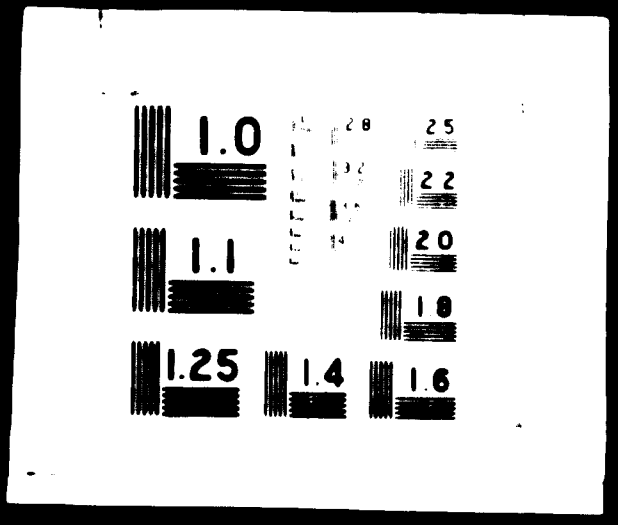


NORTH AMERICA

ANTICIPATED ADDITIONS TO WORLD AMMONIA CAPACITY AS OF 15 OCTOBER 19[illegible]

('000 Metric Tons of N/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
CANADA							
Beker Ind. Sarnia, Ont.	121						
Can. Fert. Ltd. Medicine Hat, Alta.			298				29[illegible]
Cominco Ltd. Carseland, Alta.			298				
Pan. Can. Tyler Brooks, Alta.							296
Sherritt-Gordon Ft. Sask., Alta.							368
U.S.A.							
Agrico							
Blytheville, Ark.	13						316
Donaldsonville, La.	29						
Verdegris, Okla.	316			316			
Beker							
Conda, Ind.	75						
Carlsbad, N.M.		149		-			
Beker & Texas Gulf Carlsbad, N.M.		108					
Calif. Oil Ventura, Cal.	70						
C.F. Ind. Donaldsonville, La.			312				
C.F. Ind. - Mesa Donaldsonville, La.			312				
Collier Kenai, Ala.				372			
Columbia Augusta, Ga.							372
Duval Corp. Hanford, Cal.	15						

NORTH AMERICA

ANTICIPATED ADDITIONS TO WORLD AMMONIA CAPACITY AS OF 15 OCTOBER 1975

('000 Metric Tons of N/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
(U.S.A. cont'd)							
Farmland Ind.							
Enid, Okla.			316				
Pollock, La.			312				
First Miss.							
Ft. Madison, Ia.	20						
Donaldsonville, La.				298	1/		
Georgia Nitrate							
Cordon, Ga.		25					
Good Pasture							
Dimmit, Tex.		30					
Grace Okla. Nit.							
Woodward, Okla.				298			
IMC/Com. Solv.							
Sterlington, La.				298			
Kearny Chem.							
Gremercy, La.		20					
Miss. Chem. Corp.							
Yazoo, Miss.		40		298			
Monsanto Corp.							
Luling, La.			298				
Nutriflow-Kerley							
Lake Charles, La.		89					
Occid. Ag. Chem.							
Taft, La.	75						
Lanthrop, Cal.	30	22					
Tipperary Corp.							
Lovington, N.M.	49						
Vulcan Mat.							
Wichita, Kansas		9					

1/ Uncertain at the time of printing.

NOTE: The Felmont Oil project (312 in 77/78) was excluded after having been checked by TFI.

ANTICIPATED ADDITIONS TO WORLD AMMONIA CAPACITY AS OF 15 OCTOBER 1971

('000 Metric Tons of N/Year)

	70/72	73/76	75/77	77/78	78/79	79/80	Indefinite or beyond 80
AUSTRIA							
Chemie Linz A.G.							
Linz	231						
	50*						
BELGIUM							
Ste Carbonchem							
Tertre		10					
Willebroek		20					
Marly		15	15				
FINLAND							
Kemira Oy							
Oulu	20						
FRANCE							
Cofaz							
Ambaras (nr Bordeaux)					271		
AFC							
Toulouse							85
Gardinier Montoir							
Bret							163
Cdo. Paroisse							
Frais-Wazier, Nord					41		
Produits Chim. U. Kuhl							
Villier St. Paul					271		
Rhône-Poulenc							
Rouen					271		
GERMANY F.R.							
ASF							
Ludwigshafen					430		
					380*		
Eba Chemie							
Brunsbuttelkoog					450		
Knur Chemie							
Oberh. Holfen	40						

WESTERN EUROPE

ANTICIPATED ADDITIONS TO WORLD AMMONIA CAPACITY A[illegible]

('000 Metric Tons of N/Year)

	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Indefinite or [illegible]
GREECE							
Aeval-Nit. Fert. Ind.							
Ptolemais					203		
Esso-Pappas							
Thessalonika			21				86
Motor Oil Hell.-Ekve							
Theodorai							247
IRELAND							
Eir-N Chem.							
Whitegg-Cork							57x2
Nitrigin Eire, Teor.							
Whiteg.-Cork					365		
ITALY							
ANIC							
Ravenna			165				
Gela							82
Montedison							
Ferarra			370				
			121*				
Pto Marghera					370		
					113*	123*	
Priolo, Sicily					109*		
Ital. Resine (SIR)							
San Eufemia					193		
NETHERLANDS							
UKF							
Geleen					370		
NORWAY							
Norsk Hydro							
Karmoey							290

MISCELLANEOUS TABLES

ANTICIPATED ADDITIONS TO WORLD AMMONIA CAPACITY AS OF 15 OCTOBER 1977

('000 Metric Tons of N/Year)

