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ASSIGNMENT REPORT ON THE PROMOTION OF ENVIRONMENTAL  
MANAGEMENT ACTIVITIES,

UNEP/ECWA JOINT MISSION TO ADEN,  
PEOPLE'S DEMOCRATIC REPUBLIC OF YEMEN

8-12 MAY 1984

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### SUMMARY

The People's Democratic Republic of Yemen has undergone rapid development over the past 10 years. Environmental protection is viewed by various ministries as an integral part of the development process but is not yet considered a priority in the current five-year plan. A national council for the protection of the environment has recently been established by a presidential Decree-law No. 8 entailing responsibility for environmental policy and programme development at the national level. This move reflects the current awareness of Government regarding the need of development with minimal environmental degradation.

Environmental legislation is viewed by the National Council for the Protection of Environment as an essential tool in assuming technical and legal responsibility. Consolidation and adaptation of existing by-laws and regulations to environmental lines will facilitate law enforcement.

There is some concern about a solid waste disposal system for the Aden Governorate and necessary action is being undertaken for operation of sanitary landfills.

The development of coastal areas, including protection of the marine environment, is under active consideration in collaboration with the United Nations Environment Programme (UNEP) Regional Seas Programme (RSP). Desertification is still a problem and further attention is needed as drought, soil erosion and sand-dunes formation have had a considerable impact on agricultural lands. The struggle against encroachment of the desert should be waged and intensified within the framework of government policy and priorities accorded towards anti-desertification. It was noted that desertification should be viewed within the context of development plans as they should take place in rural and marginal areas and not merely interpreted in purely economic terms.

An occupational health programme is jointly implemented by the World Health Organization (WHO) and the Ministry of Public Health. However, the programme should be strengthened with manpower enabling an effective monitoring of workers at the site and the checking of the working environment.

At present, industrialization is pursued with no due account of its impact on the environment. Environmental guidelines for siting industries and impact assessment are essential for licensing industries to avoid any future environmental implications.

It is recommended that a national policy for environmental planning should be adopted where environmental components can be integrated into various developmental sectors, particularly during the preparation of the forthcoming five-year plan.

A report on the state of the environment for the Democratic Yemen may assist the Ministry of Planning in focusing on environmental issues peculiar to the country. It had been suggested that a workshop on environmental awareness might be organized by 1984 ensuring the active participation of ministries, trade unions and institutions in this activity.

Actions by UNEP are underway in specific areas such as a marine environment protection project, strengthening information exchange and training in methodology of food hygiene - quality control and expert advisory service in legal formulation of environmental legislation. Other actions will be dealt with according to the priorities described in the report.

## I. TERMS OF REFERENCE

1. In line with strengthening co-operation and co-ordination between the Economic Commission for Western Asia (ECWA) and UNEP in identifying environmental issues in Western Asia, the Environment Co-ordination Unit of the Regional Commission has developed a joint undertaking for fact-finding visits to selected countries in the region, together with the Regional Office for Western Asia (ROWA) of UNEP.

2. The objectives are as follows: to arrange short-term missions jointly to agencies concerned with environmental protection; to assess existing environmental problems; to ascertain the policy on environmental dimensions in the development plans; to review the country's need for UNEP assistance in the promotion of environmental protection measures and to discuss specific environmental issues of utmost importance that require short-term technical advice through work programmes of ECWA and ROWA.

## II. ITINERARY OF OFFICIALS MET

1. The ECWA/UNEP itinerary for the visit to Aden is given in Annex I.

2. The list of officials met in Aden is given in Annex II.

## III. THE COMPOSITION OF THE UNEP/ECWA JOINT MISSION

UNEP - Mr. SALEH OSMAN - Regional Representative and Director (ROWA)

ECWA - Mr. RAJA GEDEON - Environment Co-ordination Unit (ECU)

ECWA - Mr. MUHAMMAD THABET - Technical Co-operation Unit (TCU)

## IV. CURRENT ENVIRONMENTAL PROTECTION ACTIVITIES

### 1. Institutional set up

Discussions were held at the office of His Excellency the Minister of Public Health. A wide range of environmental issues were touched upon, among which is the recent establishment of the National Council for the Protection of the Environment (NCPE).

Decree law No. 8 was promulgated on 5 February 1984 making the Council the principal body responsible for environmental policy.

His Excellency the Minister of Public Health is the Chairman of the NCPE. A permanent secretariat will be established representing concerned ministries having some environment-oriented activities in their field of work. The role of the envisaged secretariat is to co-ordinate the environmental activities and to assist the council in carrying out its tasks and follow-up the enforcement of its orders and recommendations. The government plans to select members of the NCPE giving due priority to ministries which have specific environmental components in their development programmes. The function of each member will then be clearly identified to channel sources of inputs towards NCPE objectives.

