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Ninth Meeting
Montreal, 8–10 March 1993

Addendum

1993 UNDP WORK PROGRAMME

This document includes:

- (a) The letter of transmittal from the Government of Thailand
- (b) The Project Proposal



กองแผนงาน
กรมโรงงานอุตสาหกรรม

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Department of Industrial Works
57 Pra Sumen Road
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9 February 1993

Dear Dr. El-Arini,

We would like to submit an institutional strengthening proposal for your consideration. Please find the proposal attached herewith.

Since the consumption of ozone depleting substances in our country has already exceeded 10,000 MT per year, we would like Thailand to be reclassified as a Category 1 country which is eligible for the assistance of approximately US\$ 400,000 as described in the Executive Committee Guideline (UNEP/OzL.Pro/ExCom/7/20).

We believe that the phaseout of ozone depleting substances in Thailand is a strenuous task since the consumption of the controlled substances is distributed into all five sectors: refrigeration and air-conditioning, solvent cleaning, foam, aerosol, and fire extinguishing. The numbers of factories consuming the controlled substances in various sectors are significant. Thus, the achievement of the reduction of controlled substances requires considerable amount of well qualified manpower and other supporting components as described in the proposal. It is reasonable to state that the achievement of Thailand's phaseout program largely depends on the strength of this office. With full support of this project, we expect phaseout activities could be carried out in an expeditious manner.

Your support is necessary and essential for the success of our ozone depleting substance phaseout activities in the future. Thank you for your cooperation.

Yours sincerely,

(Picha Attavipach)
Director-General

Dr. Omar El-Arini
Chief Officer
Multilateral Fund Secretariat
Montreal Canada

PROJECT PROPOSAL

PROJECT: Institutional Strengthening of the Ozone Layer Protection Unit

COUNTRY: Thailand

EXECUTING AGENCY: Department of Industrial Works (DIW), Ministry of Industry

IMPLEMENTING AGENCY: UNDP

GNP/capita: US\$ 1,000

**CONSUMPTION OF
CONTROLLED SUBSTANCES:** 10,044 MT (in 1991)

I. Background Information

The Department of Industrial Works (DIW) of the Ministry of Industry is about to set up the Ozone Layer Protection Unit, solely devoted to the phase-out of the ozone depleting substances (ODSs)'s consumption. ODSs are widely used in Thai industry as reflected by the current consumption, which is now exceeds 10,000 MT. Thus, it would be more accurate to categorize Thailand as a Category I country described in the United Nations Environmental Programme (UNEP)'s document (UNEP/OZL.PRO/EXCOM/7/20).

Objective of the Project

a) Long-term objective

To develop a capability within the Ozone Layer Protection Unit to effectively implement projects for speedy and effective phase-out of the ODSs in Thailand, in compliance with the obligations stated in the Montreal Protocol.

b) Short-term objectives

- i) To upgrade capabilities of the Ozone Layer Protection Unit.**
- ii) To assist the factories in developing and**

implementing the ODSs phase-out activities.

- iii) To improve data collecting system for better monitoring of the consumption of controlled substances, and for providing the industry with the latest development of the non-ODSs technology.
- iv) To increase public awareness on the issues of the ODSs.
- v) To recommend policy and legislation to the National Committee on the Implementation of the Montreal Protocol.
- vi) To exchange experiences in implementing the phase-out activities with other national and international organizations.

Scope of the Project

The project will have a country wide impact. Due to the national policy of decentralisation, factories were established in most major cities over the Kingdom of Thailand. This fact makes the effort of the DIW more difficult. For example, refrigerating industry can be found not only in the Bangkok Metropolitan area but also in the Southern part of Thailand, while electronic industries are concentrated in Bangkok as well as in the Northern part of the country.

Economic growth has also brought with it a high involvement in construction. A large number of large air-conditioning units (chillers) were installed all over the country. Furthermore, demand for cars equipped with air-conditioners has also drastically increased, which results directly in the increase of mobile air-conditioner repair shops.

However, given the central location of DIW in Bangkok, most, if not all activities of the project will be implemented in Bangkok itself.