	77/78	78/79	79/80	80/81	81/82	82/83	Indefinite or Beyond 83
SPAIN							
S. A. Cros Tarragona							339
Soc. Esp. Fabr. Nitr. Luchana							218
Union Explos. R-T Huelva			266				
UNITED KINGDOM							
ICI Billingham			292				
Shellstar Ince Marshes							271
Scanitro Petershead							272
Albright and Wilson Barton/Humber							266
YUGOSLAVIA							
Ind. Nafte (INA) Rutina							330
Kokszno Hemijska Lukavac					68		

OCEANIA AND OTHER DEVELOPED ECONOMIES

ANTICIPATED ADDITIONS TO WORLD AMMONIA CAPACITY AS OF 15 OCTOBER 197[illegible]

('000 Metric Tons of N/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
OCEANIA							
AUSTRALIA							
Western Mining Corp. Kwinana		41					
N.P. Australia n.a.							n.a.
OTHER DEVELOPED ECONOMIES							
JAPAN							
Mitsubishi Gas Chem. Niigata					217 82*		
Mitsui-Toatsu Sakai							273
Nissan Chiba							271
Ube Ube		68					
SOUTH AFRICA							
Afr. Expl. & Chem. Ind. Modderfontein	271						
Fed. Kunsmis Sasolburg							300
Sasol-S. Afr. Coal Sasolburg II						82	

AFRICA

ARTIFICIAL ADDITIONS TO WORLD AMMONIA CAPACITY AS OF 15 OCTOBER 1975

('000 Metric Tons of N/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
ALGERIA							
Sonatrach							
Arzew II				271			
Annaba					271		
MOROCCO							
n.a.							
Jorf Lasfar							812
TUNISIA							
Ind. Chim. Maghreb							
Gabes							272
GABON							
Ste Chim. Gabon							
Port Gentil							54x2
KENYA							
Ken.-Ren Chem. Fert.							
Mombasa					54		
MOZAMBIQUE							
Moz. Gulf Oil							
Panda							268
SENEGAL							
Sen. Ref. & Petrochem. Co.							
Ceyar							27x2
ZAMBIA							
Nitr. Chem. - Zamb.							
Kafue				57			

LATIN AMERICA

ANTICIPATED ADDITIONS TO WORLD AMMONIA CAPACITY AS OF 15 OCTOBER 1975

('000 Metric Tons of N/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
CUBA							
Union Explos. (FRT)							
Cienfuegos							271
Cuba Govt.							
Nuevitas		95					
MEXICO							
Pemex							
Cosoleacaque III	246						
IV			369				
V				369			
Salamanca			246				
Quimonex							
Cunutitlan			154				
TRINIDAD							
W. R. Grace							
Point Lisas							542
Trin. Nitr. Co.							
Point Lisas				296			
VENEZUELA							
Maracaibo							
El Tablazo							271x2
Mixto-Oriente(Ven)							
Pto. La Cruz							271x4
Pentacon							
n.a.							650
ARGENTINA							
Fabric. Milit.							
San Lorenzo							86
Impagro							
San Lorenzo							172

LATIN AMERICA

ANTICIPATED ADDITIONS TO WORLD AMMONIA CAPACITY AS OF 15 OCTOBER 1975

('000 Metric Tons of N/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
ARGENTINA (CONTD)							
Yacimentos Petro. Fisc.							271
San Lorenzo							271
n.a.							
BOLIVIA							
Yacimentos Petro. Fisc.							271
Ste. Cruz							31
BRAZIL							
Arafertil							271
Araxa							
Petrobras							
Camacari (Petrofertil)			246				
Araucaria						326	
Aracaju						244	
Rio Grande Mit. (now Petrobras)							326
Rio Grande							
Usimas							
Belo Horizonte				4			
CHILE							
Petroquim. Chil.							272
Punta Arenas							
COLOMBIA							
Fert. Colomb.							
Barranca-Berm.					27		
n.a.							407
Bogota							
PERU							
Fertiperu							
Talara	81						

NEAR EAST

ANTICIPATED ADDITIONS TO WORLD AMMONIA CAPACITY AS OF 15 OCTOBER 1975

('000 Metric Tons of N/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
EGYPT							
El Nasr d'Engrais							
Talkha I		104					
II					325		
Abu Quir Fert. Co.							
Abu Quir					271		
Egypt Chem. Ind. Co.							
n.a.							271
LIBYA							
Libyan Nat. Oil							
Massa en Brega				272			
SUDAN							
Sudan Gt.							
Port Sudan							108
BAHREIN							
India/Bahrein Gt.							
n.a.							271
IRAN							
Iran Fert. Co.							
Shiraz					326		
Shapur Chem. Co.							
Bandar Shapur			271				
IRAQ							
Min. of Ind.							
Basrah-Abu Floos			217				
OMAN							
Govt/Gazocean							
n.a.							271x2

NEAR EAST

ANTICIPATED ADDITIONS TO WORLD AMMONIA CAPACITY AS OF 15 OCTOBER 1975

('000 Metric Tons of N/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
QATAR							
Qatar Fert. Co. Umm Said					244		
SAUDI ARABIA							
Saudi Arabia Fert. Co. Damman							247
Saudi-Taiwan n.a.							245
SYRIA							
Syria Govt. Homs						272	
TURKEY							
IGSAS Izmit			271				
Azot Sanayii Gemlik						234	
Akdeniz Gubre San. Mersin							271