It was noted that various laboratories and institutions in the country have certain activities in the field of environment. So the permanent secretariat of NCPE will act as a driving force for co-ordinating activities at the national level. Since there are environmental components in each ministry, one would expect to mobilize these elements under the functions of the secretariat. On this basis, further co-ordination and a stronger relationship among concerned ministries will be pursued within the framework of by-laws and regulations of the permanent secretariat. This form of relationship was expected to secure co-operation of concerned sectors in the field of environment.

To achieve this goal, it is assumed that a legal expert is needed to assist in the formulation of regulations governing the function of the secretariat. The legal expert would be able to review all existing regulations and put forward new ones after field visits of institutions in the country. His advice on structure, composition and level of representation at NCPE will also be awaited.

The establishment of NCPE was acknowledged by UNEP and ECWA as a great achievement but the nature and membership of the council should be considered within the framework of the responsibility attached to each ministry. It was also noted that membership must be evolutionary and functions would be based on priorities set out by the government in the field of environment.



As regards the expert, it was suggested that a short-term mission to PDRY will enable the expert to visit organizations and institutions concerned and to put forward a working paper in close co-operation with His Excellency the Minister of Public Health-Chairman of NCPE, identifying the functions and the nature of NCPE. The consolidated report will be presented to the Council of Ministries for endorsement and implementation according to priorities laid down by the Government. Upon formal request, UNEP and ECWA will then assist in the formulation of the secretariat according to the approved programmes and will help in putting forward a job description of technical staff-members of the secretariat. It was noted that due to limited members of the secretariat it may draw on the technical staff of various ministries at any time, depending on the nature of the issue under consideration by the secretariat. In this way, the NCPE will insure the participation of ministries concerned with environment-oriented activities.

## 2. Environmental health control

The Environmental Health Project is under implementation in co-operation with WHO. Its main function is to inspect working conditions in industries. The staff undertakes measurements related to health-hazard implications. There are plans to establish a section for the working environment although the Environmental Health Project has limited staff, but it undertakes a wide variety of measurements and inspections. Staff training is envisaged under a WHO agreement where US\$ 61,000 are allocated for two years. It was noted that this amount is limited and further assistance is required to enhance the activities of the project.

In terms of priorities, the Ministry of Health at the outset was not aware of these activities due to lack of solid information to justify its acceptance in the Government's plan. But at present the Ministry of Health is seriously considering including this project into the forthcoming five-year plan. To justify this action a statement is normally required to identify the volume and extent of the problem for proper presentation and for obtaining government support.

A plan for an environmental health clinic is envisaged enabling the execution of routine check-ups at industrial and occupational sites. A UNEP/ECWA delegation emphasized the importance of training in this matter. An indication was given of the need for strengthening co-operation with the Arab Labour Organization (ALO) to exchange information and participate in

seminars and workshops usually organized by ALO in the field of work safety and occupational health. A lot of available technical papers released by various regional organizations can be drawn upon in improving working conditions and environmental health. What is required now is the preparation of a working paper denoting the Ministry of Health's views towards the working environment as based on statistical data and sound information. The paper may also indicate the procedure of work including the type of relationship between environmental health and other ministries. The role of the environmental health clinic and occupational health clinic has to be identified and incorporated in the envisaged working paper. A visit to a Nutrition and Food Control Laboratory was arranged. Several chemical and bacteriological analyses were carried out in this laboratory. Sampling is not frequent and monitoring of food samples, for example, is conducted at random. The capacity in terms of equipment and necessary instruments is limited though it encompasses devoted and qualified staff. The Ministry of Health's expected to look into the matter to strengthen this laboratory to cope with the tremendous parameters envisaged in any food safety and quality control measurements.

### 3. Environmental legislation and law enforcement

As regards environmental legislation, UNEP will support a legal expert in assisting the Democratic Yemen formulate national environmental legislation. Upon considering the placement of the secretariat, it was mentioned that it is advisable to be directly supervised by His Excellency the Minister of Public Health, while the secretariat may not be a unit within the structure of the ministry. This view is prompted by the fact that environmental issues are multi-disciplinary. Proper co-ordination among various ministries will be more effectively assured if the secretariat is attached to the minister himself, so contacts with ministries will be conducted by the secretariat of the NCPE as this form of relationship will avoid any constraints in addressing other ministries.

It was concluded that the Government should enforce the law on all ministries and therefore, in the interest of the council's objectives, the independence of NCPE and the secretariat should be maintained. For it will not be conceivable for any agency responsible for monitoring the environment to be simultaneously entrusted in enforcing the law.

