



TOGETHER
for a sustainable future

OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.



TOGETHER
for a sustainable future

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

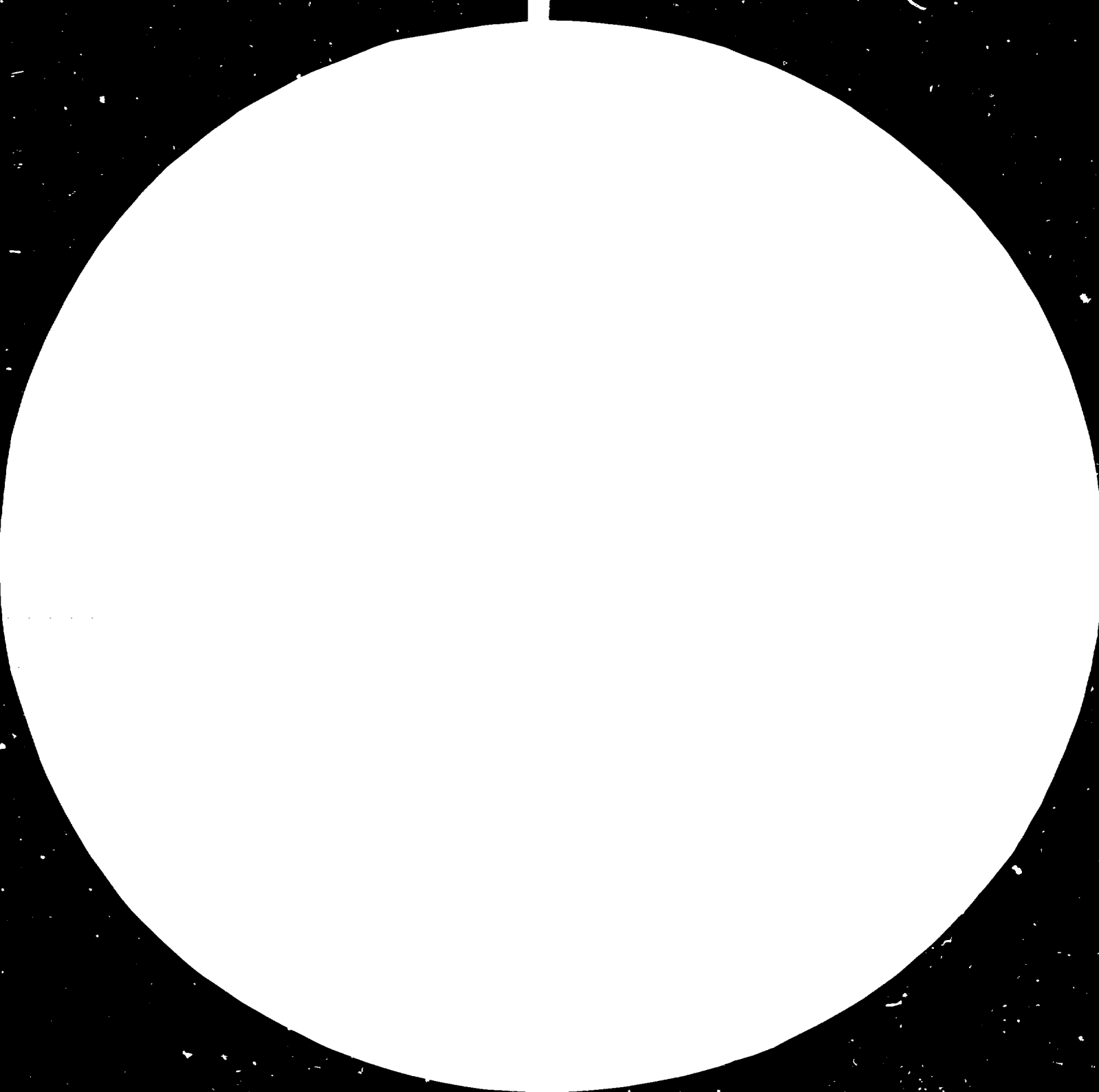
FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org



1.0

1.0

1.1

1.1

1.1

1.25

1.4

1.6

11370

REGIONAL NETWORK FOR THE
PRODUCTION, MARKETING AND CONTROL
OF PESTICIDES IN ASIA AND THE FAR EAST

DP/RAS/81/064

Terminal Report *

Prepared for the Governments of
the Democratic Republic of Afghanistan, Peoples Republic of Bangladesh,
India, Indonesia, Republic of Korea, Malaysia, Pakistan,
Philippines, Sri Lanka and Thailand

by the United Nations Industrial Development Organization,
acting as executing agency for the
United Nations Development Programme

Based on the work of
William J. Magee, UNIDO Consultant

001101

* This document has been reproduced without formal editing.

C O N T E N T S

	<u>Page No.</u>
Introduction	1
I. Summary	4
II. Recommendations	5
III. Purpose	6
IV. Duties	6
V. Findings	7
A. Difficulties encountered	8
B. Country Visits	9
Afghanistan	9
Bangladesh	9
India	10
Indonesia	10
Korea	10
Malaysia	10
Pakistan	11
Philippines	11
Sri Lanka	11
Thailand	11
C. Analysis of country requests for UNDP inputs to provide a full array of regional network activities	12
D. Selection of host to manage and operate the regional network	13
VI. Annexes	
<u>Tables - Summary</u>	
1. Consultant/Expert Component	14
2. Individual Training Component	15
3. Group Training Component	16
<u>Country Data</u>	
4. Afghanistan	17
5. Bangladesh	20
6. India	29
7. Indonesia	35
8. Korea	38
9. Pakistan	41
10. Philippines	49
11. Thailand	59

Regional Network for the Production, Marketing
and Control of Pesticides in Asia and the Far East

I N T R O D U C T I O N

A joint UNIDO/FAO Mission in cooperation with WHO and ESCAP was fielded during the period 1 July 1973 - 15 February 1974 and visited in approximate sequence Hong Kong, Philippines, Singapore, Indonesia, Malaysia, Thailand, India, Nepal and Afghanistan. Hong Kong and Singapore were not participants in the Survey but brief stop-overs enroute were made to contact regional technical/sales staff of multinational pesticide manufacturers. The mission's duties were (i) to collect supply-demand data on pesticides in so far as possible for the period 1967 - 1972 and make growth estimates to project pesticide requirements through 1982; (ii) gather information on raw material availability and current and planned pesticide manufacturing and formulation facilities; and (iii) make recommendations for the development of the pesticide industry at the national, sub-regional and regional levels. At the time the mission was fielded a number of events took place internationally and locally in Germany and Japan which made pesticide procurement not only difficult in late 1973 and well into 1975, but much more costly. These were (i) the petroleum embargo in October 1973; (ii) almost all available ship-bottoms were under Soviet Charter to carry wheat from North America; and (iii) explosions in the paranitrophenol plants of both Bayer in Germany and Sumitomo in Japan reduced supplies of parathion, methyparathion and fenitrothion to a trickle. Consequently, the reports and recommendations of the mission which were distributed to the member countries of ESCAP in mid-late 1974 generated enough interest and feedback that UNIDO started planning a Governmental Consultation for the region. Meanwhile, as a result of these supply difficulties, the World Food Conference in the spring of 1974 called on FAO to convene in cooperation with UNIDO, UNDP and WHO, an Ad-Hoc Government consultation on pesticide supply and demand which took place in Rome, 7 - 11 April 1975. In accordance with Resolution M of the consultation which dealt with the development of the pesticide industries in developing countries, UNIDO in cooperation with ESCAP organized a Regional Symposium on Pesticide Production in Asia and the Far East which was to be held in Bangkok late January - early February 1976. Financial constraints resulting from over implementation of UNDP

projects in 1975 postponed holding the symposium until 1 - 7 February 1977. This meeting was attended by representatives from Afghanistan, Iran, Pakistan, India, Niue, Bangladesh, Thailand, Malaysia, Sri Lanka, Indonesia, Philippines, Korea, Hong Kong, Papua New Guinea and Fiji and included representatives from the pesticide industry and the international agencies, FAO, UNEP and WHO. The symposium recommended that highest priority be given to the establishment of a regional pesticide development programme. A draft project document for such a programme was prepared by UNIDO and submitted to the UNDP for comment and approval. The UNDP then convened an inter-agency meeting which was attended by FAO, UNIDO, WHO and UNEP on 9-10 April 1979 to determine the need for a pesticides development and control programme for Asia and the Pacific region. The meeting agreed that a UNDP assisted regional project operating as a network system, utilizing existing regional institutional resources was desirable and UNIDO was designated as the executing agency with the others agreeing to cooperate and provide what assistance they could in the establishment and operation of the overall network. A preparatory meeting for a regional network for development and control of pesticides for Asia and the Pacific was organized by UNIDO to be held in Jakarta later that year. Financial constraints again caused the postponement of the preparatory meeting until 21 - 26 April 1980. The participating countries were Bangladesh, India, Indonesia, Iran, Korea, Malaysia, Philippines and Thailand. The meeting identified a number of areas where regional cooperation was feasible and necessary as well as the components and mechanism for an intercountry cooperative programme. Although the Jakarta meeting was not as well attended as the Bangkok Symposium and only a few national coordinating institutions or organizations could be tentatively suggested if the respective governments decided to participate, UNIDO redrafted the project document to provide a regional network for the production, marketing and control of pesticides in Asia and the Far-East for UNDP comment and approval. This draft proposed had as its third preparatory project activity, the fielding of a mission for six months to countries supporting the project to obtain from each participant data identifying the national network coordinating agency/institution, institutional format, specific objectives, qualitative and quantitative information on technical assistance outputs expected in terms of experts and equipment, training programme outputs expected for individual fellow-ships and groups (study tours, workshops and inplant training),

qualitative and quantitative information on in kind inputs for counterparts, facilities, equipment and supplies, and individual and group training programmes that could be hosted by the participants. The present mission was fielded beginning 1 August 1981 to obtain these data and draft the final project document for approval by UNDP and the participating countries. The mission terminated on 21 December, at which time the final project document had been drafted and this mission report submitted.

I. SUMMARY

This mission, Regional Network for the Production, Marketing and Control of Pesticides in Asia and the Far-East, DP/RAS/81/064/11-01/32.1.G., was fielded during the period 1 August - 21 December 1981 to carry out a preparatory assistance mission to Afghanistan, Bangladesh, India, Indonesia, Korea, Malaysia, Pakistan, Philippines, Sri Lanka and Thailand. The principal objective of the mission was to prepare a project document for a regional network bearing the same title as the mission from information obtained during these governmental consultations.