FAR EAST

ANTICIPATED ADDITIONS TO WORLD AMMONIA CAPACITY AS OF 15 OCTOBER 1977

('000 Metric Tons of N/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
AFGHANISTAN							
Min. of Ind.							
Mazar-i-Sharif		58					
BANGLADESH							
Bang. Fert. Chem. Phar. Co.							
Ghorasal		179					
Ashuganj					252		
INDIA							
Coromandel Fert.							
Vishkm, A.P.		9					
FCI							
Barauni, Bihar			163				
Gorakhpur, U.P.			66				
Haldia, W. Bengal					163		
Korba, M.P.							266
Namrup, Assam			163				
Nangal, Punjab				266			
				83*			
Paradeep, Orissa							345
Ramagundam, Orissa				266			
Sindri, Bihar					266		
					126*		
Talcher, Orissa				266			
Trombay V, Maharashtra							266
Gujarat State Fert.							
Baroda					367		
IFFCO							
Kalol, Gujarat	266						
Phulpur, U.P.					266		
Maharashtra Coop. Fert.							
Roha							56
Mangalore Chem. Fert.							
Mangalore		163					
Nagarjuna Fert.							
Kakinada							266

FAR [illegible]

ANTICIPATED ADDITIONS TO WORLD AMMONIA CAPACITY AS OF 15 OCTOBER 1975

('000 Metric Tons of N/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
INDIA (CONT'D)							
National Fert.							
Bhatinda					253		
Mathura							244
Panipat						244	
Shiram (SCI)							
Kota, Rajast.	41						367
South Petr. (SPIC)							
Tuticorin, Mys.		298			369		
Zuari Agro Chem.							
Kampte							244
PAKISTAN							
Fauji-Arrico							
Goth Machhi						271	
MFC							
Hasara					46		
Mirpur Mathelo					271		
Multan				247			
				54*			
SRI LANKA							
State Fert. Co.							
Colombo						147	
INDONESIA							
Pertamina							
E. Kalimantan							406
Cikampek (West Java)						271	
Pusri							
Palembang II	179						
III			271				
IV				271			
KOREA							
Honhae Chem. Corp.							
Yosu			489				
Naju or Chin Hae			80*				

EAST EUROPE

ANTICIPATED ADDITIONS TO WORLD AMMONIA CAPACITY AS OF 15 OCTOBER 1974

('000 Metric Tons of N/Year)

	74/75	75/76	76/77	77/78	79/79	79/80	Indefinite or Beyond 80
BULGARIA							
Devnia							165
Khimko Kombinat Dimitrovgrad					130		
GERMANY D.Rep.							
Veb Stickstoffwerke Piesteritz	387						
HUNGARY							
Petfürdo		272					
POLAND							
Kedzierzyn							272
Zaklady Azotowe Pulawy							136
Police (nr. Stettin)						407	
Opole					407		
RUMANIA							
Combinatul Chimic Arad		247					
Combinatul Chimic Craiova				247			
Govt., Bacau					247		
Combinatul Azotoasa Targu Mures	247 1/			247			
Combinatul Chimic Ramnicu Valcea	247						

1/ To be excluded from 1973/74 list where it is included as operating from January 1974.

EAST EUROPE

ANTICIPATED ADDITIONS TO WORLD AMMONIA CAPACITY AS OF 15 OCTOBER 1975

('000 Metric Tons of N/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
U.S.S.R.							
Cherpovets, RSFSR	100						
Gerlovka, Ukr. (Cr.L)					369		
(Cr.L)					369		
Kemerovo, RSFSR (CR.L)					369		
(CR.L)					369		
North Sakhalin							407 1/
Novgorod, RSFSR (Toy)	370				370		
Novomoskovsk, RSFSR (Toy)	370						
(Toy)		370					
Servedonetsk-Lisichan (Toy)	370						
Tayshet, RSFSR	100						
Togliatti-Kuibyschew (Chem.)					369		
(Chem.)					369		
(Chem.)						369	
(Chem.)						369	
Tomsk, RSFSR		100					
Voskressensk		165					
Unknown Loc.(Toyo)							369 x 4
Unknown Loc.(Italian)							4 plants

1/ Check if not operating since 1972/73.

SOCIALIST ASIA

ANTICIPATED ADDITIONS TO WORLD AMMONIA CAPACITY AS OF 15 OCTOBER 1975

('000 Metric Tons of N/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
CHINA, P.R.							
Kellogg							
Woitun, Heilungkiang Prov.		272					
Benjin, Liaoning Prov.		272					
Nachi, Szechwan Prov.		272					
Changchow, Hopeh Prov.			272				
, Yunnan Prov.			272				
, Kweichow Prov.			272				
, Hopeh Prov.			272				
, Hunan Prov.			272				
Toyo							
Luchow (nr Chunking)		272					
Taiwan		272					
Uhde							
Anching			272				
Canton, Kwangtung Prov.				272			
Nanking, Kiangsu Prov.				272			
TAIWAN							
Taiwan Fert. Corp.							
Hsinchu				245			
N. KOREA							
Uhde							
Pyongyang				217			

ANTICIPATED ADDITIONS TO WORLD AMMONIA CAPACITY AS OF 15 OCTOBER 1975
('000 Metric Tons of N)