### V. ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

The Deputy Minister of Industry was briefed on the environmental consideration in the development process particularly on

incorporation of environmental dimensions into industrial development. An account was given on the recently convened regional workshop (held in Amman, from 2 to 6 May 1984) on industrial impact assessment and siting of industry. A set of recommendations was endorsed by delegates from countries in Western Asia. These recommendations were based upon deliberations and discussions that had taken place during presentation by UNEP of the guidelines for industrial impact assessment. A delegation from the Democratic Yemen was represented. It was noted that the guidelines will help Western Asian countries take into account the EIA statement when endorsing or licensing new industries. The workshop also elaborates on ways and means to the siting of industry on an environmentally-sound basis. Other environmental issues pertaining to the Democratic Yemen were discussed among which were a solid waste disposal system and selection of technology for development etc..

The Deputy Minister explained that there are no guidelines or questionnaires available concerning environmental dimensions. The current procedure at the Ministry of Industry takes account of economic advantages. The siting of industry is associated with population, infrastructure and the availability of raw material, etc.. EIA is not at present a practice at the Ministry. The Deputy Minister requested assistance from the UNEP office in Paris to formulate environmental guidelines and questionnaires required for setting up an industry. Some detailed activities concerning the working environment were discussed and the role of various institutions in environmental health control was emphasized. But it was noted that the activities carried out by different sectors in the realm of the environment are limited in nature and need to be strengthened particularly in industrial pollution abatement measures.

UNEP agreed upon request from His Excellency the Deputy Minister to provide an expert for a two-week period to assist in formulating regulations and questionnaires within the UNEP guidelines for EIA. This request could be processed through the UNEP office in Aden. It was also emphasized that the two participants from the PDRY who attended the Amman Workshop have gathered information and formulated questionnaires for certain countries of Western Asia which would enable them to embark on such activities and introduce this practice for industrial licensing. As regards baseline data and monitoring environmentally hazardous elements that are essentially needed for EIA, it was noted that strengthening the national capabilities in this field constitutes an asset in developing and applying these techniques.

## VI. METROPOLITAN ISSUES

### 1. Urban environmental management

Several environmental problems were raised with His Excellency the Governor of Aden and other senior officials at the Governorate. Some of the problems are the "Solid Waste Management System", environmental awareness and proper maintenance of machines used for solid-waste collection system throughout. These issues were considered crucial and, if not adequately approached, could have an adverse effect on the environment. This could be in the form of developing mass-media programmes and maintenance facilities of vacuum vehicles including proper arrangements for spare parts, storage facilities and handling techniques.

At present the volume of solid disposal ranges from 200 to 300 tons daily and the collected wastes are incinerated in a primitive manner. The Aden Municipality indicated that a high percentage of this waste originated from excess food wastes due to a current pattern of consumption and traditional life-style. It also appeared that there is a lack of awareness on the part of the public in solid waste collection and a lack of manpower to cope with the issue. This might be attributed to financial and, to some extent, to social constraints. It has been noted that plans are underway to dump waste into newly selected sanitary landfills as emissions from old incinerators appeared to pose an environmental and health hazard problem. The new sanitary landfills are located 3 kilometres away from the Greater Aden Scheme.

The sewerage system is under construction and it is planned to be completed by 1985 to cover the Aden Governorate. The wastewater flow is estimated at 20 to 25 million cubic metres (cu m) per annum. Industrial discharges flowing to this sewerage system are limited while domestic wastewater constitutes the major effluent. Treatment of wastewater encompasses primary treatment in oxidation ponds followed by chlorination before discharge to the sea. Monitoring of treatment operations and effluent quality is not adequate. It is suggested that most of the treated effluents could be utilized for irrigation purposes provided that adequate measures are taken for proper irrigation and safeguards are implemented to avoid health risks. Perhaps the Democratic Yemen could draw upon the experience gained in Kuwait and the United Arab Emirates in the recycling of wastewater. The Arab Organization for Agricultural Development (AOAD) can also be sought for assistance in this field. UNEP, upon request from the Government, can provide an expert to study the problem and put forward practical solutions. However, UNEP-ROWA intends to

organize an informal gathering of experts from the region during 1985 to promote this experience in Western Asia.

## 2. Environmental awareness

A comprehensive educational campaign is needed taking advantage of the available mass-media. The campaign should focus on the conduct of the citizen towards the environment and rational consumption and on the need for an alternative pattern of life-style and development. The programme should be elaborate and be incorporated into school programmes. The organization of a national workshop in the PDRY for environmental awareness is proposed. This would ensure the participation of various public organizations. The NCPE may undertake this activity and assume its co-ordinating role. UNEP is ready to prepare a working paper to be presented at the workshop. The workshop is envisaged to put forward an action-programme for environmental awareness.