II. RECOMMENDATIONS

1. Countries participating in a regional network system should be brought into the document preparation process well in advance of preparatory assistance missions to them and be given a detailed set of instructions by the executing agency (UNIDO in this instance) through the local UNDP office regarding data expected from them.
2. The UNDP should draw up and distribute to the Executing Agencies a set of guidelines for preparation of project documents for regional network systems.
3. The Government of the Democratic Republic of Afghanistan should prepare an urgent request through UNDP, Kabul, to UNIDO for a short term preparatory fact finding mission to assess the need for pesticide repacking and formulating facilities including a quality control laboratory and prepare proposals for follow-up.
4. UNIDO favourably react to any request resulting from recommendation No. 3.
5. FAO should accelerate the activation of the pesticide analysis component of its project AFG/78/017 so that the counterpart can monitor the quality of its pesticide purchases and press claims against suppliers of faulty products.
6. The Regional Network should in its early activities search for ways to utilize excess local pesticide manufacturing capacity to supply member countries who have no or insufficient pesticide manufacturing capability.
7. The Regional Network should examine sponsorship or actively conduct a study to determine if recycling of DDT back into agriculture is desirable or justified on the basis that much of the product's bad reputation as an environmental pollutant may have been polychlorinated biphenyl contamination and interference in much of the early monitoring work that implicated DDT, perhaps falsely.

8. The Government of Thailand should adopt a definite, firm policy on industrial investment to encourage basic manufacturing of specialty chemicals, including pesticides.

III. PURPOSE

This assignment, DP/RAS/81/064/11-01/32.1.G., was to conduct a preparatory assistance mission to 10 Countries in the ESCAP region that had expressed a willingness to participate in regional cooperative efforts to promote pesticide industrial development. The cooperative programme would be a network system that harnessed and utilized primarily regional resources with minimal but significant inputs from the UNDP to serve as a catalyst to get the participating countries more deeply involved in the international and voluntary sharing or exchange of their technical resources, skills and capabilities. Essentially this Regional Network for the Production, Marketing and Control of Pesticides in Asia and the Far East would be a Technical Co-operation among Developing Countries (TCDC) activity stimulated by outside elements, namely the UNDP and UNIDO.

IV. DUTIES

Consultations were held during the period 1st. August to 29 November 1981 with the Governments of the Democratic Republic of Afghanistan, The Peoples Republic of Bangladesh, India, Indonesia, Republic of Korea, Malaysia, Pakistan, Philippines, Sri Lanka and Thailand. A preliminary report of the missions findings were given to representatives of those governments who attended the ESCAP/Agricultural Requisites Scheme for Asia and the Pacific/2/Agro-Pesticides Regional Consultative and Evaluation Meeting held in Bangkok, Thailand from 30 November to 3 December 1981.

For these government consultations the mission was instructed to:

- i) Determine the extent of each government's interest and its focal point(s);
- ii) brief the governments on the envisaged mechanism for the programme based on a network system of national agencies/institutions;
- iii) collect information from the governments on:

- a) The name, location and terms of reference of each national participating in the network and identify the agency/institution designated by the government to coordinate the programme on the national level;
 - b) detailed qualitative and quantitative descriptions of outputs the individual countries expected to achieve through regional cooperation to promote investment in the pesticide industrial sector;
 - c) specific objectives the governments wish to pursue through their participation in the scheme;
 - d) qualitative and quantitative descriptions of inputs the participating countries could provide the network; and
- iv) incorporate these data into a project document for approval by the UNDP and the participating countries.

Drafting of the project document was completed on 15 December 1981. At that time data from Indonesia and Sri Lanka had not been received from the governments and the data from Malaysia was incomplete.

In addition to drafting the project document for the Regional Network for the Production, Marketing and Control of Pesticides in Asia and the FAR East, RAS/81/064, a final report on the findings of the mission and recommendations to the governments and the sponsoring agencies on further action which might be taken was included in its terms of reference. This is that report.

V. FINDINGS

Data obtained from the seven of the countries participating in the regional network are contained in Annexes 1 - 11 of this report. Data from three, Indonesia, Malaysia and Sri Lanka, had not arrived when the mission terminated although these governments had indicated that they would participate in the network.

A. Difficulties encountered

The major constraint encountered during the mission can be attributed to communication difficulties in the system that links the UN agencies with country counterparts. Prior to the fielding of the mission UNIDO had proposed that the final report of the UNDP/UNIDO Preparatory Meeting for the Regional Programme for Development and Control of Pesticides for Asia and the Pacific held in Jakarta/Indonesia from 21 - 26 April 1980 and a copy of a proposed project document drafted by UNIDO after that meeting be distributed to all Governments of the region, with a request for an early indication of their interest in participation in the project along with specific objectives outputs and activities that the Governments wished to see pursued and achieved. If this had been done, the mission would have gone much smoother because more time could have been spent refining data already collected by the participants rather than being engaged in the data collecting process as was the case. The only document the countries had received was the report of the Jakarta meeting with a request that they express their interest in participation in a regional network system and list the objectives they hoped to achieve.

The regional network system using primarily regional resources is a concept that has been slowly involving and preparing a project within such a scheme is a new experience for both the participating countries and the executing agencies. Most of the guidance provided by the UNDP for preparation of a network document has been of a negative nature on components it cannot have and experience obtained in preparing project documents for a country projects or centralized regional projects which are being superseded by the network system, is little value. A glance at the data in the annexes indicated that many countries still view the regional network system as an extension of the shopping list complex nature to country projects. Preparation of project documents for a regional network would greatly benefit from the publication by the UNDP of a detailed set of guidelines. A formal set of guidelines would have greatly reduced the amount of improvisation and refinement of technique in the data collecting process that this mission experienced.

B. Country Visits

AFGHANISTAN

This country has made excellent progress in its attempts to provide chemical inputs to agriculture at a reasonable price and is seeking ways to further reduce the price of these products. There is no local manufacture or formulation of pesticides, veterinary products or spray application equipment. The government consequently intends to seek UNDP/UNIDO assistance through the country programme to establish repackaging and pesticide formulation facilities so that the retail price (currently 118% of C+F) of pesticide imports can be further reduced. Any request from Afghanistan for a UNIDO assessment and fact finding mission on pesticide repacking and formulation units should be treated favourably.

The sole pesticide importing, distributing and marketing firm, Afghanistan Fertilizers Company, has no facilities to check the quality of the products it purchases. Consequently, it is all too regularly cheated by some of its suppliers, especially brokers rather than original manufacturers. Pesticide analytical instruments and fellowship training for their operation are a component in a FAO executed project, AFG/78/017, but activation of this phase of the project is not expected until 1982 and probably will not be operational toward the end of 1983. There is meanwhile a critical need these facilities to measure and control pesticide quality.

BANGLADESH

The Government owned and operated DDT factory is not operating at optimum capacity for economic viability because national vector control programmes in the public health area no longer require large quantities of the product. Hopefully, the regional network will provide a forum to permit this and other instances of local over capacity to operate economically by exporting to other members of the region, which require pesticide products in excess of their local manufacturing capability. Much of DDT's bad reputation which restricts its use on agricultural crops is due to faulty analytical techniques which indicated the false presence of DDT when the polychlorinated biphenyls caused not only environmental pollution and hazard problem but were actually being measured by gas chromatographic techniques employed which were not capable of distinguishing between the presence of DDT or its metabolites and polychlorinated biphenyl interference. The

regional network might wish to sponsor or conduct investigations that would lead to the recycling of DDT back into agriculture.

The Government also strongly expressed its desire to host the regional network coordinating unit.

INDIA

India has a large scale UNDP assisted, UNIDO executed project, Pesticides Development Programme in India, DP/IND/80/037, under implementation which should provide significant inputs and services to the regional network in mid 1982 and beyond when it becomes fully equipped and operational.

India restated its wish to host the regional network. The remight be advantages to having two mutually supportative projects under one roof but there is a greater inherent danger that one might be diluted at the expense of the other.

INDONESIA

Indonesia wished to host the regional network and offers the advantage of good prospects for close coordination between regional network activities and those of the agricultural committee of the ASEAN sub-region and the ASEAN secretariat who are headquartered in Jakarta. The ASEAN sub-region have under study a cooperative basic pesticide manufacturing unit for its members. Data concerning Indonesia's role in regional network operations has been posted but not received when this report was drafted.

KOREA

Initially it does not appear that Korea will be active in regional network activities as its sophisticated state of agricultural and industrial development would justify. Hopefully, the potential participating governmental agencies/institutes will re-examine their position as the regional network develops and take an enlarged role in network activities.

MALAYSIA

The timing of the mission's visit to Malaysia was somewhat inopportune because some of the key personnel vis-à-vis regional network contributions were tied up by previous commitments to prepare their programme of the FAO

conference and project documentation for a bilaterally assisted project of the Federal Republic of Germany. Consequently, data on Malaysian participation in the network is still awaited.

Malaysia wishes to host the regional network coordinating unit.

PAKISTAN

Pakistan also has a DDT production unit which is underutilized regional activities mentioned above in the paragraph on the visit to Bangladesh would also benefit Pakistan. The private sector pesticide industry in Pakistan is primarily a repackaging/blending operation using imported ingredients so there is scope for considerable improvement in utilizing local raw materials for pesticide formulation.

PHILIPPINES

The Philippines also offered to host the regional network. Selection of this country offers several advantages such as; it hosts the industrialization committee of the ASEAN sub-region making liaison and coordination of activities in the pesticide manufacturing sector easy, it possesses two well equipped centers with pesticide analytical instrumentation to support network activities in formulation development and evaluation, product quality control and residue monitoring and agency proposed to operate and manage the regional network coordinating unit is itself organized as an efficient, smooth functioning network system.

SRI LANKA

During the early phases of regional network operations, Sri Lanka is expected to have minimal participation in network activities. Personnel to man pesticide analysis are still undergoing training abroad and will be occupied on their return with training additional local support staff. The nation has enacted modern pesticide control legislation but the infrastructure and personnel to police and enforce these laws has not been established or recruited.

THAILAND

Thailand is also one of the candidate countries to host the regional network.

The main deterrent preventing industrial investment in manufacturing units for chemical specialties, including pesticides has been the lack of a government policy to encourage plant investment which is firm and does not vacillate when confronted with media and environmentalist pressures. The need to establish such a policy will be more acute now that petrochemical resources have been discovered and pressure will build to utilize them in the manufacture of downstream products.

C. Analysis of country requests for UNDP inputs to provide a full array of regional network activities

The countries provided data to cover all the activities or services they thought the regional network should provide together with the individual countries assignment of its priority for each activity or service. Although the budget limitation for UNDP inputs was fixed at \$500,000 for an initial 2 year period, this was encouraged to arrive at a cost estimate for a fully operational regional network subject to the following restrictions: 1) individual experts or consultant assignments would carry a 6 month limit except those on a regional, multi-country activity; 2) equipment needs could be indicated but the network could not be expected to provide it; and 3) individual fellowships would carry a 6 month limit.