Justification

In recent years, Thailand's consumption of controlled substances has increased with high pace due to the rapid expansion of its national economy. With high purchasing power, the demand for products produced with or containing controlled substances has drastically risen.

The consumption of the controlled substances by sector (in 1991) is as follows:

Refrigeration and air-conditioning	3,314 MT
Solvent Cleaning	4,318 MT
Foam Blowing	1,507 MT
Fire Extinguishing	603 MT
Aerosols	301 MT
TOTAL	10,044 MT

Thus, an effective plan to reduce the consumption of ODSs must comprise two major components; one is to curb down the new demand for ODSs, and another is to assist existing factories to convert their facilities to use alternative technologies.

The DIW is empowered by the Ministry of Industry to ensure that all factories in the kingdom comply with industrial laws and regulations. However, the DIW is experiencing difficulties in recruiting qualified scientists and engineers, due to the comparatively low level of remuneration offered by the civil service as opposed to the private sector.

The responsibilities of the DIW involve issuing licenses for establishing and expanding factories; inspecting the safety of the factories; and ensuring that the factories comply with industrial environmental law by taking and analyzing waste water samples collected from the factories, etc. The increasing number of factories, arising from good investment atmosphere created by the government's economic and political policies, also generates more work for the DIW. It is obvious that there are needs for new highly qualified personnel and better equipment to ensure the success of the ODSs phase-out programme.

With full commitment to the Montreal Protocol, Thailand is determined to conform with all terms and conditions directed by the Protocol. Since the controlled substances or ODSs are widely used in various industries with different degrees of complexity, any government attempts in reducing the consumption of such substances must be carried out concertedly and effectively not only to ensure the success of each phase-out activity, but also to attain high degree of cost-effectiveness.

The Ozone Layer Protection Unit is now being established within the DIW to respond to the requirements set in the Montreal Protocol. The Unit will be underequipped both in terms of personnel and office equipment. In order to fulfill its objectives in implementing and facilitating actions aimed at speedy phase-out of the ODSs in Thailand, the Ozone Layer Protection Unit urgently requires assistance from the Multilateral Fund to strengthen its capabilities.

Beneficiaries of the Project

The direct beneficiary of the project will be the Ozone Layer Protection Unit of the Department of Industrial Works. With an increased capability of the Ozone Layer Protection Unit to monitor and implement the ODS phase-out in Thailand, industry and ultimately the society will benefit from the compliance with the aims of the Montreal Protocol. A well designed phase-out schedule will not only contribute largely in amending the ozone hole, but will also ensure that all existing products will be used till their full service lives via adequate supply of the ODSs or proper substitutes.

Since the utilization of controlled substances disperses into all five major sectors: refrigeration and air-conditioning, foam, solvent, aerosol, and fire extinguishing, significant number of factories will be assisted by the DIW in the transitioning process to ODSs-free industries. For refrigeration, most of the major factories producing domestic refrigerators in Thailand are large multinational companies with Thai ownership ranging from 10% to 80% with few exception of 100% locally owned companies. However, most of the retail food display cases installed in supermarkets are produced totally by Thai firms.

While many domestic refrigerators are installed in shophouses, where they are used for cooling soft drinks and other beverages, larger units are installed in hotel kitchens, restaurants, and supermarkets in Thailand. It is estimated that, during 1985 to 1991, over 500 compressors using R-502 were installed in low temperature refrigeration systems. During the same period, almost 900 compressors using CFC-12 were installed in medium temperature refrigeration systems. Thus, it is certain that any governmental efforts in cutting down the use of controlled substances will affect individual owners of these products.

For air-conditioning sector, it could be differentiated into two sub-sectors: chillers and mobile air-conditioners. Most large buildings, installed with chillers, are owned by Thai. Thus, any abrupt termination of the uses of controlled substances in this sub-sector will have a direct impact to the Thai economy. The situation is quite similar for a sub-sector of mobile air-conditioners. It is estimated that there are more than 1,500 chillers currently in use in Thailand, and more than 1 million cars and trucks equipped with air-conditioning systems. To minimize the adverse economic impact, the DIW will have to inform and assist owners of these equipments to phase out their dependency on the ODSs.