## 3. Maintenance facilities

UNEP would consider provision of an expert to help in the efficient operation of the maintenance workshop as requested by the Governorate of Aden. It is agreed that frequent failure of the solid-waste collection vehicles would lead to adverse environmental consequences.

It would be advisable to appoint a British expert to the maintenance workshop as most vehicles are British-made.

## 4. Solid waste disposal system

As mentioned earlier, a request from the Government for expert advice in assessing sanitary landfill practices would be looked upon by UNEP favourably and the date of the proposed mission should be identified and agreed upon as appropriate.

## 5. Slaughterhouse

With the new schemes of slaughterhouse development, the problem of waste disposal of both solids and liquids can be aggravated if correct measures are not duly taken. In this connection, the Aden Governorate is looking forward to training technical staff to cope with this issue. As a control measure, the Government is in need of assistance in arranging training courses for health inspectors. These courses could be organized inside the country or somewhere in neighbouring countries. The terms of reference for the training courses would include quality control, health food criteria, etc.. In response to this demand,

UNEP would consider providing an expert in this field to identify the need and put forward the plan, criteria and control process.

## VII. FISH WEALTH AND MARINE ENVIRONMENT

A meeting was held between the UNEP/ECWA delegation and His Excellency the Deputy Minister of Fish Wealth, Mr. Abdul Wahab Sharaf. The Deputy Minister reviewed the activities carried out at the ministry focusing on the environmental aspect of fish wealth development in the Democratic Yemen. It was noted that thirteen co-operatives in fish development were active along the coastal region of the Republic. The development programmes in this matter cover transport of fish, storage facilities, establishment of seaports, decks and marketing. Implementation of these programmes is carried out by the ministry in co-operation with the World Bank and the European Common Market.

To improve the programmes, in 1983 the ministry established a Research Centre for Marine Science. This Centre is to provide valuable information on fish wealth development, including the environmental parameters required for protection of sea wealth and coastal areas. The ministry is aware of the pollution problems associated with coastal development. It has submitted to UNEP a project document concerning fish wealth development with the aim of protecting the marine environment, and enhancing the coastal management programme. The document identifies the extent of marine pollution in the Gulf of Aden and actions needed to take control measures for abating deterioration of the marine environment.

UNEP has indicated the following:

Concerning the project document on coastal development, UNEP's RSP has considered the project and UNEP's ROWA has followed up this matter through its specialized bodies. Comments were delivered to the Deputy Minister at the meeting on ways and means of proper implementation of this vital project. It is proposed that a technical staff member from RSP would be provided to identify the project details and prepare terms of reference for an inter-agency mission consisting of the International Union for Conservation of Nature and Natural Resources (IUCN), RSP, FAO, the International Atomic Energy Commission (IAEA) and UNEP. The arrival of the technical staff member prior to the inter-agency mission would facilitate the mission's work by identifying the national technical capabilities, job description, and preparing technical papers in co-operation with the local technical staff of the Research Centre for Marine Science. It has been agreed at the meeting

that the inter-agency mission was to come in October 1984 whereas the technical staff member of RSP was to come earlier - possibly in July 1984 as appropriate.

UNEP also raised the question of solar energy application in the Democratic Yemen, in particular to the use of solar energy in the field of fish wealth development. Mention was given to a complete UNEP report on this matter where certain recommendations for action are included regarding the use of solar energy for cookers, water pumps, heaters and desalination of saline water in the coastal area. It was noted that the use of solar energy in some neighbouring countries was successful and it is gaining wider recognition from concerned governments. However, the introduction of this technique depends mainly on government policies and on each government's level of priorities. It was also noted with great satisfaction that these development plans and ongoing activities in Marine Environment off the coastal area of the Gulf of Aden will certainly provide substantial input and considerable strength to the regional Red Sea and Gulf of Aden development programme of which the Democratic Yemen is a member.

#### VIII. SOIL CONSERVATION AND DESERTIFICATION CONTROL

A wide spectrum of environmental issues in the agricultural sector was discussed during the meeting with the Deputy Minister of Agriculture. Soil conservation and desertification control are of major concern to the Democratic Yemen. It was noted that drought, soil erosion and sand-dunes formation have considerably affected the agricultural area and hence aggravated the degree of desertification.