Data on the expert/consultant, individual training and group training components for a full array of regional network activities (Not including requirements of Indonesia, Malaysia and Sri Lanka whose data has not arrived) is consolidated in tables 1, 2 and 3. From these data the total programme for a regional network providing full services to the participating countries for which we have data would have an estimated cost as follows:

Component	US \$ cost
Technical Assistance (Consultants/Experts)	1,285,800
Training Programmes (Individual and group)	646,550
Total	<u>1,932,350</u>

Without exception, the governments consulted indicated that 5 years of regional network operations with UNDP support would be required to establish the network on a continuing basis. Consequently, a regional network

providing full services to the participating countries can be expected to cost something on the order of \$2,000,000 over a 5 year operational period.

D. Selection of host to manage and operate the regional network

Prior to the ESCAP/Agricultural Requisites Scheme for Asia and The Pacific/2/Agro-Pesticides Regional Consultative and Evaluation Meeting of 30 November - 3 December 1981 in Bangkok, Thailand, the countries wishing to host the regional network were notified by cable from UNIDO, Vienna to authorize the representatives attending it to negotiate on their behalf during discussions which would narrow the selection process so that recommendations could be forwarded to the UNDP. Only two delegations, Bangladesh and the Philippines, carried this authorization and estimated their total costs and those for UNDP inputs for project support personnel to manage and operate the regional network coordinating unit as follows for two years of operations:

	<u>m/m</u>	<u>Total Cost</u>	<u>UNDP input</u>
		US \$	US \$
Bangladesh	120	86,400	34,000
Philippines	144	50,000	40,000

and equipment requiring UNDP inputs was estimated to be:

<u>Bangladesh</u>	<u>Cost US \$</u>
Photocopier	13,000
Word processor	23,000
3 English Typewriters	900
Vehicle	10,000
Total	46,900

<u>Philippines</u>	
Photocopier	13,000
Word Processor	23,000
Total	36,000

This information was transmitted to the UNDP so that they could make a decision, which finally fell on the Philippines.

Table 1

Consultant/Expert Component for full operation of a Regional Network

<u>Subject</u>	<u>m/m</u>	<u>US \$</u>
Formulation and Packaging	9	63,000
Quality Control Analysis	24	168,000
Industrial Toxicology	15	105,000
Regional Harmonization Registration	12	84,000
Regional Harmonization MRL	12	84,000
Standardization Analytical Methods	12	84,000
Trade Considerations	12	84,000
Residues Monitoring Management	12	84,000
Establishment of MLR	18	126,000
Natural Product Chemist	6	42,000
Documentation and Information	24	172,800
Pesticide Production Technology	12	84,000
Analytical Instrument Maintenance	3	21,000
Environmental Monitoring and Hazard Assessment	6	42,000
Multiproduct Organophosphate Production	6	42,000
Technical Assistance Sub-total.....		<u>1,285,800</u> =====

Table 2

Individual Training programme component for full operation of a Regional Network

<u>Afghanistan</u>	<u>Priority</u>	<u>No.</u>	<u>m/m</u>	<u>Host</u>	<u>US \$</u>
Form. and Pack.	1	4	24	India	44,400
Toxicol	2	4	24	India	44,400
Qual. Control	3	4	4	Philippines	7,400
<u>Bangladesh</u>					
Residue Anal./Qual. Control	1	4	4	Philippines	7,400
Toxicol	1	2	12	Japan	22,200
Formulation Tech.	1	1	6	India	11,100
Pesticide Manufact.	2	1	6	India	11,100
<u>Korea</u>					
Animal Pearcng	6	2	6	England	11,100
Form. devel.	2	2	6	India	11,100
Fish toxicol	3	1	6	Japan	11,100
Residues Anal.	4	2	2	Philippines	3,700
Form. Anal.	5	2	2	Philippines	3,700
Mamal Toxic	1	2	6	India	11,100
Avian Toxic	7	1	3	MRC-England	5,550
<u>India</u>					
Inhalation Toxic	1	2	6	MRC-England	11,100
Delayed Neurotoxic					
<u>Indonesia</u>					
<u>Pakistan</u>					
Inhalation Toxic	1	2	6	MRC-England	11,100
Delayed Neurotoxic					
<u>Malaysia</u>					
<u>Philippines</u>					
Residues Monitoring Manag.	1	2	6	NA-Europe-Japan	11,100
Industry Policy Form. Chem	2	1	6	India	11,100
Pesticide Manuf. Tech.	2	1	6	India	11,100
Clinical Toxicol and delayed neurotoxicity	5	1	6	MRC-England	11,100
<u>Sri Lanka</u>					
<u>Thailand</u>					
Residues Monitoring Manag.	1	4	12	USA-Europe-Japan	22,200
Residues Analysis	2	2	2	Philippines	3,700
Formulation Chem.	1	4	24	India	44,400
Pest. Manuf. Tech.	2	2	3	India	5,500

Individual Training Sub-total..... 227,750

Table 3

Group Training Component for full operation of a Regional Network

<u>Study Tours</u>	<u>Priority</u>	<u>No.</u>	<u>US \$*</u>	
National Network Coordinators Tour	3	10	18,000	
Regulatory Control Monitoring		10	18,000	
Case History for Pesticide Manage.		20	36,000	
Pesticide Industrial Organization		20	36,000	
Pesticide outbreak Detection, Survey and Treatment System		10	18,000	
			<hr/>	
		Study Tours Sub-total.....	126,000	126,000
<u>Workshops</u>				
Registration Harmonization		20	36,000	
Trade Considerations		20	36,000	
Residues Monitoring		20	36,000	
Industrial Toxicology		20	36,000	
Formulation Development (Korea)		3	5,400	
Formulation		3	5,400	
Manufacturing Plant Licensing		10	18,000	
			<hr/>	
		Workshop Sub-total.....	172,800	172,800
				<hr/>
		Group Training Sub-total.....		298,800
		Training Programme Sub-total.....		646,350
				<hr/>
		GRAND TOTAL.....		1,932,350
				=====

* Calculated on basis of Average Travel Cost of US \$1,100 plus per diem \$700 per fellow per tour or workshop.

Annex 4

Afghanistan

Data for Regional Network for the Production, Marketing and
Control of Pesticide in Asia and the Far East, (RAS/81/064)

I. Organization

- a) National Network Coordinating Agency
Afghanistan Fertilizer Company
P.O. Box 3206
Kabul
Democratic Republic of Afghanistan

This organization has sole responsibility for the import and distribution of pesticides in Afghanistan. It also markets fertilizers, veterinary products, small spray application equipment and tools such as pruning shears, emasculators, etc. Pesticides, Fertilizers and Veterinary products can only be imported and marketed by AFC. The company has a very close working relationship with The Ministry of Agriculture, Corporate policy is dictated by the Supreme Council for AFC which is chaired by the Minister of Agriculture. The company distributes through its 26 selling centres who sell direct to end users and to retailers who in turn sell to end users. It has a staff of 700 of whom 70 are in the pesticide section. The company's annual operating budget is on the order of US \$1,420,000 of which some US \$180,000 are for pesticide operations.

b) Participating Agencies

The following Ministries/Departments will be cooperating in
the National Network

1. Ministry of Agriculture; Plant Protection Department,
Veterinary Department and Agricultural Extension Department.
2. Ministry of Finance; Agricultural Bank
3. Ministry of Trade
4. Ministry of Mining and Industry
5. Department of National Planning

c) Terms of Reference

To procure and distribute agricultural inputs specified by the
Ministry of Agriculture to the right place, at the right time, at uniform
legal prices.

II. Objectives

1. Continuously assess the demand and supply situation for pesticides.
2. Identify local raw materials and develop formulation for manufacture of suitable pesticide products.
3. Install pesticide formulation and repackaging units.
4. Install pesticide quality control and residue monitoring facilities.
5. Establish a worker safety programme for AFC pesticide units which includes industrial decontamination systems, worker health monitoring facilities etc.
6. Develop a professional cadre of competent technicians in the disciplines of formulation, product quality control, material handling, marketing, distribution, residue monitoring of agricultural export products, etc.

III. Outputs Desired

A. Technical Assistance

1. Experts/Consultants

<u>Subject Matter</u>	<u>Priority</u>	<u>m/m</u>	<u>Frequency</u>	<u>No. counterparts trained</u>
Formulation + Packaging	1	3	1	1
Quality Control Analysis	3	6	1	4
Industrial Toxicology	2	6	1	4
Regional Harmonization Registration	1	12 ±	1	1
Regional Harmonization MRL	3	12 ±	1	1
Standardization Analytical Methods (Residues + Form.)	2	12 ±	1	1
Trade Considerations	5	12 ±	1	1

IV. Training Programme

<u>Type</u>	<u>Subject</u>	<u>Priority</u>	<u>number fellows</u>	<u>Frequency</u>	<u>m/m</u>	<u>Host</u>
Individual	Formulation + Packaging	1	4	1	24	India
	Formulation Analysis	3	4	1	4	Philippines
	Toxicology	2	4	1	24	India
Group Study Tours	National Coordinators	3	1 Country	1	1	Regional
	Regulatory Control Monitoring	1	1	1	1	Jap/US/UK/FRG
Workshops	Registration Harmonization	1	1	2	$\frac{1}{2}$	Regional
	Trade Considerations	5	1	2	$\frac{1}{2}$	Regional
	Residues Monitoring	3	1	1	3/4	Regional

V. Counterpart Inkind Inputs

A. Technical Assistance

<u>Specialization</u>	<u>m/m</u>	<u>US \$ Value</u>
Formulation and packaging	27	4,320
Quality Control	28	4,400
Toxicology	48	7,680
Group	6.5	1,300

B. Equipment and Laboratories etc.

<u>Type</u>	<u>Size (m²)</u>	<u>US \$ Value</u>
Buildings, Offices, Warehouses (AFC)	300	12,000
Plant Protection Facilities	2500	500,000
Analytical Equipment (AFG/78/017)		150,000
Expendable		10,000

C. Documentation and Information Service \$ US 5 - 800

VI. Desired Project Duration: 5 years or more.

Annex 5

Bangladesh

Data for Regional Network for the Production, Marketing and Control of Pesticides in Asia and the Far East (RAS/81/064)

I. Organization

- a) National Network Coordinating Agency
Ministry of Agriculture and Forests

It is an overall administration controlling body with an annual total budget of US \$264.3 million and 50 nos of high officials for the Secretariat. There are about 20 nos of Directorates/Organizations (both Govt and Autonomus) under its administrative control. Each Directorate/Organization has a number of professional/technical staff. The Ministry has three committees on Plant Protection viz Technical Sub-committee, Plant Protection Committee and Agricultural Pesticide Advisory Committee for standardization/registration of pesticides in Bangladesh. With the privatization of the pesticide trade, the Pesticide Technical Advisory Committee will work henceforth exclusively on legislation of pesticides. It will be chaired by the Secretary, Ministry of Agriculture and Forests, with the members from different Ministries and Organizations concerning the marketing and control of pesticides in the country.

b) Participating Agencies

1. Operating under the umbrella of Ministry of Agriculture and Forests
 - a) Directorate of Plant Protection (Co-ordinating Unit) with an annual budget of \$1.1 million.
 - b) Bangladesh Agricultural Research Council with an annual budget of \$1.4 million.
 - c) Bangladesh Rice Research Institute with an annual budget of \$2.1 million.
 - d) Bangladesh Agricultural Research Institute with an annual budget of \$6.8 million.
 - e) Directorate of Agriculture (Extension and Management) with an annual budget of \$4.4 million

2. Co-operating with Ministry of Agriculture and Forests
 - a) Directorate of Fisheries.
 - b) Environmental Pollution Control Board.
 - c) BCSIR Laboratory
 - d) Agricultural University (Agricultural Chemistry, Entomology, Agronomy and Plant Pathology Departments).
 - e) Pesticide Association of Bangladesh.
 - f) Ministry of Industry.
 - g) Ministry of Health.
 - h) Ministry of Commerce.
 - i) Ministry of Finance.
 - j) Ministry of Planning.

