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Appendices

1. Letter from DGIS dated 16 November 1995, in which the Commission has been asked to submit an advisory review
2. Project information
3. Letter from the Commission for EIA dated 15 February 1995 concerning the ToR for EIS/feasibility study Shabwah: water and sanitation, Yemen
4. Review of the EIS

1. INTRODUCTION

The Government of the Republic of Yemen and the authorities of the Shabwah Governorate plan to upgrade and develop the water supply, sanitation and waste disposal facilities for the population centres of Ataq, Nisab and Beihan and the rural area of Wadi Jirdan in Shabwah Governorate. The Government of the Kingdom of the Netherlands intends to assist the Government of the Republic of Yemen in implementing this initiative. The Netherlands Government, in consultation with the Government of the Republic of Yemen, has decided to carry out an environmental impact assessment (EIA) for the proposed initiative.

In a letter dated 19 July 1993, the Netherlands Minister for Development Cooperation invited the Commission for EIA in the Netherlands to prepare an advice on the contents of the environmental impact statement (EIS) to be drawn up for the proposed initiative. According to that letter the EIA activities will be integrated with the feasibility studies for the pertinent project areas in Ataq, Nisab, Beihan and Wadi Jirdan.

On 14 October 1993 the scoping advice was submitted to the Netherlands Minister for Development Cooperation^{1]}. In the 'Terms of Reference'^{2]} (ToR) for the combined Environmental Impact Statement/feasibility study, which were adopted in January 1995, it was mentioned that the advice of the Commission must be considered as an integral part of the ToR. In a letter dated 15 February 1995 the Commission expressed her concern about the lack of clarity of the ToR and the adverse influence this might have on the quality of the EIS^{3]}. The actual EIS was prepared in conjunction with the feasibility study during March – May 1995 by the Netherlands Economic Institute (NEI)^{4]}. The whole process was delayed by the internal Yemeni events of 1994.

By letter dated 16 November 1995 the Netherlands Minister for Development Cooperation invited the Commission for EIA in the Netherlands to perform an advisory review of the EIS. This advice has been prepared by a working group of the Commission for EIA and will therefore be referred to as 'the Commission'. In the working group the following disciplines are represented: geohydrology, civil engineering, cultural anthropology and public health^{5]}.

Due to the lack of clarity of the ToR, for the feasibility study the Commission has used the scoping advice of October 1993 as the main framework for the review of the EIS. The composition of this review advice is as follows. In chapter 2 the main conclusion of the review is presented. Chapter 3 gives recommendations pertinent to the proposed identification of the drinking water supply and sanitation projects in the four geographical areas. The actual review of the EIS is carried out in appendix 4, based on the scoping advice of October 1993.

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- 1 Commission for environmental impact assessment: Advice on the specifications for the content of the EIS on the water supply, sanitation and waste water disposal projects for Ataq, Wadi Jirdan, Nisab and Beihan areas, Shabwah Governorate, Republic of Yemen. 14 October 1993.
 - 2 Terms of Reference for feasibility study of water supply, sanitation and waste disposal projects in Shabwah province, Republic of Yemen. January 1995.
 - 3 This letter (in Dutch) is attached as appendix 3.
 - 4 Shabwah: water and sanitation. Draft final report. Feasibility of improvements in water supply, sanitation and waste disposal in Wadi Jirdan, Ataq, Nisab and Beihan, Shabwah Governorate, Republic of Yemen. Prepared by: Netherlands Economic Institute (NEI), Rotterdam. September 1995.
 - 5 The composition of the working group of the Commission as well as general information about the project is presented in appendix 2.

2. MAIN FINDINGS OF THE REVIEW OF THE EIS

The EIS/feasibility study has collected an impressive amount of environmental, social and institutional information in a short period about the water supply and sanitation situation in the study area. The main shortcoming of the EIS/ feasibility study however, is that this information is not arranged in such a form that it can be applied directly to well-informed decision making and project identification. The reason for this serious inadequacy finds its cause in that the guidelines/points of departure as defined and recommended by the Commission in the scoping advice were not used nor interpreted adequately.

1. The sustainability concept was not used as starting point for the preparation of the EIS/feasibility study in general and for the development of alternatives in particular. Chapter 4, § 5 shows that sustainability is only defined in terms of durability. The analysis of the data does not adequately reflect the importance of the water quantity and quality as the basic limiting factor governing the setting, and the prerequisites for the identification and weighing of the available options and the subsequent determination of interventions.
2. Instead of an integrated area-specific approach, a sectoral approach was followed. The analysis of the existing problems is described in general terms, presented in a sectoral way and it is not specified for the four distinguished study areas. The objectives are only determined for the study areas as a whole. Area-specific objectives have not been defined although they are necessary to develop alternatives.
3. The EIA concept to develop alternatives is not correctly applied. In the EIS/feasibility study alternatives are described only on a sectoral basis. The selection of the sectoral alternatives per study area is not motivated thoroughly and the alternatives are not combined into feasible and viable interventions. Ranking of the options is not clear due to lack of transparency of the multi-criteria analyses.

These remarks are further elaborated in appendix 4. In this appendix a detailed review of the EIS/feasibility study is presented.