In the Hadramout area, for example, the quality of soil is adversely affected by increasing salinity of irrigated water. In combating desertification, the ministry is undertaking the following measures:

- (i) Leaching the semi-arid and marginal lands with flood water. As a result of this exercise some plants have been growing;
- (ii) Constructing certain side walls and terraces in the mountainous areas with the aim of preventing flood waters from infiltrating through to the sub-soils thus preventing soil erosion;

- (iii) Building small dams for the diversion of flood water to agricultural or reclaimed lands to improve soil quality;
- (iv) Establishing a research centre for the development of agriculture. Working papers for several projects to be conducted at the centre were prepared and perhaps may be included in the forthcoming five-year plan;
- (v) Expanding afforestation projects and encouraging individuals to participate in planting trees. Public awareness towards tree protection is now being actively pursued;
- (vi) Concentrating on rangeland development, particularly in the northern areas of the country.

UNEP will undertake a review of achievements in the field of desertification control at the "Governing Council Session" that was held between 16 to 29 May 1984. It was noted, however, that desertification control at the national level will not be effective unless it is ratified in priorities laid down by the Government. Therefore Government policy and its attitude towards this matter is crucial.

To promote this attitude at the governmental level, one would expect that a statement should be submitted indicating the degree of desertification as based on statistical data concerning loss of certain species and rangelands deterioration due to over-grazing and drought. Such information, which contains useful data on the extent of the problem, could eventually lead to government endorsement for placing desertification control in their set of priorities.

According to present priorities, the Ministry of Agriculture has paid rather more attention to irrigation than desertification control. This attitude was prompted by the belief that irrigation processes will prevent or mitigate desertification. But it was realized that little effort was made to protect rangelands and forests. A note was also made that the anti-desertification unit and rangeland development unit at the ministry should be strengthened with manpower capable of carrying out their duties with no interruption.

In the water sector, a project is under implementation in Wadi Hadramout. This project is funded by the World Bank and the Kuwait Development Fund. The objective of this project is to drill bore holes to a depth of more than 200 metres. The deep underground water in this vicinity seems to have water



suitable for drinking and irrigation purposes. Several hectares are envisaged to be irrigated under this project.

An agreement with the Arab Centre for the Studies of Arid Dry Lands (ACSAD) was recently reached by which technical advice on the handling and interpretation of meteorological data and training of personnel would be provided. In general, water in the Democratic Yemen is becoming a scarce commodity due to salt-water intrusion in the coastal belt and over-pumping in urban areas thus leading to a decline in the water table. In promoting the activities of anti-desertification, UNEP is presently undertaking a project in the Lahj Governorate in Lohar district showing desertification combat in practice. This project will serve as an example for the future extension of the acquired experience to other areas in the Democratic Yemen.

The UNEP/ECWA delegation visited the area of the project and were satisfied with the progress made at this stage of implementation.

## IX. ENVIRONMENTAL POLICY

### 1. Environment and development plan

An introductory statement was given by the UNEP/ECWA delegation on the inter-sectoral nature of the environment during the meeting with His Excellency Deputy Minister of Planning. It was emphasized that a unified form of approach towards the environment may be adopted by the Democratic Yemen's national planning machinery. This conceptual approach will ensure a better status for the environment in the development planning process where priorities are usually set out and progress of implementation could be monitored. Therefore there is a need to establish priorities at the planning stages to integrate environmental issues into the national development processes.

The Deputy Minister reacted favourably to environmental concern and shared the views that environmental issues should be integrated into planning programmes. It was noted that certain environmental issues will be seriously looked upon in preparing the Indicative Planning Figure (IPF) cycle and some of the emerging environmental issues will be taken into consideration in preparation of the five-year plan.

It emphasized that review of the current plan is essential before embarking on such activities and putting forward suggestions. A performance report or a policy statement is required. In practice, it is advisable to prepare a State of of

the Environment Report (SER) focusing on environmental issues confronting the Democratic Yemen. This report if prepared prior to preparation of the national plan, may identify key issues concern to the country and will serve as an environmental guide for the preparation of a national development plan on an environmentally-sound basis. To proceed with this exercise, the Ministry of Planning can draw on the experience of UNEP and ECWA in the field. UNEP will consider providing a consultant to support the preparation of this comprehensive report. It was also noted that a national workshop on environmental awareness is envisaged to take place by the end of the current year. The outcome issues may provide a substantial contribution to the shaping of the SER.

It was accepted that the SER will serve as a background paper for the preparation of IPF and the forthcoming national plan. A review of other issues discussed with various ministries took place. Serious consideration was given to the formation of the NCPE. It was realized that the Council has to prepare a position paper with a set of priorities in co-operation with the ministries concerned. As regards environmental legislation, there is a need to review, compile and consolidate existing by-laws and regulations to substantiate the enforcement action of NCPE.