To cover the programmes, the above organizations have their own budget.

3. Terms of Reference:

- i) To implement the Agricultural Pesticide (Amendment) Act, 1980 for registration and licensing of handlers (producers and sellers) of pesticides, collect fees pertaining there as well as the renewal, suspension, revocation, or cancellation of such registration or licences, and such other rules and regulations as may be necessary.
- ii) To establish and impose appropriate penalties on handlers of pesticides for violation of any rules and regulations of the Act.
- iii) To inspect the establishment and premises of pesticide handlers to ensure that health and safety rules and regulations are followed.
- iv) To enter and inspect farmers fields to ensure that only the recommended pesticides at recommended dose are used in crops.
- v) To establish and enforce levels of pesticides in raw agricultural commodities.
- vi) To prevent and regulate the exportation and importation of agricultural commodities containing pesticide residues above the accepted tolerance levels.

- vii) To restrict or ban the use of any pesticide or its formulation in specific areas or during certain periods upon evidence that the pesticide is an imminent hazard, has caused or is causing wide spread serious damage to crops, fish, or livestock, or to public health and the environment.
- viii) To explore indigenous raw materials to reduce reliance on imported materials/ingredients of pesticides.
- ix) To promote and co-ordinate all operational research on pesticides in co-operation with the Agricultural Research Council.
- x) To conduct an information campaign regarding the sale and effective use of pesticide products in the country.

II. Objectives

- A. Harmonization of national registration requirements for pesticides products through out the region and ultimately International.
- B. Harmonization throughout the regions of national tolerance and maximum pesticide residue levels permitted on imports of agricultural commodities.
- C. Establishment of standardized methods of pesticide residue analysis throughout the region (and internationally) to ensure that residue monitoring data, obtained by the exporting and importing countries on agricultural commodities are comparable.
- D. A study of trade considerations to promote preferential tariff conditions for pesticide products (and intermediate or raw materials used to produce pesticide product) that are manufactured and traded within the region.
- E. The establishment of a Regional Documentation and Information System to support objectives "A" through "D" above.
- F. Establishment of formulation facilities using indigenous carriers.
- G. Promotion of co-operative manufacturing programmes based on locally available botanicals, microbials, etc.
- H. Training of personnel in formulation technology, residue analysis, quality control, pesticide legislation etc.
- I. Strengthening of the present national pesticide laboratory by upgrading the existing facilities.

III. Outputs to be achieved through participation in the network

A. Technical Assistance

1. Consultants, Experts, etc.

<u>Subject Matter</u>	<u>m/m</u>	<u>Priority</u>	<u>Frequency</u>	<u>No. of counter- parts trained</u>
Regional Harmonization of pesticide registration requirement	12 \pm	1	1 m/m Regional meeting, 1 m/m follow-up Reg. meeting; 1 m/m each country	1 country
Documentation and information	12/ Year of operation	1	-	1 country
Residue Monitoring	6 \pm	1	4 m/m 1st. year 2 m/m each second year	6
Reduction of trade restriction on pesticide products manufactured within the region	12 \pm	2	1 m/m Regional meeting; 1 m/m country, 1 m/m follow-up Reg. meeting	1 country
Establishment of pesticide tolerance levels	3 \pm	2	2 m/m 1st. year 1 m/m next year	3
Formulation analysis formulation evaluation of local carriers and sample collection	6 \pm	1	4 m/m 1st. year 2 m/m next year	20
Natural Pesticide product chemist (botanicals, micro-bials, etc.)	6 \pm	3	1 time only	3

2. Establishment or upgrading of facilities

<u>Type</u>	<u>Objective</u>	<u>Capacity</u> (Annual output)
a) Residue monitoring Unit	Upgrading present pesticide laboratory	2000 analyses/year
b) Toxicology Unit (Fist, mammals, birds, etc.)	"	As required

3. Equipment

a) Non-Expendable

<u>Priority</u>	<u>Location/Purpose</u>	<u>Type</u>	<u>Value US \$</u>
2	Network Co-ordinating Unit	Photocopier	9 - 10,000
		Word Processor	23,000
		Vehicle, 4 door sedan or station wagon	10,000
		3 English Type-writers	900
1	Up-grading of residue analytical facilities	4 gas chromatographs, UV-vis spectrophotometer, Evaporators, Blenders, Ovens, freezers, refrigerators, balances, shakers, fume hood, centrifuge, gas cylinders, laboratory-mill, electronic generator, voltage, stabilization system, climate control system, extractors still etc.	127,400
2	Toxicology Unit	Various	20,000

b) Expendable

Network Co-ordinating Unit	Miscellaneous	5,000/year operation
Residues Laboratory	Glass ware, reagents solvents, etc.	7,600
Toxicology Unit	Ditto	7,000

B. Training Programmes

1. Individual

<u>Priority</u>	<u>Sub. Matter</u>	<u>No. of fellows</u>	<u>Frequency</u>	<u>Duration</u>	<u>Preferred Host Country</u>
1	a) Residue analytical method	4	1	4 weeks	Philippines
1	b) Vertebrate Toxicology	2	1	6 weeks	Japan
2	c) Industrial Policy				
	i) Formulation Technology	1	1	6 m/m	India
	ii) Pesticide Manufacturing Technology	1	1	6 m/m	India

2. Group

<u>Study Tour</u>					
<u>Priority</u>	<u>Sub. Matter</u>	<u>No. of fellows</u>	<u>Frequency</u>	<u>Duration</u>	<u>Preferred Host Country</u>
1	Pesticide regulatory control monitoring	1 country	1	10 weeks	USA/FRG
2	Case history for pesticide management	2 countries	1	2-3 "	Korea
3	Pesticide industrial organization and plant safety	2 countries	1	2-3 "	India
1	Pest outbreak detection, survey, + treatment system	1 country	1	3 weeks	Japan/ Taiwan

Workshop

1	Registration Harmonization	2 countries	2	2 weeks	Regional
2	Regional Pesticide Trade Consideration	2 countries	2	2 weeks	Regional
1	Residue Monitoring	2 countries	1/year	2 weeks	Regional
2	Mammalian Toxicology	2 countries	1	2 weeks	Regional

In-Plant Training

None during 1st. and 2nd. years operation, but may be required later through ad-hoc Technical Committee of Experts

Counterpart Inputs in Kind

A. Technical Assistance

1. Counterparts

<u>Specialization/Network output</u>	<u>Man/months</u>	<u>Value US \$</u>
Harmonization of registration requirement and tolerance levels	100/year	63,000/year
Documents and Information	30/year	19,000/year
Residue Monitoring	60 m/m	3,200/year
Regional pesticide trade consideration	100/year	63,000/year
Individual training programme	19	1,000
Group training programme	13	700

2. Buildings, Laboratories, Land, Office Space, etc.

<u>Type-Location</u>	<u>Size (m²)</u>	<u>Value US \$</u>
Network Co-ordination Host Facilities, Dacca	-	80,000
Pesticide Laboratory Directorate of Plant Protection	800	50,000
BCSIR Laboratories (Chemistry Div.)	2000	140,000
Laboratory of Environmental Pollution Control Board	500	30,000
Agr. University, Mymensingh (Entomology and Agr. Chemistry Department for natural pesticide product chemistry and toxicology)	1000	40,000

3. Equipment, Tools, Supplies, etc.

a) Non-expendable

<u>Location</u>	<u>Type</u>	<u>Value US \$</u>
Pesticide Laboratory, Directorate of Plant Protection, Dacca	Gas Chromatographs IR spectrophotometers UV-vis spectrophotometers, samples processing, etc.	100,000

<u>Location</u>	<u>Type</u>	<u>Value US \$</u>
BCSIR Laboratory (Chemistry Division)	Gas Chromatographs IR spectrophotometers UV-vis spectrophotometers Sample Processing, etc.	500,000
Laboratory of Environmental Pollution Control Board	"	40,000
Agricultural University, Mymensingh (Entomology + Agricultural Chemistry Department - natural pesticide product chemistry and toxicology)	Various analytical, extraction, rearing and testing facilities	50,000

b) Expendable

Pesticide Laboratory, Directorate of Plant Protection	Glassware, reagents, packing materials, charts, stills, etc.	30,000
BCSIR Laboratory (Chemistry Division)	"	80,000
Laboratory of Environmental Pollution Control Board	"	10,000
Agricultural University, Mymensingh (Entomology and Agricultural Chemistry Department-natural pesticide product chemistry and toxicology)	"	30,000

B. Training Programmes

1. Individual

<u>Subject Matter</u>	<u>No. of fellows</u>	<u>Frequency</u>	<u>Duration</u>	<u>Value (Taka)</u>
Pesticide Quality Control	3	1/year	4 weeks	160/fellow
Residue analysis	After installation of GTZ equipment which will be completed in mid 1982.			

2. Group

None during first 2 years operation.

C. Documentation and Information Systems

<u>Subject Matter</u>	<u>Value US \$</u>
Pesticide Market Survey	2,100
Dealer training manuals, products registration materials etc.	2,600/year

D. Miscellaneous Component 1,300/year

VI. Future UNDP active support

Current Project	Long range		
5 Years	<u>Subject Matter</u>	<u>Frequency</u>	<u>Form</u>
	Harmonization	1 m/m/year	Consultant and 2 weeks
	a) Registration		
	b) Tolerance		Workshop (regional)
	Trade consideration	1 m/m/year	

Annex 6

India

Data for Regional Network for the Production, Marketing and Control of Pesticides in Asia and the Far East (RAS/81/064)

I. Organization

A. National Network Coordinating Agency

Hindustan Insecticides Limited, a public Sector Pesticide Industry under the administrating control of the Department of Chemicals and Fertilizers, Ministry of Petroleum, Chemicals and Fertilizers, Government of India, will act as National Network Coordinating Agency. If India is selected to host the regional network coordinating unit, then this agency will act as host. To support network activities, HIL has an organization of 8-10 professional scientists supported by 12-15 technical personnel and a labour force of 25. Its annual operating budget for these activities is on the order of Rs. 700,000. The regional network activities would be conducted under the umbrella of the same governing committee which directs the activities of the country project. Pesticides Development Programme in India which is being supported by a UNDP contribution of US \$1,949,600 and counterpart in kind contribution equivalent to RS 5,823,400 for an initial project period of five years. The governing committee consists of representatives from the various departments such as Health, Agriculture, Chemicals and Fertilizers, and other departments which have pesticide related responsibility. Consequently, regional network activities with other participating agencies such as Health, Agriculture, Environmental protection and Occupational Health and Safety will be arranged within the frame work of the governing committee for the country project.