The foam industry is diverse and difficult to characterize. Some companies produce a number of foam types, while others concentrate on a single type. The largest flexible PU manufacturers have already switched to alternative blowing agents, primarily PU-grade methylene chloride, but smaller firms that use the batch-foaming process continue to rely on CFC-11. Thus, the government efforts will aim at these smaller firms, whose financial and technological resources are limited, in order to assist them to convert to alternative technology.

The official information indicates substantial reduction in the consumption of the controlled substances in the aerosol sector. Although the ban on CFC use as aerosol propellants in Thailand has been put in place, there still are some factories persisting in continuing the use of these substances as aerosol propellants. To identify factories still using the controlled substances in this sector is indeed a formidable task. Thus the DIW must step up its effort to ensure a complete compliance of all factories within this sector.

The recent increase in the use of the controlled substances in solvent sector is the direct result of the rapid expansion of the electronics sector, particularly by the Japanese, European and US firms, operating wholly owned subsidiaries or as joint ventures with the Thai firms. Although there is a voluntary commitment among factories owned by the multinational companies to take on the phase-out schedules similar to their mother companies, the role of the DIW, as a government body, will be to recommend any policies or measures to foster this positive commitment.

Use of halons in Thailand is less than in the neighboring countries such as Malaysia. Halon 1211 hand-held extinguishers are primarily used in office buildings, factories, and commercial establishments. While the extent to which total flooding systems are used is not clear, it is known that the Electric Generating Authority of Thailand (EGAT) uses halon 1301 flooding systems in its facilities. In many countries, there is significant use of halons by the military. No information is available on the use of halons by the military services in Thailand. Since there is no alternative for halons in some applications, it is essential that all halons users must be informed about its future shortage due to the termination of the production of halons. Moreover, the accurate information of the users and the quantities of halons being used will enable the DIW to set up a halon bank in the future.

II. Structure and Management

To meet all obligations under the Montreal Protocol, the Royal Thai Government has taken a number of steps to reduce consumption of the ODSs. These have included restricting the import of the ODSs; granting tax incentives to importers of recycling equipment; banning use of the ODSs in certain applications; restricting the use of the ODSs in new factories; requiring recycling in specific instances; and undertaking demonstration projects and studies in order to better define Thailand's phase-out options.

The National Committee on the Implementation of the Montreal Protocol has also been set up recently, to consider and review plans and policies prepared by the Ministry of Industry before submitting for the Cabinet's approval. The Committee comprises the representatives from the government agencies, the private sector and academic institutions. The Committee meets twice a year.

Within the government, the Ministry of Industry has been given all responsibilities for formulating national policy and undertaking measures necessary to ensure that Thailand meets the Protocol's obligations. To fulfill the aforementioned responsibilities, the Ministry of Industry has empowered the DIW to function as the national executing agency for the Montreal Protocol.

The DIW oversees the construction and operation of all manufacturing plants. Investors and industrialists are required to apply for permission to build, operate, and expand their premises before any action is actually taken. The DIW has its functions to determine and foster industries which are significant to the economy of Thailand, to ensure that the environment does not deteriorate as results of their operations, and to abate the pollution problem arising from factory operation.

Responsibilities of the DIW comprise three general natures: prevention, control and correction. The DIW must be ascertained by the investors that the factories will operate without imposing any dangers to its workers and environment. Before any construction or expansion, the factory plans must be submitted to the DIW for approval, the DIW then, will grant licenses for establishment and expansion, or reject the request. To ensure that the factories are built in accordance with the approved plan, the DIW will inspect the factories before issuing licenses, allowing them to start operation.

The DIW has some concerns that lengthy procedures required before starting factory operation may discourage investors; thus, it has decided to gradually diminish its roles on this aspect. The department will shift its effort to factory control in which careful inspection of the factory by the DIW's technicians and engineers will be carried out laboriously. While investors will find the start-up of the factories become easier, they will also face with more severe punishment for not complying with laws and regulations concerning with safety and environment.

There is a need for tighter control to ascertain that the presence for the factories will render no negative impacts on well beings of the people living in the vicinity, and surrounding environment. Increasing work-load and the shortage of human resources has been previously described. It is crucially important that the DIW must be equipped with appropriate equipment and personnel, the DIW will then, be able to perform its duties effectively and efficiently.