	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80
DEVELOPED MARKET ECONOMIES	32,904	34,225	34,871	38,005	39,885	42,72[illegible]	42,690
North America	14,220	15,029	15,521	17,667	19,547	19,547	19,547
U.S.A.	13,114	13,802	14,294	15,844	17,724	17,724	17,724
Canada	1,106	1,227	1,227	1,823	1,823	1,823	1,823
Western Europe	14,247	14,488	14,533	15,521	15,521	18,222	18,092
Austria	320	501	501	501	501	501	501
Belgium	614	614	659	674	67	674	674
Denmark	30	30	30	30	30	30	30
Finland	204	224	224	224	224	224	224
France	2,421	2,421	2,421	2,421	2,421	3,275	3,275
Germany, Fed. Rep.	2,392	2,432	2,432	2,432	2,432	2,932	2,932
Greece	233	233	233	254	254	457	457
Iceland	8	8	8	8	8	8	8
Ireland	38	38	38	38	38	403	403
Italy	1,779	1,779	1,779	2,193	2,193	2,53[illegible]	2,411
Netherlands	2,155	2,155	2,155	2,155	2,155	2,525	2,525
Norway	647	647	647	647	647	647	647
Portugal	323	323	323	323	323	323	323
Spain	890	890	890	1,136	1,136	1,136	1,136
Sweden	111	111	111	111	111	111	111
Switzerland	53	53	53	53	53	53	53
United Kingdom	1,383	1,383	1,383	1,675	1,675	1,675	1,675
Yugoslavia	646	646	646	646	646	714	714
Oceania	415	415	456	456	456	456	456
Australia	415	415	456	456	456	456	456
Other Developed Market Economies	4,022	4,293	4,361	4,361	4,361	4,496	4,578
Israel	68	68	68	68	68	68	68
Japan	3,674	3,674	3,742	3,742	3,742	3,877	3,877
South Africa	280	551	551	551	551	551	633
DEVELOPING MARKET ECONOMIES	7,690	8,483	9,389	12,046	14,432	18,038	20,0[illegible]
Africa	386	386	386	386	714	1,018	1,042
Algeria	271	271	271	271	542	813	813
Kenya	-	-	-	-	-	54	54
Rhodesia	90	90	90	90	90	90	90
Zambia	25	25	25	25	82	82	82

ANTICIPATED ADDITIONS TO WORLD AMMONIA CAPACITY AS OF 15 OCTOBER, 1975
('000 Metric Tons of N)

	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80
DEVELOPING MARKET ECONOMIES cont'd							
Latin America	2,142	2,469	2,564	3,410	4,079	4,106	4,676
Argentina	64	64	64	64	64	64	64
Brazil	233	233	233	479	483	483	1,053
Colombia	124	124	124	124	124	151	151
Cuba	220	220	315	315	315	315	315
Mexico	512	758	758	1,358	1,727	1,727	1,727
Netherlands Antilles	82	82	82	82	82	82	82
Peru	35	116	116	116	116	116	116
Trinidad & Tobago	221	221	221	221	517	517	517
Venesuela	651	651	651	651	651	651	651
Near East	1,646	1,646	1,808	2,567	2,839	4,005	4,521
Egypt	167	167	271	271	271	867	867
Libyan Arab Republic	-	-	-	-	272	272	272
Afghanistan	-	-	58	58	58	58	58
Iran	309	309	309	580	580	906	906
Iraq	54	54	54	271	271	271	271
Kuwait	543	543	543	543	543	543	543
Qatar	244	244	244	244	244	488	488
Saudi Arabia	163	163	163	163	163	163	163
Syrian Arab Republic	41	41	41	41	41	41	313
Turkey	125	125	125	396	396	396	630
Far East	3,516	3,982	4,631	5,683	6,800	8,882	9,815
Bangladesh	54	54	233	233	233	484	484
Burma	66	66	66	66	66	66	66
India	2,248	2,435	2,905	3,277	3,930	5,444	5,688
Indonesia	109	288	288	559	830	830	1,101
Korea, Republic of	626	626	626	1,035	1,035	1,035	1,035
Malaysia (Sabah, Sarawak, W. Malaysia)	41	41	41	41	41	41	41
Pakistan	336	336	336	336	529	846	1,117
Philippines	109	109	109	109	109	109	109
Sri Lanka	-	-	-	-	-	-	147
Thailand	27	27	27	27	27	27	27
CENTRALLY PLANNED ECONOMIES	21,475	23,566	26,080	27,712	29,212	32,580	33,735
Asia	4,231	4,231	5,591	7,223	8,229	8,229	8,229
China	3,393	3,393	4,753	6,385	6,929	6,929	6,929
Korea, D.P.R.	490	490	490	490	707	707	707
Taiwan	348	348	348	348	593	593	593

ANTICIPATED ADDITIONS TO WORLD AMMONIA CAPACITY AS OF 15 OCTOBER 1975
('000 Metric Tons of N)

	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80
CENTRALLY PLANNED ECONOMIES Cont'd							
Eastern Europe	17,144	19,335	20,189	20,189	20,983	24,352	25,496
Albania	50	50	50	50	50	50	50
Bulgaria	812	812	812	812	812	962	962
Czechoslovakia	1,025	1,025	1,025	1,025	1,025	1,025	1,025
Germany, Dem. Rep.	905	1,372	1,372	1,372	1,372	1,372	1,372
Hungary	472	472	744	744	744	744	744
Poland	2,137	2,137	2,137	2,137	2,137	2,544	2,951
Romania	1,694	2,188	2,435	2,435	2,929	3,176	3,176
U.S.S.R.	9,969	11,279	11,914	11,914	11,914	14,498	15,236
TOTAL WORLD	61,969	66,274	70,310	77,763	83,529	93,333	96,116

ANTICIPATED ADDITIONS TO WORLD PHOSPHORIC ACID CAPACITY AS OF 15 OCTOBER 1975
('000 Metric Tons of P_2O_5)