B. Terms of Reference

1. To carry out, organise, develop and manage in India or any part of the world in general and/or all business relating to and allied to chemicals and fertilizers with specific reference to pesticides to achieve national prosperity and self-reliance in the field of agriculture and public health.

2. To establish, maintain and operate trainee institutions in any specialised discipline of sciences, engineering or administration in India or in any part of the world.

3. To carry on the business of chemical, mechanical, civil and electrical engineering in all its branches in India or in any part of the world.

II. Objectives

a) To survey the pesticide demand and supply situation nationally and in the region so that gaps between demand and supply can be detected at an early date to eliminate and minimize the high cost of emergency acquisition of these products.

b) To identify the availability of and test local raw materials and fillers for formulations.

c) To plan, coordinate and promote the pesticide industry nationally and regionally.

d) To expand and modernize existing production units as well as plan new units.

e) To determine the feasibility of setting up new plants, their required infrastructure and investment and the proper distribution and marketing of their products.

f) To evaluate proposals or tenders to erect pesticide production or formulation plants.

g) To develop formulations specifically suitable for local production or use nationally in the various states and in the neighbouring countries of the region.

h) To adopt imported technology both in the production and formulation of pesticides that will suit local manufacturing conditions.

i) To evaluate equipment suppliers.

j) To establish standards for production inputs and quality control of finished products at the manufacturers/suppliers level.

- k) To set up information and documentation services and disseminate information on pesticide technology and markets.
- l) The harmonization of national registration requirements for pesticide products throughout the region.
- m) The harmonization throughout the region of national tolerance levels and maximum available pesticide residue levels permitted on imports of agricultural commodities.
- n) The harmonization of standardised methods of pesticide residue analysis throughout the region to ensure all residual monitoring data obtained by exporting and importing countries on agricultural commodities are comparable.
- o) The harmonization of analytical methods for quality control of formulated pesticides throughout the region.
- p) To conduct a study of trade considerations to promote preferential tariff conditions for pesticide products and intermediates or raw materials used to produce pesticide products manufactured and traded within the region.

III. Outputs to be achieved through participation in the Network

Technical Assistance

1. Experts, Consultants etc.

<u>Subject Matter</u>	<u>Priority</u>	<u>Man/months</u>	<u>Frequency</u>	<u>Counterparts trained</u>
Regional harmonization of pesticide registration requirement	1	12 ±	1 m/m Regional meeting; 1 m/m each country; 1 m/m follow-up regional meeting	1/country
Documentation and information	1	12/year		1/country
Reduction of trade restrictions on pesticide products manufactured within the region	2	12 ±	1 m/m Regional meeting; 1 m/m country; 1 m/m follow-up reg. meeting	1/country

<u>Subject Matter</u>	<u>Priority</u>	<u>Man/Months</u>	<u>Frequency</u>	<u>Counterparts trained</u>
Regional harmonization of tolerance levels and maximum available pesticide residue.	3	12 ±	1 m/m Regional meeting; 1 m/m country; 1 m/m follow-up Reg. meeting	1/country
Standardization of residue and quality control monitoring methods	4	12 ±	-do-	-do-
	4	12 ±	-do-	-do-

2. Equipment

a) Non-expendable

<u>Location/purpose</u>	<u>Type</u>	<u>Value US \$</u>
Network coordination unit	Photocopier UBIX or equivalent	9,000
	Word processor	
	Vehicle, 4-door sedan	10,000

b) Expendable

Network coordination unit	Miscellaneous	5,000/year operation
---------------------------	---------------	----------------------

B. Training Programmes

1. Individual

<u>Subject Matter</u>	<u>Priority</u>	<u>No. fellows</u>	<u>Frequency</u>	<u>Duration</u>	<u>Location</u>
Inhalation Toxicology	1	2	1	6 m/m ea.	MRC-UK
Delayed Neurotoxicology					

2. Group

<u>Subject Matter</u>	<u>Priority</u>	<u>No. fellows</u>	<u>Frequency</u>	<u>Duration</u>	<u>Preferred Host Country</u>
Pesticide Regulatory Control monitoring	2	1/country	1	10 weeks	UK/FRG
Case history for pesticide management	4	1/country	1	2-3 "	Korea
Pest. outbreak detection, survey and treatment systems	3	1/country		2 weeks	Japan/ Taiwan

<u>Subject matter</u>	<u>Priority</u>	<u>No. fellows</u>	<u>Frequency</u>	<u>Duration</u>	<u>Preferred Host country</u>
Registration Har- monization Reg. pesticide	1	2/country	2	2 weeks	Regional
Trade concentration	1	2/country	2	2 weeks	Regional
Residue Monitoring	5	2/country	1/year	3 weeks	Regional

IV. Counterpart Inputs in Kind

A. Technical Assistance

1. Counterparts specialization Network Output

<u>Subject Matter</u>	<u>Man/Months</u>	<u>Value US \$</u>
Harmonization of registration requirements and tolerance levels	2/year	800
Documentation and information	24/year	9,600
Regional pesticide trade considerations	120/year	48,000
Regional harmonization of tolerance residue	2	800
Standardization of residue methods	2	800
Quality control methods	2	800
Individual training programme	12	4,800
Group training programmes	8	20,000

2. Building, Laboratories, Land, Office space etc.

<u>Type location</u>	<u>size (m²)</u>	<u>Value US \$</u>
Network coordination host facilities New Delhi	as required	80,000
Hindustan Insecticides Ltd., Central R + D Complex and pesticide Development Programme for India	3000	440,000

3. Equipment, Tools, Supplies etc.

Total (Expendable and Non-expendable) 761,000

B. Training Programmes

1. Individual

<u>Subject Matter</u>	<u>Value/fellow/month</u>
Formulation Chemistry	800
Pesticide manufacturing technology	800

2. Group

Workshops	800
Study tours	1,600

The framework for hosting Regional cooperative programmes is contained in the Project Document of the country programme but subject matter and phasing will depend on progress in the implementation of it.

C. Documentation and Information Systems

Market surveys	US \$23,600
Misc. components	10,000

V. Future UNDP active Support

<u>Current Project</u>	<u>Long range Subject matter</u>	<u>Frequency</u>	<u>Form</u>
5 years	Harmonization	1 m/m/year	Consultant
	Trade consideration	-do-	Workshop
	Market survey	yearly	Regional

Annex 7

Indonesia

Data for Regional Network for the Production, Marketing and Control of Pesticides in Asia and the Far East (RAS/81/064)

"Strengthen the Institute for Research and Development of Chemical Industry to become the Focal Point of the Republic of Indonesia in Regional Network for the Production, Marketing and Control of Pesticides in Asia and the Far East".

I. Organization

In participating the Regional Network for the Production, Marketing and Control of Pesticides in Asia and the Far East activities, the Republic of Indonesia, c/o Ministry of Industry, will emphasize the activity on the processing and development of Pesticide formulation suitable for Indonesia. Functional unit of Ministry of Industry which is responsible in such activities is the Agency for Industrial Research and Development (AIRD).

Based upon the job and task, potency of the staff and laboratory facilities, the AIRD chose the Institute for Research and Development of Chemical Industry (IRDCI) to carry out the activities mentioned above. It means that IRDCI become the focal point of the Republic of Indonesia, in which other national institutions involved in pesticide activities must support this programme.

II. Objectives

1. Strengthen capabilities of IRDCI in testing, evaluation, design and development of pesticide formulation utilizing local raw material, suitable for local application and meeting local requirement.
2. Select, evaluate, recommend and supply compositions of pesticide formulations which can serve as model for development of local pesticide formulations.
3. Provide guidance in adaptation of imported technology both in the production and formulation of pesticides, to best suit conditions of the countries concerned or that of the region.

4. Prepare proposals for the standardization and quality control at plant or supplier level.

III. Output to be achieved

1. Developing testing and control facilities and faculties for the selection and development of new pesticide formulations.
2. Establishment of technical pesticide production units through the selection of appropriate production technology and construction services.
3. Utilization of local carrier for the formulation of pesticides in great demand assuring that at least 75 percent of such products are locally formulated.
4. Selection and development of pesticide formulations particularly suitable for Indonesia.

A. Technical Assistance

1. Consultants, Experts, etc.

<u>Subject Matter</u>	<u>m/m</u>
a. Pesticide formulation	12
b. Pesticide quality control	12

2. Establishment of facilities and equipment

<u>Type</u>	<u>Capacity</u>
Formulation Unit complete with the equipment	As required
Quality Control Unit, complete with the equipment	As required

B. Training Programme

1. Individual

<u>Subject Matter</u>	<u>m/m</u>
a. Pesticide formulation	20
b. Pesticide quality control	20

2. Group

<u>Subject Matter</u>	<u>m/m</u>
a. Pesticide formulation	FRG
b. Pesticide Industrial Organization and Plant Safety	USA
c. Pesticide Management	Japan
d. Pesticide Quality Control	Japan

Annex 8

Korea

Data for Regional Network for the Production, Marketing and Control of Pesticides in Asia and the Far East (RAS/81/064)

I. Country Network Coordinating Unit and Participating Institute

Institute of Agricultural Sciences
Office of Rural Development
Ministry of Agriculture and Fisheries, Su Weon

Terms of Reference

A. Agrochemicals Department

- To conduct research on and develop pesticides.
- To establish safe use standards for pesticides.

B. Biology Department

- To develop control programmes for pests of rice and citrus
- To develop control programmes for nematodes and rodents
- To develop control programmes for major crop diseases.

II. Immediate Objectives

A. Agrochemical Department

1. Develop stable and effective combined formulations of insecticide-fungicide mixtures.
2. Strengthen capabilities in design, development and evaluation of pesticide formulations utilizing Korean raw materials that satisfy storage stability and performance requirements.
3. Train personnel in pesticide quality control.
4. Provide state of the art technology to the Pesticide Residues Monitoring Unit.

B. Biology Department

1. Establish a vertebrate toxicology unit to obtain data and information required for pesticide registration and control.