Another important function of the DIW is to find solutions for the problems emerging from the factory operation. In the aspect of industrial waste, the department has put its emphasis on the correction of the increasing amount of industrial waste water, by constructing and managing the central waste water treatment plants. Having such facilities available would make the small factories become difficult to afford their own treatment facilities to carry out their activities without violating any laws and regulations. Industrial waste water from these factories will be sent for treatment at the central facilities.

The organization chart of the DIW is shown in the Annex I.

Currently, two Divisions within the DIW have direct responsibilities in the national ODS phase-out programme. These are the Planning Division and the Hazardous Substances and Chemicals Control Division. While the former concentrates on policy making and planning, the latter is responsible for monitoring and controlling of the import of controlled substances. As mentioned previously the DIW has responsibilities to oversee all issues related to industrial environment. Thus, to establish a separate unit will not only benefit to the ozone layer protection activities, but will also release overwhelmed burden from the two Divisions mentioned above.

The Ozone Layer Protection Unit will have direct responsibilities for the implementation of the provisions of the Montreal Protocol. These responsibilities are to develop plans and strategies for the phase-out of the control substances; to act as a bridge for technology transfer; to oversee the on-going phase-out activities; to identify any obstacles; and to recommend necessary measures or investment incentives to the National Committee on the Implementation of the Montreal Protocol.

The organization chart is depicted in the Annex II.

The Ozone Layer Protection Unit must also provide liaison between the government and the international organizations concerned. Since the public awareness on the issue of ozone depletion will have a direct impact on the market demand for the products produced with or containing controlled substances, the Unit must also be responsible in creating awareness not only among relevant industrial sectors but also among the consumers of such products.

The Unit will consist of two sub-units: a Protocol and Planning sub-unit, and a Technical Implementation sub-unit. The Protocol and Planning sub-unit will be responsible for:

- reporting of the national activities;
- coordinating with other governmental agencies related to the sectors using ozone depleting substances;
- suggesting measures and legal action to ascertain Thailand's full compliance to all obligations of the Montreal Protocol;
- identifying the impact of any adjustments and amendments of the Protocol;
- coordinating with the Hazardous Substances and Chemicals Control Division in collecting data of the import of the controlled substances;
- developing and reviewing the national phase-out programme and activities;

- analyzing market demands for controlled substances and products produced with or containing with the controlled substances;
- recommending policies and measures promoting the phase-out of the ODSs consumption.

Technical Implementation sub-unit will have major responsibilities of disseminating information about alternative technologies to various sectors consuming controlled substances in their production. Up-to-date information could be obtained from the Ozone Network, and the Ozone Action and Information Clearing House. It is proposed to set up a small working group for each sector of the ODSs application to better follow-up of the progress of the implementation of the ODSs phase-out programmes by the factories.

Moreover, this particular sub-unit will take care of the public awareness programme in which the newspapers, technical journals, national radios and televisions will be used extensively. This sub-unit will be responsible in carrying out an annual programme of awarding factories achieving effective phase-out of consumption of the ODSs in their industrial operation. All the activities from both government and private sectors will also be shared with other Parties of the Montreal Protocol. For example, the DIW, with the cooperation of UNEP, intends to play a vital role in cooperating and sharing its experiences with the other ASEAN countries.

Coordination with other Divisions within the DIW

With the existing Divisions within the DIW, the Ozone Layer Protection Unit will be the coordinator to effectively organize the phase-out activities. The control of the ODSs consumption could be carried out both at sources: chemical suppliers, and the end users: factories using the ODSs in their industrial operation. The Factory Control Division, which is responsible in considering the application for factory establishment and operation, will be able to inform current investors and new investors about the policy of the department on the issues of the ODSs' consumption. Alternative technology could then be provided by the Ozone Layer Protection Unit.

The Hazardous Substances and Chemicals Control Division, with the guidance from the Ozone Layer Protection Unit, will monitor and restrict import of all controlled substances, while the Factory Inspection Division will inspect factories for any violation. Having studied the demand and supply of the ODSs, the Ozone Layer Protection Unit will determine whether there is a need for the ODSs destruction facility and then request the Office of Industrial Services and Waste Management to plan and prepare infrastructure to accommodate such needs.