	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80
DEVELOPED MARKET ECONOMIES	12,437	15,021	15,510	16,506	16,899	17,521	17,721
North America	6,772	8,509	8,753	8,830	9,193	9,765	9,765
U.S.A.	6,053	7,790	8,034	8,111	8,474	9,046	9,046
Canada	719	719	719	719	719	719	719
Western Europe	4,227	5,028	5,281	5,331	5,361	5,411	5,411
Austria	50	50	50	50	50	50	50
Belgium	555	605	605	605	605	605	605
Denmark	30	30	30	30	30	30	30
Finland	183	183	183	213	213	213	213
France	695	1,113	1,218	1,218	1,218	1,218	1,218
Germany, Fed. Rep.	212	247	247	247	247	247	247
Greece	165	272	272	272	272	272	272
Ireland	91	91	109	109	109	109	109
Italy	477	477	477	477	477	477	477
Netherlands	335	335	370	390	390	390	390
Norway	23	23	23	23	23	23	23
Portugal	42	83	83	83	83	83	83
Spain	438	583	583	583	613	613	613
Sweden	150	150	150	150	150	150	150
Switzerland	10	10	10	10	10	10	10
United Kingdom	581	586	626	626	626	626	626
Yugoslavia	190	190	245	245	245	295	295
Oceania	159	159	159	159	159	159	159
Australia	159	159	159	159	159	159	159
Other Developed Market Economies	1,279	1,325	1,317	2,186	2,186	2,186	2,386
Israel	198	198	198	203	203	203	403
Japan	862	878	870	936	936	936	936
South Africa	219	249	249	1,047	1,047	1,047	1,047
DEVELOPING MARKET ECONOMIES	2,567	2,915	3,330	4,763	5,814	6,167	6,789
Africa	721	861	1,191	1,521	2,181	2,346	2,346
Algeria	165	165	165	165	330	330	330
Morocco	165	165	495	825	1,155	1,320	1,320
Rhodesia	34	34	34	34	34	34	34
Senegal	23	23	23	23	23	23	23
Tanzania	35	35	35	35	35	35	35
Tunisia	299	439	439	439	604	604	604

ANTICIPATED ADDITIONS TO WORLD PHOSPHORIC ACID CAPACITY AS OF 15 OCTOBER 1975
('000 Metric Tons of P_2O_5)

	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80
DEVELOPING MARKET ECONOMIES Cont'd							
Latin America	**715**	**815**	**815**	**1,111**	**1,320**	**1,408**	**1,860**
Brazil	150	250	250	492	492	580	780
Chile	90	90	50	50	50	50	170
Colombia	6	6	6	6	20	20	152
Ecuador	17	17	17	17	17	17	17
Mexico	465	465	465	474	639	639	639
Venezuela	27	27	27	102	102	102	102
Near East	**628**	**628**	**628**	**856**	**856**	**956**	**1,126**
Iran	128	128	128	326	326	326	326
Jordan	-	-	-	-	-	-	170
Lebanon	99	99	99	99	99	99	99
Syrian Arab Rep.	30	30	30	30	30	30	30
Turkey	401	401	401	401	401	501	501
Far East	**471**	**581**	**666**	**1,245**	**1,457**	**1,457**	**1,457**
Bangladesh	11	56	56	56	56	56	56
India	207	270	355	716	808	808	808
Korea, Rep. of	174	174	174	392	392	392	392
Philippines	81	81	81	81	201	201	201
CENTRALLY PLANNED ECONOMIES	**3,226**	**3,606**	**4,179**	**4,219**	**4,419**	**4,529**	**4,529**
Asia	**61**	**61**	**27**	**27**	**27**	**27**	**27**
China	24	24	24	24	24	24	24
Taiwan	40	40	73	73	73	73	73
Eastern Europe	**3,165**	**3,545**	**4,082**	**4,122**	**4,322**	**4,432**	**4,432**
Bulgaria	110	110	110	110	310	310	310
Czechoslovakia	17	17	17	17	17	17	17
Poland	456	566	566	606	606	606	606
Romania	312	312	372	378	372	482	482
U.S.S.R.	2,287	2,537	3,017	3,017	3,017	3,017	3,017
TOTAL WORLD	**18,890**	**21,542**	**23,089**	**25,488**	**27,132**	**28,217**	**29,039**

NORTH AMERICA

ANTICIPATED ADDITIONS TO WORLD PHOSPHORIC ACID (WET PROCESS) CAPACITY AS OF 31 DECEMBER 1975

('000 Metric Tons of P_2O_5/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
CANADA							
Texas Gulf, Inc., Kidd Creek, Ont.							154
U.S.A.							
Agrico Chem-Williams Donaldsonville, La.	363						
Baker Industries Conda, Idaho							141
Taft, La.				363			
C.F. Industries, Inc. Plant City, Fla.	340						
Hardy City, Fla.							n.a.
Farmland Ind. Pierce, Fla.					227		
W. R. Grace & Co. Bartow, Fla.					345		
International Minerals Bonnie, Fla.	680						
Occidental Ag. Chem. White Springs, Fla.	318						
Lathrop, Calif.	13						
Olin Corporation Pasadena, Texas	5	54					
J. R. Simplot Pocatello, Idaho	18	36					
Texas Gulf Sulphur Lee Creek, N.C.		154					308
Valley Nitrogen Prod. Helm, Calif.			77				

Note: The Mississippi Chem. Corp. plant expansion of 36,000 tons which appeared on this list originally for 1974/75 should now be added to the 1973/74 list.

[illegible]

ANTICIPATED ADDITIONS TO WORLD PHOSPHORIC ACID (WET PROCESS) CAPACITIES AS OF [illegible]

('000 Metric Tons of P_2O_5/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
BELGIUM							
Prod. Chim. et Metal. (Rupel)							
Saunegarde-[illegible]sbrock	30						
Union Chemique Belge							
Zanvoorde	20						
FINLAND							
Kemira Oy							
Siilinjarvi			30				
FRANCE							
Azote & Prod. Chem. (APC)							
Grande Courrone	220						
		45					
Cie Fr. Az. (COFAZ)							
Le Havre	198						
Generale des Engrais							
Grand Quevilly		60					
GERMANY, F.R.							
Fabwerke Hoechst							
Knapsack	35						
GREECE							
Chem. Ind. N. Greece							
Salonkia							39
Hellenic Chem. Prod.							
Piraeus	25*						
	66						
	66						
IRELAND							
Nitrigin Eireann Teo							
Arklow		18					
ITALY							
Fosfitalia S.A.							
Monfalcone							250