III. Outputs to be achieved

A. Technical Assistance

1. Consultants

<u>Priority</u>	<u>Subject Matter</u>	<u>m/m</u>	<u>No. Counterparts trained</u>
1	Mammalian Toxicology	3	2
2	Formulation Development	6	4
3	Fish Toxicity	3	2
4	Residue Analysis	3	4
5	Formulation Analysis	6	4
6	Avian Toxicology	3	2

Note: (Priority: 1 = highest)

2. Establishment of Facilities

<u>Priority</u>	<u>Type</u>	<u>Function</u>	<u>Capacity</u>	
1	a) Vertebrate Toxicity Unit	1. Rearing Test Animals	5,000 animals/yr.	
		2. Toxicity Testing	50 Chemicals/yr.	
1	i) Equipment:	<u>Expendable</u>	<u>Non-expendable</u>	
		Food + Watering devices, syringes + Needles, glass ware	US \$5,000	-
		Small Animal cages scales, Animal Weighing scales, Operating Table and instruments, Autopsy table and instruments, Cage sterilizer Instrument Sterilizers		US \$10,000
2	b) Formulation Analysis			
		i) Equipment:		
2	i) Equipment:	Reagents, Glassware,	US \$5,000	
		Column Packing, instruments (IR, LC, GLC)		US \$120,000
3	c) Formulation pre-pilot plant	Liquid blending Dry blending		

i)	Equipment	<u>Expendable</u>	<u>Non-expendable</u>
	Granulator, Liquid blenders, dry blenders pulverizers		US \$15,000

3. Equipment, Tools, Laboratories and Supplies

<u>Subject Matter</u>	<u>Value US \$</u>
Vertebrate Toxicity Laboratory	73,559.00
Rearing Rooms and Ponds	29,423.00
Furnace	7,356.00
Chemistry Laboratories and Stores	110,338.00
Instruments (GLC, LC, UV, AA)	133,877.00
Glassware, etc.	9,268.00

4. Training Programmes

A. Individual

<u>Subject Matter</u>	<u>No. Fellows</u>	<u>Frequency</u>	<u>Duration m/m</u>	<u>Value US \$</u>
Animal Rearing	9	1/year*	1	3,975.00
Mammalian Toxicity	9	1/year*	1	3,975.00
Residue Analysis	3	1/year	4	30,895.00

*Last 3 years of a 5-year programme

B. Group

Other individual fellowships and group training programmes in the form of workshops, study tours and in-plant training could be accepted in Korea in the fields of residue analysis, formulation technology, formulation analysis, efficacy and phytotoxicity testing, marketing distribution and control but in-kind inputs would have to be calculated for each workshop according to subject matter, number of trainees, duration, travel within Korea provided, training manuals/other training materials, tutorial fees, etc.

Annex 9

Pakistan

Data for Regional Network for the Production, Marketing and Control of Pesticides in Asia and the Far East (RAS/81/064)

I. Organization

- a) National Network Coordination Agency
Pakistan Agricultural Research Council,
P.O. Box 1031
Islamabad - Pakistan

The Ministry of Food, Agriculture and Cooperatives Islamabad, is comprised of two divisions namely Food and Agriculture Division, and Agricultural Research Division. The Secretary to the Government of Pakistan, Agricultural Research Division is also Chairman of the Pakistan Agricultural Research Council (PARC) which is responsible for coordinating, financing and monitoring agricultural research at the national level as well as in the four provinces of Pakistan namely Punjab, Sind, NWFP and Baluchistan. International linkage/assistance is also done through this Division. PARC has an annual operating budget of some US \$22.5 million and employees over 180 professionals supported by more than 400 technicians and 3000 clerks, labourers etc.

The import, use and regulation of pesticides in consultation with relevant Ministries of the Government of Pakistan is the function of Ministry of Food and Agriculture. The PARC plays a vital role in regulation, research and training in the field of pesticides use. The manufacture of pesticides is presently with the Ministry of Production which has two units which produce DDT and BHC on a limited scale. Most of the pesticides are imported but some are formulated and packed for sale within the country. Pesticide sales are in the private sector. The Environmental Protection aspects of agro-chemical use directly fall within the responsibility of PARC but the planning part is being looked after by the Urban Affairs and Environment Division, Ministry of Housing and Works.

b) Participating Agencies

The following Ministries/Divisions of the Government of Pakistan and Provincial Institutions will be cooperating with the national network for planning and conduct of work on pesticides.

1. Ministry of Food, Agriculture and Cooperatives, Islamabad
2. Ministry of Commerce, Islamabad
3. Ministry of Housing and Works, Islamabad
4. Ministry of Science and Technology, Islamabad
5. Ministry of Production, Islamabad
6. Ministry of Industries, Islamabad
7. Ministry of Health, Islamabad
8. Agricultural Research Institute, Tarnab, Peshawar, NWFP.
9. Agricultural Research Institute, Sariab, Quetta, Baluchistan
10. Plant Protection Institute, Faisalabad, Punjab
11. Jinnah Post graduate Medical Centre, Karachi, Sind
12. Federal Pesticides Laboratories, PARC, Karachi
13. National Agricultural Research Centre, PARC, Islamabad

2. Terms of Reference

1. Identification of researchable areas of national interest in all sectors and sub-sectors of agriculture, their socio-economic institutional aspects and other matters connected therewith; to furnish leadership in planning and development of objectives and priorities of national concern, to undertake and coordinate such research including the development of nationally coordinated research projects, programmes on agriculture, its products as well as by-products.
2. The development of inter-disciplinary and multicommodity research in liaison and cooperation with international, regional bilateral and national organizations of problems related to agricultural development.
3. Research support and building institutional capability of agricultural scientific work.
4. Utilization of the results of research and generation, transfer and application of appropriate technology.

5. Training and utilization of agricultural scientific manpower and arresting the flight of talent from the country.
6. The establishment of a national agricultural scientific information system; and
7. Promotion of the public understanding regarding agriculture and transfer of improved technology particularly to the farming community so that self-sufficiency in food could be achieved.

II. Objectives

1. Continuously assess the demand and supply situation of pesticides.
2. Identify raw materials and develop formulations for manufacture of suitable pesticides products.
3. Encourage basic manufacture of technical pesticides.
4. Plan, coordinate and promote pesticides consumption locally and in the region.
5. Regulate the use and import of pesticides in the country in line with regional/international regulations and local requirements through:
 - i) harmonization of registration requirements locally and in the region;
 - ii) fixation of tolerance and maximum pesticides residues level permitted on import of agricultural commodities in the region/internationally;
 - iii) establish pesticides residue monitoring network through out the country and coordinate it with regional monitoring activities.
6. Standardize analytical methods for pesticide residues to harmonize them with the region and international standards.
7. Harmonize pesticide quality control standards within the region and internationally.
8. Monitor quality of pesticides available locally and obtained through imports.
9. Research and development of natural pesticidal products.
10. Safeguard the environment from misuse of pesticides; and monitoring of their harmful effects.

11. Establish national information network to promote consumption and safe use of pesticides.
12. Train personnel in the different disciplines relevant to the development manufacture and safe use of pesticides.
13. Strengthen existing national pesticide institutions.

III. Outputs to be achieved through participation in the network

A. Technical Assistance

1. Experts Consultancies

<u>Subject matter</u>	<u>Priority</u>	<u>Man/Month</u>	<u>Frequency</u>	<u>Counterpart to be trained</u>
a. Regional Harmonization	1	12 <u>+</u>	1 m/m Reg. meeting; 1 m/m each country; 1 m/m follow-up of reg. meeting	1/country
b. Regional harmonization of tolerance levels and maximum allowable pesticide residues	2	12 <u>+</u>	-do-	1/country
c. Standardization of residue and quality control monitoring methods	3	12 <u>+</u>	-do-	1/country
d. Reduction of trade restrictions on pesticide products manufactured within the region	3	12 <u>+</u>	-do-	1/country
e. Development and manufacture of pesticides	2	6 m/m	1	5 Pakistanis
f. Analytical instrument maintenance	1	3 m/m	1	5 Pakistanis
g. Environmental monitoring methodology + assessment	3	6 m/m	1	5 Pakistanis

B. Training Programme

1. Individual

<u>Subject Matter</u>	<u>Priority</u>	<u>No. Fellows</u>	<u>Frequency</u>	<u>Duration</u>	<u>Preferred Country</u>
Inhalation Toxicology Delayed Neuro- toxicology	2	2	1	6 m/m	MRC - UK

2. Group - Study Tours

Network National Coordinations familia- rization tour of participating countries	1	1/country	1	4 weeks	Regional
- Pesticide Regulatory control monitoring	1	1	1	4 weeks	US/UK/FRG
- Case history for pesticide management	3	1	1	2 weeks	Korea
- Pest outbreak de- tection survey and treatment systems	2	2		2 weeks	Japan

Group - Workshops

- Pesticides registra- tion Harmonization Regional Pesticides	1	1	2	2 weeks	Regional
- Trade Consideration	2	2	2	2 weeks	Regional
- Residue monitoring	3	2	1	3 weeks	Regional

C. Equipment

a. Non-Expendable

<u>Location/Purpose</u>	<u>Type</u>	<u>Value US \$</u>
i. Network Coordination Unit	- Photocopier UBIX or equivalent	9,000
	- Work processor	
	- Vehicle, 4-door Sedan	10,000
ii. National Network Programme	Vehicle (2), Chromatograph GL (2), Chromatograph HP (2), Atomic absorption, Spectro- photometer, Infra-red spec- trophotometer, UV-VIS spec- trophotometer, Integrator, Densitometer (3), TLC (4), Climatic control (5), Refri- gerator (2), Freezer (6), Flash evaporator (5), Shaker (4), Soxhelt extractor (6), Voltage Stabilizer (7).	370,000

<u>Location/Purpose</u>	<u>Type</u>	<u>Value US \$</u>
	Miscellaneous	30,000
b. <u>Expendable material</u>		
i. Regional network coordination unit		10,000
ii. National Network programme		15,000
IV. <u>Counterpart Inputs in Kind</u>		
A. <u>Technical Assistance</u>		
1. <u>Counterparts:</u>		
<u>Specialization/network output</u>	<u>m/m</u>	<u>Value US \$/year</u>
a. <u>Professional</u>		
1. Regulation and Registration Pesticides	3	10,800
2. Regional Pesticides Trade	12	4,200
3. Pesticides quality control	12	30,000
4. Pesticides Residue studies	150	45,000
5. Pesticides Formulation and Manufacture oriented research	60	24,000
6. Local Group training programmes in pesticides safe use	500	100,000
7. Documentation and Information	50	15,000
8. Individual training	12	3,000
9. Group training and meeting	80	40,000
b. <u>Technicians and others</u>		
2. <u>Building, Labs. Office Space:</u>		
<u>Type Location</u>	<u>Size</u>	<u>Value US \$</u>
- Network Coordination Host facilities at Islamabad	100 m ²	80,000
- National Coordination Unit and Lab.	100 m ²	80,000
- Provincial Lab. and Office (4 units)	400 m ²	300,000
- Federal Lab. and Office (3 units)	300 m ²	250,000

3. Equipment, Tools, Supplies, etc.

a. Non-Expendable

<u>Location</u>	<u>Type</u>	<u>Value US \$</u>
National Centre	- Chromotographs, Spectropotometers Generators, Airconditions Refrigerators, etc.	250,000
	Vehicles	50,000
Federal and Provincial Units	-do-	900,000

b. Expendable

All units 100,000

B. Training

<u>Subject Matter</u>	<u>No. fellows</u>	<u>Frequency</u>	<u>Duration</u>	<u>Value US \$</u>
1. <u>Individual</u>				
Residue Analysis	5	1/year	3 m/m	2,500/fellow
Quality Control	5	1/year	3 m/m	2,500/fellow
2. <u>Group</u>				
Regional study tours workshops and meet- ings of the project	30	2/year	4-6 weeks	3,000/shop

C. Miscellaneous Components 20,000/year

V. Cost Sharing

They would support cost sharing idea in line with the decision of the participating Regional Countries and make desired contribution subject to approval of the responsible Ministries of the Government of Pakistan.