## 2. Multisectoral issues.

All environment-oriented issues discussed with ministries concerned have been brought to the attention of the Ministry of Planning. His Excellency the Deputy Minister was briefed on the following envisaged activities:

- (i) Environmental awareness in solid waste disposal management to be followed by a workshop;
- (ii) Maintenance facilities: the organizational aspect of a workshop, setting the criteria and procedures for the supply and use of spare parts;
- (iii) Fisheries: coastal development and marine environmental protection. A proposal for an inter-agency mission to develop a comprehensive programme and set out terms of reference was agreed by both parties;
- (iv) Food control laboratory: exchange of information programme. A brief visit to Bahrain by the Chief of Laboratory to work with Bahraini technical experts in the same field will take place with the aim of exchanging experience and having access to instrumentation, technology and methodology;

- (v) An invitation was extended to the Democratic Yemen for participation in the Governing Council of UNEP. The representatives of the Democratic Yemen at this international forum will enable them to get familiar with UNEP work programmes and the environmental activities of other nations.

#### X. NEW AND RENEWABLE SOURCES OF ENERGY

A brief account was given on the use of energy in rural districts particularly the use of renewable sources of energy during the meeting with His Excellency the Deputy Minister for Energy and Minerals. It was mentioned that many countries have embarked on solar energy application either for industries or domestic use. The application of this clean source of energy in the Democratic Yemen may appear be economically feasible and adequately viable.

It was noted that at present the conventional source of energy is widely utilized in the Democratic Yemen. A comprehensive study is underway covering the volume and pattern of consumption of energy. The envisaged study is undertaken with the co-operation of the Kuwaitii Development Fund which is to be used as a framework for the future policy of Arab States in conventional sources of energy for the year 2000. As regards solar energy, a French report was prepared three years ago for possible utilization of this source in conjunction with the conventional one. An attempt is made to utilize solar energy in the coastal region of Shakra. This will be a trial station for wider application. In fact, knowledge on the use and production of solar energy in the Democratic Yemen is limited and possible expansion in this field will require assistance from the United Nations system for a plan of action.

Mention was given to the UNEP report on the application of solar energy in the Democratic Yemen. There are certain provisions in the report for potential application of this renewable source of energy particularly in desalinization processes and cooling systems along the coastal areas and for storage facilities of fish industries. As a matter of fact, it is important for the Government to define its policy towards introduction of solar energy into the country within the framework of national priorities laid down. In this connection, one would expect to incorporate the potential use of solar energy into the proposed comprehensive study as an additional renewable source of energy. An organizational unit acting as a focal point for solar energy application is needed to be established for follow up at the national level. A consensus

was reached that the introduction of solar energy will mitigate the increasing demand on conventional sources of energy, the current rate of which is 15-20 per cent per annum.

UNEP will consider giving assistance on the outline and terms of reference that will be included in the comprehensive study as mentioned above. It is also possible that UNEP may consider preparing a parallel study covering this area. The UNEP/ECWA delegation also requested a copy of the outline of the comprehensive study to give its views for provisions of certain elements to the terms of reference as this may enhance the environmental components of the study undertaken.

As to the use of other renewable source of energy in the Democratic Yemen, it was noted that at present no comprehensive information is available for biogas application in the country. But a comparative assessment study on solar and biogas technologies and application may reveal the potential use of both sources in the Democratic Yemen.

#### XI. REVIEW REMARKS AND CONCLUSION

A review meeting was held between His Excellency the Minister of Public Health, who is also Chairman of NCPE and the UNEP/ECWA delegation. Concluding remarks for joint action were formulated as based on the outcome of the mission that took place between 8 and 12 May 1984:

##### 1. Industry

There is a need to account for the environmental dimension in industrial planning. The EIA exercise is a management tool in environmentally-sound industrial development. In the licensing of industries, a questionnaire should be prepared and adopted within the guidelines of environmental protection. A review body should be selected from various disciplines enabling assessment of the environmental impact of specific industries. Environmental guidelines should be set out at the national level when siting new industries. Reference is made to the workshop held in Amman between 2 and 6 May 1984 on environmental guidelines for industrial impact assessment. The workshop report, background papers and the recommendations may prove a useful aid in designing the approach procedure and questionnaire in this matter. UNEP, in co-operation with ECWA, will assist the Democratic Yemen in preparation of the questionnaire if requested.

## 2. Governorate of Aden Municipality

### (a) Environmental Awareness Workshop

It is agreed to arrange a national workshop on environmental awareness covering a wide spectrum of environmental issues in Aden. UNEP/ECWA may assist in arranging this workshop in co-operation with NCPE and will present a working paper from its side. Participation of various ministries, institutions, trade unions, etc. is envisaged. UNEP in collaboration with ECWA can assist in formulating and consolidating the outcome of the workshop.