III. Activities

In order to achieve the objectives and outputs of the project, the following activities will be carried out during the 3-year period of the programme.

- a) Develop a detailed work plan for the Ozone Layer Protection Unit;
- b) Identify all factories currently using controlled substances in their operations;
- c) Assist the factories in developing and facilitating implementation plans for their ODS phaseout programmes;
- d) Monitor progress of the phase-out activities by these factories;
- e) Improve the data collecting system on ODS production, consumption and imports on the phaseout activities and on the use of alternative technologies for better monitoring of the consumption of controlled substances in Thailand;
- f) Provide the factories with the latest information on appropriate non-ODS technologies;
- g) Participate in regional ODS-related conferences as relevant;
- h) Recommend policies and measures/plans on ODS phaseout activities to the National Committee on the Implementation of the Montreal Protocol;
- i) Prepare information and develop programmes for the media to raise the public awareness on the issues of ODS consumption. (This will be financed from the Government input);
- j) Exchange information on Thailand's ODS phaseout activities with the Ozone Secretariat in Nairobi, with the Executive Committee of the Multilateral Fund, with other countries, and with national and international organizations;
- k) Organize an award programme for the factories with the most effective ODS phaseout activities.

IV. Inputs

a) Government Inputs

The Government (DIW) will provide the following:

- i) Office space to accommodate 13 officers and supporting staff in the Ozone Layer Protection Unit.
- ii) Supporting staff which will consist of the following:
 - 1 officer as Chief of the Unit
 - 2 officers as Heads of the two sub-units
 - 4 officers for carrying out several of the proposed activities
- iii) Budget for the public awareness programme
- iv) Other necessary basic infrastructure.

b) Multilateral Fund Inputs

A total of US\$ 424,000 is requested for the project. The budget is broken down as follows;

1) Personnel (US\$ 171,000)

- 2 Technical Officers (Thai)

The officers will assist the Technical Implementation Sub-Unit and the factories in developing ODS phaseout programmes. They will also be involved in supplying information for the public awareness programme. The Officers must have technical experience in the ODS area and their use, as well as knowledge in computer usage, especially databases.

1 Technical Coordinator (Thai)

The Technical Coordinator will work as a liaison between the government and the international organisations concerned. He/she must have technical experience in the ODS area. The Coordinator must be able to speak and write fluently in English, and to develop strategies, plans and activities for the phaseout of the ODS consumption in Thailand.

3 Supporting Staff (Thai)

The supporting staff will assist the work carried out in the Ozone Layer Protection Unit

ii) Equipment (US \$ 14,500)

- 1 microcomputer system with disk drive, monitor, printer, modem, and needed software
- 1 fax machine
- 1 heavy-duty photocopier
- 1 typewriter

iii) Operational Costs (US\$ 207,000) which would include:

- Collection/processing/dissemination of data and information
- Telecommunication charges
- Office supplies
- Maintenance of equipment
- Official travel costs

iv) Contingency (US \$ 31,500) or 7.4% of the total budget.

V. Outputs

It is expected that with this project the following will be achieved;

- a) The Ozone Layer Protection Unit will be strengthened with adequate personnel and equipment;
- b) Facilitated compliance with the obligations of the Montreal Protocol;
- c) ODS phaseout activities developed by factories in all five sectors (refrigeration and air-conditioning, foams, solvents, aerosols, and fire extinguishing), with assistance from the Ozone Layer Protection Unit;
- d) Information system developed for better monitoring the consumption of controlled substances, and for providing the industry with information on the latest developments of non-ODS technology;

- e) Programmes developed for media, i.e. television, radio and press, to raise public awareness on the issue of the ODS;
- f) Experiences exchanged with other countries and national and international organizations concerned with the implementation of the ODS phaseout activities;
- g) National award programme organized for the factories with the most effective ODS phaseout activities;
- h) Recommendations provided to the Government, and in particular, to the National Committee on the Implementation of the Montreal Protocol, on the policies, measures and plans on the ODS phaseout programme.