VI. Future UNDP Active Support

1. Current Project: The projects current plan has been drawn on the presumption that it will continue for five years duration. It may be implemented initially for at least 3 years and extended to 5 years or more depending upon availability of resources and regional participating countries/UNDP response.

2. Long range: The following follow-up actions will essentially be desirable to harvest the fruit of the project efforts. Either a regional organization will have to be created where UNDP may work as moderator or one of the UNDP agencies may be assigned permanently to coordinate long range programme activities. The form and substance of how the below functions should be accomplished could be worked out during the course of the project.

- Continuous monitoring of pesticides demand and supply situation of the region.
- Harmonization of registration requirements, fixation of tolerance and residue levels on export/import of agricultural products.
- Standardization of quality control and analytical methodology.

Annex 10

Philippines

Data for Regional Network for the Production, Marketing and Control of Pesticides in Asia and the Far East (RAS/81/064)

I. Organization

A. National Network Coordinating Agency

Fertilizer and Pesticide Authority (FPA)

This agency has an annual budget of \$710,000 and employs a headquarter staff of 10 professionals and an extension field staff of 84 professionals. Its 20 member Technical Committee includes personnel from the 7 participating agencies operating directly under the FPA umbrella and 4 cooperating agencies. These agencies are tapped for personnel and services as needed. Consequently professional and support staff components vary widely according to project or programme under implementation. The FPA Board is the policy making body of the Authority and is chaired by the Minister of Agriculture with the Minister of Industry, Minister of Trade, Minister of Finance, Governor of the Central Bank, President of the Philippine National Bank, Director of the Bureau of the Food and Drug Administration and the Commissioner of the National Pollution Control Commission as members.

B. Participating Agencies

1. Operating under the FPA umbrella:

- a) National Crop Protection Center (NCPC) with an annual budget of \$175,000.
- b) Bureau of Plant Industry (BPI) with an annual budget of \$5,900,000.
- c) National Food and Agriculture Council (NFAC) with an annual budget of ₱8,950,000
- d) University of the Philippines, College of Medicine (UPCM) with an annual budget of \$137,500 applicable to activities which include FPA programmes.
- e) Bureau of Agricultural Extension (BAEX) with an annual budget of ₱22,325,000.

- f) Bureau of Agricultural Economics (BAEcon) with an annual budget of \$2,450,000.
- g) University of the Philippines, College of Agriculture at Los Banos, (UPCA) with an annual budget of \$850,000.

2. Cooperating with FPA:

- a) Ministry of Health (MH) through the National Safety Programme.
- b) Ministry of Labour and Employment (MLE).
- c) National Training Center for Rural Development at Los Banos (PTCRD).

Programmes with the cooperating agencies are covered by the FPA budget.

3. Terms of Reference

- 1. To conduct an information campaign regarding the sale and effective use of pesticide products;
- 2. To promote and coordinate all pesticides research in cooperation with the Philippine Council for Agriculture and Resources;

Research and other appropriate agencies to ensure scientific pest control in the public interest, safety in the use and handling of pesticides, higher standards and quality of products and better application methods;
- 3. To promulgate, rules and regulations for the registration and licensing of handlers of pesticides, collect fees pertaining thereto, as well as the renewal, suspension, revocation, or cancellation of such registration of licenses, and such other rules and regulation as may be necessary;
- 4. To establish and impose appropriate penalties on handlers of pesticides for violations of any rules and regulations established by the FPA;
- 5. To delegate such selected privileges, powers or authority as may be allowed by law to corporations, cooperative, associations, or individuals as may presently exist or be organized to assist the FPA in carrying out its functions;

6. To determine specific use or manners of use for each pesticide or pesticide formulation;
7. To establish and enforce tolerance levels and good agricultural practice for use of pesticides in raw agricultural commodities;
8. To restrict or ban the use of any pesticide or the formulation of certain pesticide in specific areas or during certain periods upon evidence that the pesticide is an imminent hazard, has caused or is causing widespread serious damage to crops, fish or livestock, or to public health and the environment;
9. To prevent the importation of agricultural commodities containing pesticide residue above the accepted tolerance levels and to regulate the exportation of agricultural products containing pesticide residues above accepted tolerance levels;
10. To inspect the establishment and premises of pesticide handlers to ensure that industrial health and safety rules and anti-pollution regulations are followed;
11. To enter and inspect farmer's fields to ensure that only the recommended pesticides are used in specific crops in accordance with good agricultural practice;
12. To require if necessary from every handler of these products, the submission to the FPA of a report stating the quality, value of each kind of product exported, imported, manufactured, produced, formulated, repacked, stored, delivered, distributed, or sold, and
13. Should there be any extraordinary and unreasonable increases in prices, or a severe shortage in supply of pesticides, or imminent dangers of either occurrences the FPA is empowered to impose such control as may be necessary in the public interest, including but not limited to such restrictions and controls as the impositions of price ceilings, controls on inventories, distribution, and transport and tax-fee importations of such pesticides or raw materials.

II. Objectives

- A. Harmonization of national registration requirements for pesticides products throughout the region and ultimately world-wide.
- B. Harmonization throughout the region of national tolerance and maximum pesticide residue levels permitted on imports of agricultural commodities.
- C. Establishment of standardized methods of pesticide residue analysis throughout the region (and internationally) to insure that residue monitoring data, obtained by the exporting and importing countries on agricultural commodities are comparable.
- D. A study of trade considerations to promote preferential tariff conditions for pesticide products (and intermediate or raw materials used to produce pesticide products) that are manufactured and traded within the region.
- E. The establishment of a Regional Documentation and Information System to support objectives A through D above.
- F. The establishment of a pesticide residue monitoring network for the 12 regions and certain Key Provinces of the Philippines to support objective C above.
- G. The erection of a multiproduct production facility to synthesize technical grade organophosphate pesticides and reduce the dependence of the Philippines, the ASEAN sub-region and the region as a whole on imports of these products from other regions.

III. Outputs to be achieved through participation in the network

A. Technical Assistance

1. Consultants, Experts, etc.

<u>Subject Matter</u>	<u>Priority</u>	<u>Man/Months</u>	<u>Frequency</u>	<u>No. Counterparts trained</u>
a) Regional Harmonization of Pesticide Registration Requirement	1	12 +	1 m/m Regional meeting, 1 m/m each country; 1 m/m follow-up Regional meeting	1/country

<u>Subject Matter</u>	<u>Priority</u>	<u>Man/Months</u>	<u>Frequency</u>	<u>No. Counter- parts tra ined</u>
b) Documentation and Information	1	12/year of operation		1/country
c) Multiproduct Organophosphate production specialist		6 ±	1 time only	advisory only
d) Residue monitoring		12 ±	6 m/m first year; 2 m/m each additional year	12 (1/regional sample collection center in Philippines)
e) Reduction of Trade restrictions on pesticide products manufactured within the region	4	12 ±	1 m/m Regional meeting, 1 m/m country, 1 m/m follow-up Reg. meeting	1/country
f) Establishment of pesticide Tolerance Levels	3	6	2 m/m first year; 1 m/m/yr after	6-7 Philippine National Committee

2. Establishment of Facilities

<u>Type</u>	<u>Objective</u>	<u>Capacity (Annual Output)</u>
a) Multiproduct Organophosphate Pesticide Synthesis Unit	Production of the less toxic organophosphate pesticides to meet Philippine, ASEAN sub-regional and ESCAP regional demands	To be determined by detailed Feasibility Study.
b) Satellite Residue Monitoring Units	Control of Pesticide residues on export crops and market basket samples	15,000 analyses/yr. (Central Laboratory plus satellite units)
c) Clinical Toxicology	To support Pesticide Control activities	As required

3. Equipment

a. Non-Expendable

<u>Location/Purpose</u>	<u>Type</u>	<u>Value US \$</u>
Network Coordination Unit	Photocopier UBIX or equivalent	9,000
	Word Processor	
Establishment of Satellite Residue Monitoring Laboratories to complete the National Monitoring Network	4 gas chromatographs UV-vis Spectrophotometer, Evaporators, Blenders, ovens, freezers, refrigerators balances, shakers, twine hood, Centrifuge, geesculinders, laboratory mill extractors still, Electronic generator, Voltage, Stabilization system, climate control, system, etc.	127,400
-do-	-do-	127,400
Clinical Toxicology Unit	Various	36,175

b. Expendable

Network Coordination Unit	Miscellaneous	5,000/year operation
Satellite Monitoring Unit	Glassware reagents, etc.	7,600
-do-	-do-	7,600
Clinical Toxicology	-do-	7,500

B. Training Programmes

1. Individual

	<u>Subject Matter</u>	<u>Priority</u>	<u>No. Fellows</u>	<u>Frequency</u>	<u>Duration</u>	<u>Preferred Host Country</u>
a)	Residue Monitoring Management	1	2	1	3 m/m ea.	N.A./Europe Japan
b)	Clinical Toxicology and Delayed Neurotoxicity	5	2	1	6 m/m ea.	MRC-UK/N.A. Europe/ Japan
c)	Industrial Policy Formulation Chem.	2	1	1	6 m/m	India
	Pesticide Manufacturing Tech.	2	1	1	6 m/m	India

2. Group - Study Tours

	Pesticide Regulatory Control Monitoring	1	1/country	1	10 weeks	USA/FRG
	Case history for Pesticide Management	5	2/country	1	2-3 weeks	Korea
	Pesticide Industrial Organization and Plant Safety	5	2/country	1	2-3 weeks	India
	Pest Outbreak Detection, Survey and Treatment Systems	5	1/country	1	2 weeks	Japan/ Taiwan

Group - Workshop

	Registration Harmonization Regional Pest.	1	2/country	2	2 weeks	Regional
	Trade Consideration	4	2/country	2	2 weeks	Regional
	Residue Monitoring	2	2/country	1/yr.	3 weeks	Regional
	Mammalian Toxicology	5	2/country	1	2 weeks	Regional

Group - In-Plant Training

N o n e

IV. Counterpart Inputs in Kind

A. Technical Assistance

1. Counterparts

<u>Specialization/Network Output</u>	<u>Man/Months</u>	<u>Value US \$</u>
Harmonization of Registration Requirement and Tolerance Levels	240/year	117,625/yr.
Documentation and Information	300/year	55,125/yr.
Organophosphate Synthesis Unit	24	15,000
Residues Monitoring	72/1st year 24/subsequent years	20,050 7,250
Regional Pesticide Trade Considerations	120/year	36,750/yr.
Individual Training Programmes	30	7,500
Group Graining Programmes	6	1,500

2. Buildings, Laboratories, Land, Office Space, etc.

<u>Type/Location</u>	<u>Size m²</u>	<u>Value US \$</u>
Network Coordination Host Facilities - Manila		80,000
Central Residue Monitoring Laboratories BPI - Manila	550	302,000
NPCC - Los Banos	120	100,000
Satellite Residue Monitoring Laboratories (5)	175 each	731,500
Toxicology	150	120,000

In addition facilities at and services of NCPC, BPI, NFAC, UPCM, BAExt, BAEco, UPCA, MH, MLE, NEPC, and PTCRD will be tapped as needed to support network activities. Values for inkind inputs from these sources cannot be calculated and incorporated into the project document as a host commitment beyond their contribution to Network Coordination host facilities.