WESTERN EUROPE

ANTICIPATED ADDITIONS TO WET PHOSPHORIC ACID (WET PROCESS) CAPACITY FROM 1975 THROUGH 1979

('000 Metric Tons of P_2O_5/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
NETHERLANDS							
Unie van Kunstmest Pernis		35[1]	20[1]				
PORTUGUAL							
Nitratos de Portugal Alnerca							32
Soc. Port. de Petroquim Sines							153
Uniad Fabril D'Azoto Barrero	41						
SPAIN							
CIA Insula - Nitrogeno Arinaga							50
Pinosa Gran Canaria							100
Foret S.A. Huelva	45						
Industrias Quimicas Canar. Gran Canaria				30(Check)			
Union Explosivos R-T Huelva	100						
UNITED KINGDOM							
Albright & Wilson Whitehaven		40					
Imperial Chemical In. Severnside	5						

1/ The phased net addition from starting up a 200,000 tpy plant and closing 145,000 tpy plan

WESTERN EUROPE

ANTICIPATED ADDITIONS TO WORLD PHOSPHORIC ACID (WET PROCESS) CAPACITY AS OF DECEMBER 1975

('000 Metric Tons of P_2O_5/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
YUGOSLAVIA							
Rud. Tapion Basen for							
Pranoho							150 (Check)
Trepca Minmetallur							
Trepca		55					1/
Zletono Lead & Zink							
Titon Veles					50		
							/
Zorca Chemical Ind.							
Subotica							100
Apatin							100

OTHER DEVELOPED

ANTICIPATED ADDITIONS TO WORLD PHOSPHORIC ACID (WET PROCESS) CAPACITY FOR THE PERIOD OF 1975

('000 Metric Tons of P_2O_5/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
JAPAN							
Central Glass Co. Ube		8*	27				
Nippon Chemical Ind. Koromours							36
Nihon Kasei Konahama	5						
Mitto-Niigato Higashi-Niigato							136
Nagn-Industries, Ltd. Miyako	11						
Toyo Soda Mfg. Co. Tonda			39				
SOUTH AFRICA							
Nosveld Fertilizers Phalborwa			198				
Federale Kunsmis Phalborwa			200				
Omnia Rustenburg	30						
Triomf & Cascogan Richards Bay			400				
ISRAEL							
Arad Chem. Co. Arad							200
Haifa Chemicals Haifa			5				
Israel Chemicals Ltd. Moshor Rotem						200	

AFRICA

ANTICIPATED ADDITIONS TO WORLD PHOSPHORIC ACID (WET PROCESS) CAPACITY AS OF DECEMBER 1975

('000 Metric Tons of P_2O_5/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
ALGERIA							
Sonatrach							
Annaba				165			165
MOROCCO							
OCP Maroc Chemie II							
Safi		165					
OCP Maroc Phosphore							
Safi I		165 (Stream 1)	330 (Streams 2 & 3)				
Safi II				330 (Streams 1 & 2)	165 (Stream 3)		
Safi III-VII							2,475
TUNISIA							
Ind. Chem. Maghrebines							
Gabes	140			165			
UGANDA							
Tororo & ICI							
Tororo							20

LATIN AMERICA

ANTICIPATED ADDITIONS TO WORLD PHOSPHORIC ACID (WET PROCESS) CAPACITY AS OF 15 OCTOBER 1972

('000 Metric Tons of P_2O_5/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
CUBA							
Triple Superphosphate							
Unknown							(450)
MEXICO							
Guanomex							
Minatitlan			9				
Guaymas				165			
VENEZUELA							
Inst. Venez de Petro							
Moron			75				
BRAZIL							
Arama Fertilizer							
Araxa						200	
Catalao							
Catalao							150
Copebras							
Santos-Cubatao	100						
CRA							
Rio Grande							150
Fertil. Araxa							
Araxa			132		[illegible]		
Fertisul							
Rio Grande							400
Ind. Carboquimica							
Itaituba			110				
Ind. Luchsinger							
Rio Grande							215
Solorrico (Ciperz)							
Rio Grande							400
Cp Vale Rio Doce							
Tapira M.G.							150
CHILE							
Empresa Nac. de Mineria							
Ventanas						120	

LATIN AMERICA

ANTICIPATED ADDITIONS TO WORLD PHOSPHORIC ACID (WET PROCESS) CAPACITY AS OF [illegible] 1975

('000 Metric Tons of P_2O_5/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
COLOMBIA							
Colominas S.A. Ventaquemada				14			
Fert. Colombianos Barranca-Bermeja						132	
PERU							
Bayovar Corp. Unknown							
Minero-Peru (Bayovar) Sech-Desert							262
Unknown Ilo							460
URUGUAY							
Ancap Montevideo							8
Agi Nueva Palmira							30

NEAR EAST

ANTICIPATED ADDITIONS TO WORLD PHOSPHORIC ACID (WET PROCESS) CAPACITY AS OF 15 OCTOBER 1975

('000 Metric Tons of P_2O_5/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
EGYPT							
Egyptian Chem. Ind. Aswan							152
IRAN							
Shapur Chem. Co. Bandur Shapur			198				
JORDAN							
Jordanian Chem. Ind. Aqaba						170	
TURKEY							
Azot Sanayii Cukurova							234
E.G.E. Gubre Sanayii Yenifoca							60
Gubre Fabrikalari Yarmica							75
Tefken Adana					100		