V. Budget

1. ONE-TIME SETUP COSTS	<u>1st Year</u>	<u>2nd & 3rd Year</u>	<u>Total</u>
Office Equipment	14,500	-	14,500
- microcomputer system, software			
- printer and typewriter			
- fax machine			
- heavy duty photocopier			
2. RECURRENT EXPENDITURE			
<u>Personnel</u>			
- Professional Staff (3 Officers)	47,500	95,000	142,500
- Support staff (3 persons)	<u>9,500</u>	<u>19,000</u>	<u>28,500</u>
Total	57,000	114,000	171,000
<u>Operational Costs</u>			
- Data processing and dissemination, telecommunications, office supplies, equipment maintenance, official travel, utilities etc.	69,000	138,000	207,000
<u>Contingencies</u>	10,500	21,000	31,500
Total Budget	151,000	273,000	424,000
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ANNEX 1: ORGANIZATIONAL STRUCTURE OF THE DEPARTMENT
OF INDUSTRIAL WORKS (DIW)

Annex I

Annex I

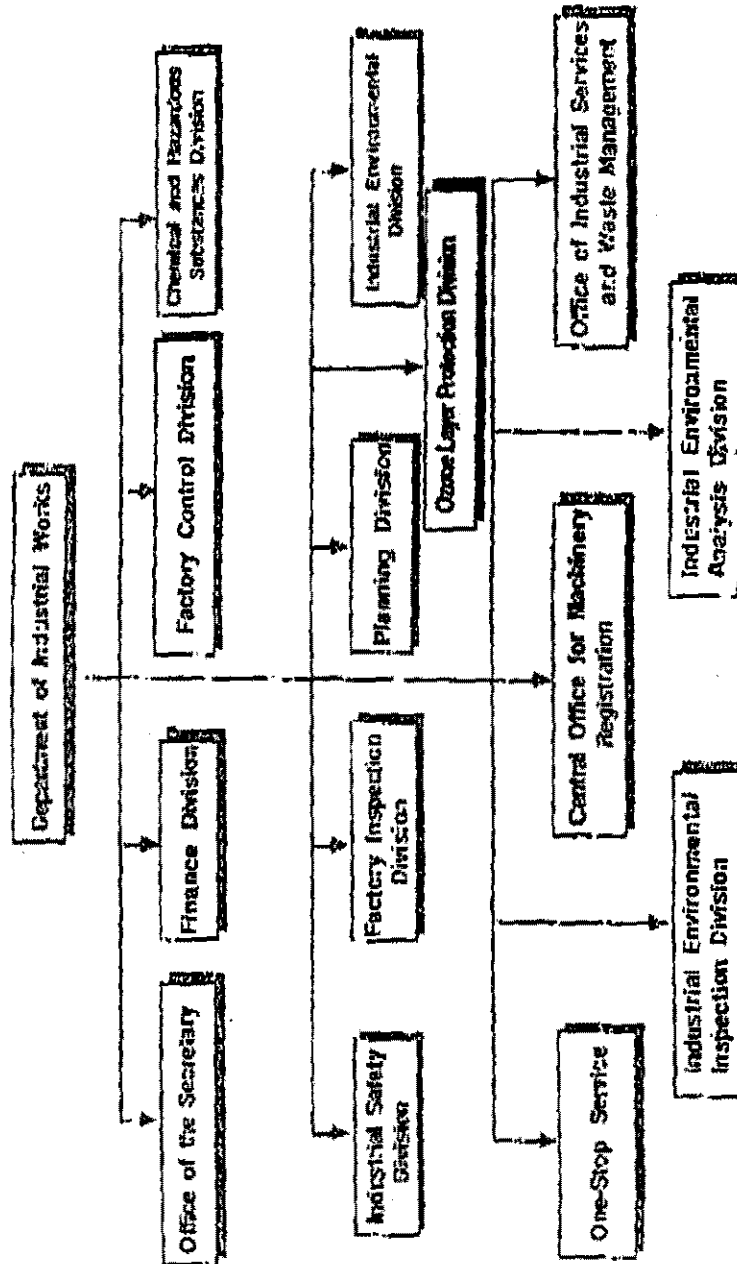


Figure 1 Organization Chart of the Department of Industrial Works

ANNEX 2

ORGANIZATIONAL STRUCTURE OF THE OZONE LAYER PROTECTION UNIT

Annex I

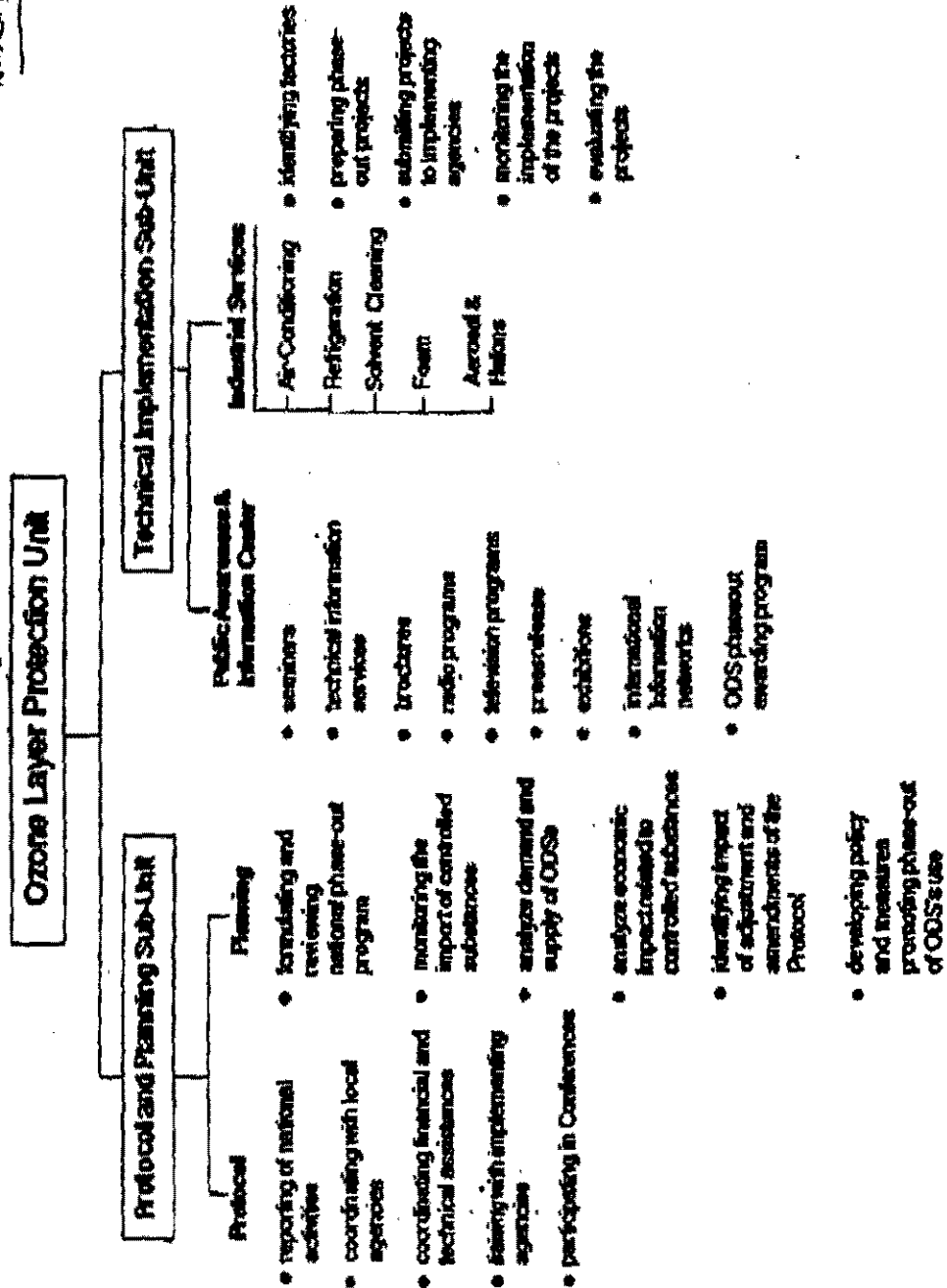


Figure 2