### (b) Maintenance Workshop

There is a need to arrange for a maintenance workshop in the municipality as lack of spare parts and failure of machines used for solid waste disposal may disrupt the collection system and eventually would have health-hazard implications. UNEP will respond favourably upon request for technical advice on solid waste management including the selection of sanitary landfills and environmentally-sound sites for solid waste dumping.

### (c) Slaughterhouse

Expert advice is required to look into the procedures used to identify the problems encountered in handling meat processes and to assess short-term and long-term needs with regard to observing public health criteria. Environmental protection measures concerning liquid and solid wastes emanating from slaughtering will be dealt with.

### (d) Human Settlements

As regards new schemes in a model village either in the Aden Governorate or in selected sites in the Democratic Yemen, Habitat may be consulted on ways and designs of these projects as they have the experience and expertise in this field. UNEP and ECWA will support such activities within its terms of reference if required.

### (e) Control of crows

The Governorate of Aden believes that the huge increases in the crow population pose a serious problem. Combat measures have been inadequate due to lack of experience. Assistance is required to identify the significance of problems and to put forward correct measures for destruction. UNEP will assist in providing the expert.

### 3. Fish wealth and marine environment

The expansion of the proposed project on the survey of development of the coastal region in the Democratic Yemen to protect the marine environment is suggested. The project is being seriously considered by UNEP, mainly by its specialized office - the RSP.

Comments on the project were delivered to the Deputy Minister of Fish Wealth. Various agencies will be involved in the project as suggested by RSP. A mission is proposed to come to Aden comprising: FAO, IAEA, IUCN, UNEP and RSP. The mission's estimated cost is US\$ 40,000. UNEP will make every effort to support this inter-disciplinary mission. It is also suggested that prior to the arrival of the mission, a substantive staff member for RSP may arrive earlier in July 1984 to put the outline and terms of reference of the mission and identify the national technical staff who would collaborate with the team mission as appropriate.

### 4. Environmental and public health

(a) The ongoing project is vital to public health and concerted efforts are required from the government to strengthen the technical capabilities and staff already on board. Its services may be extended to cover rural areas.

(b) Food quality control laboratory: adequate support is needed to strengthen the laboratory. The available rudimentary equipment will not enable the laboratory to cope with enormous problems of food hygiene control, nutrition and other commodity and safety control. A training programme is essential at this stage of development. The Chief of the Laboratory will visit Bahrain for exchange of information on similar laboratories to be established on the island.

### 5. Agriculture

(a) Desertification control: the UNEP - supported project is now under implementation in the Lahj Governorate-Lodar area, and is progressing according to the plan. UNEP wants to utilize it as a practical example in combating desertification. It is also hoped the importance accorded by the Government to this project will be extended to develop similar projects in other governorates of the Democratic Yemen to utilize the field experience gained in this exercise.

(b) The appointment of a director for the desertification project is underway. The Russian expert from FAO will be

considered as he has been involved in similar agricultural projects in Democratic Yemen for the last five years.

#### 6. Planning machinery

(a) Acceptance was reached during the meeting with the Deputy Minister of Planning that the environmental dimensions should be incorporated into the national plan i.e. integrating environmental components into various sectors of development processes and projects.

(b) Emphasis was placed on the need to adopt a national policy regarding the planning machinery for environmental protection.

(c) A point was raised regarding the preparation of the state of the environment report at the national level. This report is intended to survey environmental issues and to put forward priorities which in turn would constitute a substantial contribution to the preparation of the environmental components to be injected into the forthcoming five-year plan. Expert advice will be considered in the preparation of the report upon request.

#### 7. Energy

A prospective and comprehensive study is being currently undertaken for the potential use and production of energy up to the year 2000. In this connection, it is advisable to include the use of renewable sources of energy into the proposed study as it seems quite adequate at this stage to take due account of the renewable sources of energy, namely solar energy, in addition to the rational use of conventional sources of energy.

To enhance this approach, it is proposed to establish an organizational unit at the Ministry of Industry - Energy and Minerals - for compilation of information, application of experience and follow-up actions.

#### 8. Follow-up procedures

In reference to the above-mentioned remarks it is suggested to channel all Government requests for assistance and expert advice through the UNDP Office in Aden. This will ensure proper co-ordination of activities through the planning machinery of the Democratic Yemen where the priorities will be set within the national plan duly endorsed by political decrees.

## ANNEX I

### Itinerary

#### Monday, 7 May 1984

Arrived Aden International Airport; travelled to Aden city.

#### Tuesday, 8 May 1984

Preliminary meeting at the Ministry of Public Health with His Excellency the Deputy Minister of Public Health.