FAR EAST

ANTICIPATED ADDITIONS TO WORLD PHOSPHORIC ACID (WET PROCESS) CAPACITY AS OF OCTOBER 1975

('000 Metric Tons of P_2O_5/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
BANGLADESH							
Bangladesh Dev. Corp.							
Chittagong	45						
Khulna							40
INDIA							
Coromandel Fert.							
Vishakhapatnam		31					
D.C.M. Chemical Works							
Ambernath							230
Dharamasi Morarji							
Bombay							69
Mangalore							107
Fert. Chem. Travancore							
Alwaye							137
Cochin			115				
Fert. Corp. of India							
Durgapur							113
Trombay	33						
Sindri			156				
Haldia				75			
Rajestan							108
Hindustan Copper Ltd.							
Khetri			90				
Hindustan Lever							
Haldia				17			Check
Hindustan Zink Ltd.							
Debari	30						
Indian Farmers Fert. Coop.							
Kandla							120
J.K. Chemicals							
Saladipura							300
Konkan Develop. Corp.							
Apta							65

FAR EAST

ANTICIPATED ADDITIONS TO WORLD PHOSPHORIC ACID (WET PROCESS) CAPACITY AS OF [illegible] OCTOBER 1975

('000 Metric Tons of P_2O_5/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
INDIA (CONT'D)							
Karnataka St. Ind. Minurabad/Karnataka							125
Madras Fertilizers Manali/Madras							85
Mysore Ind. & Invest. Unknown							125
Nagarjuna Fert. Corp. Kakinada							82
National Mineral Dev. Unknown							67
Shiram Fert. & Chem. Kotah							33
Southern Petrochem. Tuticorn		54					155
Zuari Agrochemicals Panjim/Goa							60
INDONESIA							
Petrokemika Gresik							144
PHILIPPINES							
Planters Iligay				120			
PAKISTAN							
MFC Iassara							80
SOUTH KOREA							
Nam Hae Chem. Corp. Yeosu							

EASTERN EUROPE

ANTICIPATED ADDITIONS TO WORLD PHOSPHORIC ACID (WET PROCESS) CAPACITY TO BE ON STREAM BY 1975

('000 Metric Tons of P_2O_5/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
BULGARIA							
Devinia Complex							
Povelyanovo				200 1/			
HUNGARY							
Tisza Superphos. Works							
Szolnak							77
POLAND							
Police Complex							
Szeczecin	110						
Miszlow							
Miszlow			40				
RUMANIA							
Arad Complex							
Arad							100
Brason Complex							
Brason							100
Combinasue Complex							
Craiona							100
Galati Complex							
Galati							100
Lucau Complex							
Lucau					110		
Valea Calugareas Complex							
Valea Calugareasca (Piatra)		60					
U.S.S.R. 2/							
Balakovo	140						
Cherpovetsk		350					
Gomel II	110						
Kingisep II		130					

1/ This capacity was originally included in the 1973/74 list.

2/ The other projects enumerated at the meeting for CY 1974: Amalyk (130), Kingisep I (130), Novde (45), Suny (110), Uvarove (110), Voskresensk (110), were all assumed to start operati during Spring 1974 and were already included in the 1973/74 list.

SOCIALIST ASIA (AND TAIWAN)

ANTICIPATED ADDITIONS TO WORLD PHOSPHORIC ACID (WET PROCESS) CAPACITY AS OF 31 DECEMBER 1975

('000 Metric Tons of P_2O_5/Year)

	74/75	75/76	76/77	77/78	78/79	79/80	Indefinite or Beyond 80
TAIWAN							
China Phosphorus Co. Kaohsiung		33					

ANTICIPATED ADDITIONS TO WORLD POTASH CAPACITY AS OF 15 OCTOBER 1975

('000 Metric Tons of K_2O)

	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80
DEVELOPED MARKET ECONOMIES:	17,288	17,424	17,570	18,036	18,521	18,036	18,972
North America	10,343	10,434	10,582	10,686	10,746	10,696	10,632
U.S.A.	2,753	2,844	2,992	3,096	3,156	3,106	3,092
Canada	7,590	7,590	7,590	7,590	7,590	7,590	7,590
Western Europe	6,295	6,340	6,240	6,590	6,940	7,190	7,340
France	2,200	2,200	2,200	2,250	2,250	2,250	2,250
Germany, F.R.	3,000	3,000	2,800	3,000	3,100	3,200	3,300
Italy	290	290	290	290	290	290	290
Spain	800	800	800	800	800	850	900
United Kingdom	5	50	150	250	500	600	600
Oceania	-	-	28	30	35	40	50
Australia	-	-	28	30	35	40	50
Other Developed Market Economies	650	650	720	720	800	900	900
Israel	650	650	720	720	800	900	900
DEVELOPING MARKET ECONOMIES:	300	300	300	350	400	400	450
Africa	300	300	300	350	400	400	400
Congo	300	300	300	350	400	400	400
Ethiopia	-	-	-	-	-	-	-
Latin America	-	-	-	-	-	-	-
Brazil	-	-	-	-	-	-	-
Near East	-	-	-	-	-	-	50
Jordan	-	-	-	-	-	-	50
Far East	-	-	-	-	-	-	-
Thailand	-	-	-	-	-	-	-
CENTRALLY PLANNED ECONOMIES:	10,150	11,750	13,150	13,350	13,350	13,350	13,750
Asia	150	150	150	150	150	150	150
China	150	150	150	150	150	150	150
Eastern Europe	10,000	11,600	13,000	13,200	13,200	13,200	13,200
Germany, D. R.	3,000	3,100	3,200	3,200	3,200	3,200	3,200
U.S.S.R.	7,000	8,500	9,800	10,000	10,000	10,000	10,000
Poland	-	-	-	-	-	-	-
TOTAL WORLD:	27,738	29,474	31,020	31,736	32,271	32,576	33,772