3. Equipment, Tools, Supplies, etc.

a) Non-expendable

<u>Location</u>	<u>Type</u>	<u>Value US \$</u>
BPI - Manila	Gas Chromatographs, IR spectrophotometers, UV-vis spectrophotometers, Sample processing, etc.	382,100
NPCC Los Banos	Computerized gas chromatographs;	316,000
	IR, UV-vis and atomic absorption spectrophotometers etc.	31,000
	GC-Mass spectroscopy	230,000
	Stand-by generators	100,000
Satellites (3)	gas chromatographs, UV-vis spectrophotometer, etc.	579,260
Toxicology	Various	100,000

b) Expendable

All residue	glassware, reagents packing, material, charts stills, etc.	81,415
Toxicology		7,500

B. Training Programmes

1. Individual

<u>Subject Matter</u>	<u>No. Fellows</u>	<u>Frequency</u>	<u>Duration</u>	<u>Value US \$</u>
Residue Analysis	6	1/year	4 weeks	1,000/fellow

2. Groups - Study Tours

Pesticide Residue Field Monitoring	10/tour	1/year	2 weeks	1,000/fellow
------------------------------------	---------	--------	---------	--------------

Groups - Workshops

Safe Handling Storage, Disposal Recognition + Treatment of Pesticide Poisoning	50/shop	2/year	1 week	75/fellow
Product Registration Systems	30/shop	1/year	1 week	75/fellow

Groups - In-Plan+ Training

N o n e

c. Documentation and Information Systems

<u>Subject Matter</u>	<u>Value US \$</u>
Market Surveys	49,000/yr.
Training Manuals, Product Registration Material, etc.	36,750/yr.

d. Miscellaneous Component 20,000

V. Future UNDP Active Support

Current Project

5 years

Long Range

<u>Subject Matter</u>	<u>Frequency</u>	<u>Form</u>
Harmonization	1 m/m/yr.	Consultant
Trade Consideration	1 m/m/yr.	and 2 weeks Workshop Regional

Annex 11

Thailand

Data for Regional Network for Production, Marketing and Control
of Pesticides in ASia and the Far East (RAS/81/064)

I. Organization

A. National Network Coordinating Agency

National Committee on Fertilizer and Pesticide Industry
Development.

It has been agreed between the Ministry of Industry and the Ministry of Agriculture and Cooperatives that the national coordinating agency will be the "National Committee on Fertilizer and Pesticide Industry Development". One of the participating agency, the Department of Agriculture, is actively doing research on pesticides in various aspects.

There are three divisions of the Department of Agriculture that will participate in this programme. They are the Pesticide Research Branch, Division of Entomology and Zoology; the Pesticide Analysis Branch, Agricultural Chemistry Division; and the Pesticide Regulatory Branch, Agricultural Regulatory Division.

The latter will be concerned directly with the registration of pesticide, execute law enforcement according to the Poisonous Article Acts, pesticide formulation and residue analyses and there is much more research related to pesticides. There are at least 30 research scientists who have pledged their support to the programme if it is to be implemented. This department will coordinate its work and findings to concerned agencies in Thailand and also cooperate internationally.

B. Participating agency

1. Pesticide Research Branch, Division of Entomology and Zoology, with an annual budget of US \$240,000.
2. Pesticide Analysis Branch, Agricultural Chemistry Division, with an annual budget of US \$40,000.

3. Pesticide Regulatory Branch, Agricultural Regulatory Division, with an annual budget of US \$40,000.

II. Objective

1. Establishing standardized methods for pesticide residue analyses nationally and internationally to ensure that residue monitoring data obtained by exporting and importing countries on agricultural commodities are comparable.
2. Establishing pesticide residue monitoring network throughout the country and cooperate internationally.
3. Harmonization throughout the nation of tolerance and maximum residue levels permitted on importation and exportation of agricultural commodities.
4. Perform formulation analysis of commercially available pesticides in Thailand if they conform to the Poisonous Article Acts of 1967 and which was amended in 1973.
5. Research on the pesticide production and formulation in Thailand.
6. Research on natural occurring pesticides especially from plants grown in Thailand.
7. Strengthening law enforcement of the Poisonous Article Acts concerning the importation, exportation, bringing in transit, manufacturing for commercial purpose, held in stock for sale, and use in service of pesticides.
8. Improvement on the recommendation and safe use of pesticides throughout the nation.
9. Improvement of the existing Poisonous Article Acts and Product registration system in order to be widely acceptable nationally and internationally
10. Stimulating the private sector to set up more pesticide production and formulation industries in Thailand
11. Establishment of a "Regional Documentation and Information Center" concerning pesticides in various aspects.

III. Output to be achieved through participation in the network

A. Technical Assistance

1. Consultants, experts, etc.

<u>Subject Matter</u>	<u>Priority</u>	<u>Man/Month</u>	<u>Frequency</u>	<u>No. counterpart trained</u>
Residue Monitoring	1	6	1 time only	3
Establishment of tolerance level	2	6	1 time only	3
Pesticide formulation analysis (+ residue)	1	6	1 time only	3
Pesticide production technology	1	6	1 time only	advisory and feasibility study

2. Establishment of Facilities

<u>Type</u>	<u>Objective</u>	<u>Capacity (Annual Output)</u>
a. Pesticide formulation analysis unit	To analyze commercial pesticides in accordance with the "Poisonous Article Acts".	1,500 Analyses/yr.
b. Satellite residue monitoring unit	Analysis of pesticide residues on export commodities and sample from markets	10,000 Analyses/yr
c. Production and formulation of pesticides	To acquire know-how and conduct feasibility study on the production and formulation of pesticides in order to promote local investment.	To be evaluated from feasibility study.

3. Equipment and Vehicles

a. Non-Expendable

<u>Location/Purpose</u>	<u>Type</u>	<u>No.</u>	<u>Value US \$</u>
Department of Agriculture	Photocopier	1	7,000
	Vehicle 4-door Sedan	5	100,000
	Micro-bus	4	100,000
	Gas-liquid chromatograph	5	240,000
	High-pressure liquid- chromatograph	2	90,000
	Nuclear-magnetic resonance	1	200,000
	X-ray diffractometer	1	100,000
	Atomic absorption spectrophotometer	1	25,000
	Electron microscope	1	15,000
	Infra-red spectrophoto- meter	1	20,000
	UV-Vis spectrophotometer	1	20,000
	Integrator	1	10,000
	Densitometer	3	15,000
	TLC	4	5,000
	Air-conditioner	5	5,000
	Refrigerator	2	10,000
	Freezer	6	7,000
	Flash evaporator	5	5,000
	Shaker	4	4,000
	Soxhlet extractor	6	9,000
Voltage stabilizer	3	2,500	
Pesticide Analytical Kits	4	10,000	
Respirator	100	2,000	

b. Expendable Material

Glassware and
chemicals 50,000/yr.

B. Training Programme

1. Individual Training

<u>Subject Matter</u>	<u>Priority</u>	<u>No. fellows</u>	<u>Frequency</u>	<u>Duration</u>	<u>Preferred host country</u>
Residue Monitoring Management	1	4	2/yr.	6 m/m	USA, Europe
Pesticide Residue analysis	2	2	1	6-12 m/m	USA, Europe
Pesticide formulation chemistry	1	4	2	2 years	USA, UK
Pesticide manufacturing technology	3	2	2	3 m/m	Japan, France Germany

2. Group-study tour

Pesticide industrial organization and plant safety	1	2	2	4 weeks	Japan, India
Pest. Outbreak forecasting		2	2	3 weeks	Japan, India

3. Training or study tour

Pesticide regulatory system regarding monitoring, registration, production system and plant safety, safe handling storage and disposal, first aid or treatment of pesticide poisoning	1	12	3/yr	8 weeks	Japan, USA etc.
---	---	----	------	---------	-----------------

4. Workshop

Pesticide residue monitoring	1	4	2	8 weeks	
------------------------------	---	---	---	---------	--

C. Documentation and Information

A systematic technical documentation and dissemination of such information center will be established in Thailand. This center will facilitate among national participating agencies retrieving data on pesticide use, its production, formulation and other related areas. The national information center will also exchange the results on the research and development, etc. concerning pesticides among participating countries.

Subject matter

<u>Subject Matter</u>	<u>Value US \$</u>
Pesticide formulation, production, marketing monitoring and control surveys	50,000/yr
Filing system, training manuals, product registration material etc.	45,000/yr

D. Miscellaneous component

\$25,000/year

current exchange rate \$1 US = 23 baht

IV. Counterpart input in kind

A. Technical Assistance

<u>Subject Matter</u>	<u>Man/Month</u>	<u>Value US \$</u>
Residue Monitoring	300	14,000/yr
Establishment of pesticide tolerance level	300	14,000/yr
Pesticide formulation and residue analysis	400	18,800/yr
Pesticide control unit	300	14,000/yr
Registration and documentation	300	14,000/yr

B. Land, Building, laboratories, office space etc.

<u>Type/Location</u>	<u>Size m²</u>	<u>Value US \$</u>
Pesticide Research Laboratory Building	3,000	800,000
Satellite Laboratory unit	100	60,000
Pesticide analysis Laboratory Unit	100	150,000
Pesticide regulatory building	200	300,000

C. Equipment, Tools, supplies, etc.

1. Non-expendable

<u>Location</u>	<u>Type</u>	<u>Value US \$</u>
Pesticide Research Branch	Gas-liquid chromatograph HPLC, IR-spectrophotometer, Centrifuge, TLC, Spectro- photometer, Atomic absorp- tion spectrophotometer, Sweep Co-distiller, sox- hlet extractor, Hobard Chopper, etc.	2,000,000
Pesticide Analysis Branch	GLC, IR-spectrophotometer TLC, UV-spectrophotometer Vehicles, etc.	100,000
Pesticide Regula- tory Branch	Vehicles, etc.	105,000

2. Expendable

Pesticide Research Branch	Glassware, reagents, chemicals, packing materials, etc.	450,000
Pesticide Analysis Branch	Glassware, reagents, etc.	50,000
Pesticide Regula- tory Branch	various	50,000