Discussion with the Director-General of Occupational Health and Environmental Sanitation and the Director-General of Preventive Medicine on the objectives of the UNEP/ECWA mission, and on arrangements for visits.

Introduction to His Excellency the Minister of Public Health and discussion on the objectives of the assignment and the minister's views on a broad spectrum of environmental issues and future technical assistance to the Democratic Yemen in environmental protection.

Introduction to His Excellency the Deputy Minister of Industry; discussion on Industrial Impact Assessment and Environmental Guidelines for siting of industry.

Visit to the Food Quality Control Laboratory; discussion with the chief of the laboratory on the role of safety control in human environmental protection.

#### Wednesday, 9 May 1984

Discussion at the Governorate of Aden with senior officials in the presence of the Director-General of Preventive Medicine and Director-General of Occupational Health and Environmental Sanitation. Discussion extended on water reuse, recycling solid waste management and public environmental awareness.

Introduction to His Excellency Deputy Minister of Fish Wealth at the Ministry. Discussion on coastal area development and marine environmental protection.



Visit to occupational health centre, Director's Office - WHO  
- assisted project.

Thursday, 10 May 1984

Discussion with His Excellency Acting Deputy Minister of Agriculture in the presence of the Director of Agriculture Research and Agricultural Extension and Head of Forest Section in the Agriculture Research Centre.

Senior officials from the Ministry of Public Health were present at the meeting. Introduction to His Excellency the Deputy Minister of Planning. Discussions also took place with the following officials: His Excellency Deputy Minister and the Assistant Deputy Minister for Co-operation in the presence of the UNDP Resident Representative.

Visit to the Research Centre for Marine Science. Tour of laboratories and discussion with His Excellency the Deputy Minister of Fish Wealth, Senior Advisor and Director of the Centre on Coastal Area Development and Marine Pollution and Protection Measures.

Friday, 11 May 1984

Tour field visit to the project site of the UNEP - assisted anti-desertification project in the Lodar area.

Meeting with His Excellency the Governor of Aden Governorate. Discussion on environmental issues confronting the municipality of Aden.

Saturday, 12 May 1984

Meeting with the Director-General of Oil and Minerals Corporation. Discussions on the use of renewable sources of energy.

Review meeting with His Excellency the Minister of Public Health and chairman of NCPE on major issues concerning environmental awareness and future co-operation and assistance in environmental protection.

Departure from Aden.

## ANNEX II

### List of Officials Met

#### 1. MINISTRY OF PUBLIC HEALTH

The Minister, His Excellency Dr. Abdulla Ahmed Bukair, (also Chairman, National Council for the Protection of the Environment).

Deputy Minister, His Excellency Mr. A.A. Bamatruf.

Director-General, Dr. Ahmad Bassahi, Preventive Medicine Department.

Director-General, Dr. Fahmi Muhammed Kayed, Occupational Health and Environment Sanitation Department.

Head, Food Control Laboratory, Mrs. Raja'a Suleiman Ahmad.

#### 2. MINISTRY OF INDUSTRY

Deputy Minister, His Excellency Mr. Osman Abdul Gabar.

#### 3. MINISTRY OF PLANNING

Deputy Minister, His Excellency Mr. Abdalla Abadan.

Assistant Deputy Minister for Co-operation, Mr. Hassan Hubeishi.

#### 4. MINISTRY OF AGRICULTURE

Acting Deputy Minister, His Excellency Mr. Nassir Amir.

Director, Research and Agricultural Extension, Mr. Fadl Amboul.

Head, Forest Section, Mr. Muhammad Zera'a.

5. MINISTRY OF FISH WEALTH

Deputy Minister, His Excellency Mr. Abdul Wahab Sharaf.

Director, Research Centre for Marine Environment.

6. GOVERNORATE OF ADEN

Governor, His Excellency Mr. Mahmoud A. Arasi.

Director, Environmental Health Department.

Engineer, Mr. Badr Naji.

7. CORPORATION OF ENERGY AND MINERALS - MINISTRY OF INDUSTRY

Deputy Minister, His Excellency Mr. Ahmad Abdul Kader.

8. UNITED NATIONS DEVELOPMENT PROGRAMME

Resident Representative, Mr. W. Bryan Wannop.

#### ACKNOWLEDGEMENTS

The ECWA/UNEP delegation is indebted to the Ministry of Public Health, People's Democratic Republic of Yemen, for providing excellent facilities enabling the delegation to hold discussions with many agencies during the brief mission to Aden.

The joint mission is most grateful to all the officials met in the different Government agencies for their time and efforts in providing information and views on environmental issues. Special mention must be made to His Excellency Dr. Bukair, Minister of Public Health and to His Excellency Mr. Mahmoud Arasi, Governor of Aden, for support throughout the mission.