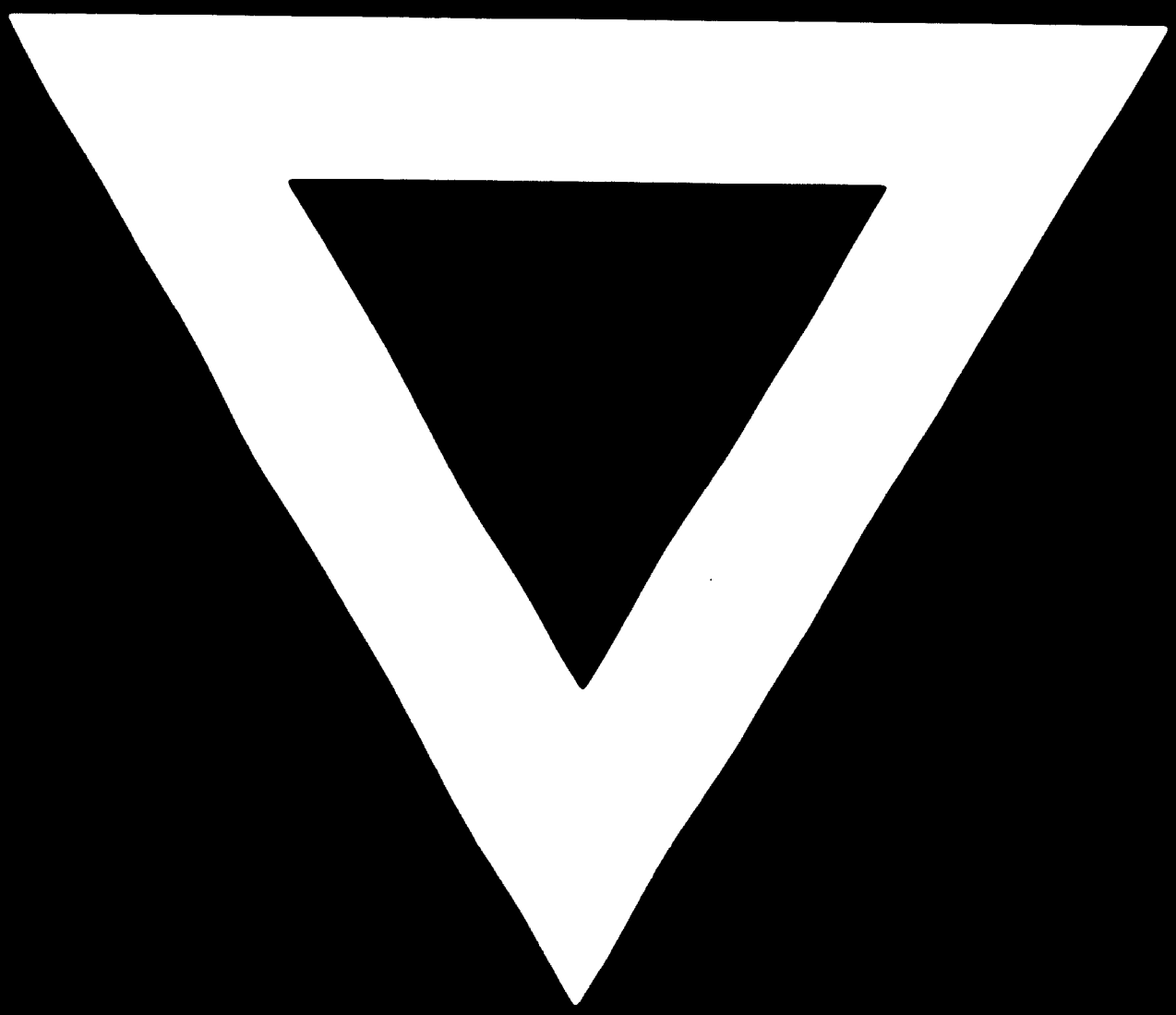
ANTICIPATED DEVELOPMENT OF WORLD PHOSPHATE ROCK CAPACITY AS OF 15 OCTOBER 1975

('000 tonnes product)

REGION 1/	ACTUAL DELIVERIES				FORECASTED SUPPLY POTENTIAL				
	1972	1973	1974	1975 Estimate	1975	1976	1977	1978	1979
W. Europe	108.2	128.0	105.0	100E	90E	90E	90E	90E	90E
E. Europe	19772.0	21580.0	22505.0	22200E	23500E	25000E	26500E	28000E	29500E
N. America	39807.9	40421.6	43039.3	40300E	42750	48600	54000	57600	62100
Oceania	2927.2	4563.8	4649.7	3460E	3725	5325	5825	5745	5225
Latin America	414.4	430.1	549.2	550E	690	830	2540	2860	3670
N.W. Africa 2/	18200.4	21414.4	25934.7	20500E	27600	32850	36550	40450	43950
Near East 3/	2191.1	2438.8	3698.6	2600E	5160	7666	10700	13060	13560
Africa (Except N.W.)	5044.3	5513.1	5773.1	6130E	6225	6475	7485	7935	7935
South Asia 4/	217.0	136.0	326.4	300E	390	650	740	840	900
Socialist Asia	3180.0	3660.0	4600.0	4500E	5200E	5800E	6400E	7200E	8500E
World	91812.5	100485.8	111181.0	100640E	115330	133286	150830	163780	175430

1/ ISMA definitions. Pertinent divergencies from FAO definitions are footnoted.
2/ Algeria, Morocco, Tunisia
3/ Including Israel
4/ India, Pakistan, Bangladesh, Sri Lanka
SOURCE: ISMA submittal to the UNIDO/FAO/World Bank Group on Fertilizers. Figures reflect producer intentions in October 1975.

SOME PAGES
ARE ABSOLUTELY
UNREADABLE



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