As a result of these omissions, the two projects proposed in the EIS/feasibility study are described mainly in terms that are too technical and too sectoral. They do not guarantee a sustainable solution of the problems and they do not contribute to a sustainable water extraction and use (quantitatively and qualitatively), in the four distinguished areas. Therefore, they are not considered appropriate for execution.

In spite of these essential omissions the EIS/feasibility study contains much useful data which can be used for the formulation of an implementation programme with viable and integrated water supply and sanitation projects in each of the four areas. Particularly, much useful social and institutional information is already available in the various appendices of the EIS/feasibility study. Physical and geohydrological data that are needed for sustained water production are largely lacking. In order to obtain the necessary geohydrological data to determine the maximum water extraction, a monitoring programme of the producing aquifers must be established and maintained. In the following chapter recommendations as to the identification of project interventions are given.

3. RECOMMENDATIONS FOR PROJECT IDENTIFICATION

In this chapter the Commission presents recommendations and guidelines for the implementation programme in which new and viable project interventions must be identified. The recommendations will focus on:

- ! essential information which is still lacking and which should be available to enable identification of projects;
- ! the selection and identification of projects in the four geographical areas.

3.1 Essential additional information for projects identification

The total package of existing and additional information must enable the selection and formulation of integrated area-specific projects concerning water supply, sanitation and reuse of treated waste water.

Physical aspects

Information about the availability and current use of ground water is the most essential information which is lacking in the EIS and which is necessary with regard to the identification of new projects. However, it is clear that it is unrealistic to demand for the collection of this information in a short time span. Therefore, an alternative approach is recommended, i.e. the establishment and implementation of a monitoring system as part of a ground water management plan. In § 3.3 more detailed recommendations concerning a ground water management plan are given. In the implementation of the monitoring programme it must be taken into account that the execution of the water supply projects will trigger various others developments which might increase water demands considerably. The implementation of the monitoring programme therefore must recognize that the monitoring results may necessitate (sooner or later) the execution of corrective measures in case total water extraction demands concerned appear to exceed the sustainable capacity of the aquifers.

Social aspects

Issues of rights of passage, land rights and water rights are mentioned in the annexes but are not elaborated upon in the main report. Area-specific elaboration of this information is essential for the formulation of project proposals in general and for implementation of properly functioning water supply and sewerage systems in particular.

With regard to public health, basic epidemiological information concerning water related morbidity and mortality should be put together. Furthermore the functioning of the identification study executed in 1994 by Roy Stoves should be described both in qualitative and quantitative terms.

Institutional aspects

A comprehensive description of existing governmental and non-governmental institutions involved in the water sector on governorate and also on national level, other than only water supply institutions, is essential in view of monitoring the sustainable availability of the water resources. This review should take into account the forthcoming national policy and strategy on water issues, the role of the various water authorities and the initiatives to further the process of decentralisation.

3.2 Selection and identification of projects

In the selection and identification of new projects the scoping advice prepared by the Commission should be used, because the points of departure, objectives and the methodology for developing alternatives present a feasible approach. However, the information presented in the EIS/feasibility study allows for more specific guidelines. Therefore, the guidelines presented in this section should be used in addition to the scoping advice.

3.2.1 Objectives

The general objectives as formulated in the scoping advice are still valid and do not need readjustment. The general objectives must be evolved into area-specific objectives as needs for the three towns are different from the rural area of Wadi Jirdan.

3.2.2 Methodology

For the identification of project interventions, the Commission recommends to adopt within the proposed projects a two-pronged approach, that should be interrelated, while allowing for sufficient flexibility to undertake initiatives at both district and local levels. In particular, this approach should strengthen the decentralisation policy in the country in the water and sanitation sector to be continued and even be reinforced. In this way, the projects to be identified by the Yemen and Netherlands authorities will allow for 'central support' by the government authorities, including the Environmental Protection Council, active in the field of water and sanitation at district/ Shabwah levels, while providing at the same time sufficient motivation and the necessary means for local NGOs and communities to initiate relevant activities to respond to their water and sanitation needs.

3.2.3 Interventions

District level

Taking the expressed needs of the populations in the various areas, including women, into account, institutional support should be provided for concerned authorities at district/Shabwah level. In particular attention should be provided for the following subjects:

- ! Support policy development and define the necessary and feasible package of interventions that the public sector can undertake.
- ! Strengthen public sector to support, regulate and control the interventions in the field of price setting, water-rights, accessibility and use of water-resources assuring sufficient quantity, quality control of water sources, operation and maintenance of water supply, sewerage and sanitation systems and supervision and monitoring.
- ! Support Human Resource Development (HRD) of the concerned authorities, assuring quality and quantity of staff-performance.
- ! Support government to respond to expressed needs of the populations at the local levels.

Local level

Area-specific interventions and support for Ataq, Nisab, Beihan and Wadi Jirdan in the fields of water, sanitation, sewerage and waste water by the relevant government authorities, NGOs, neighbourhood associations and the private sector must be elaborated in close collaboration between district and local authorities based on the area-specific information available in annex 3, page a55 – a68. For each of these four geographical areas, the interventions should be elaborated from a sustainability point of view, taking the physical, social and institutional perspectives into consideration. For each area the various alternative interventions that could be undertaken should be described in some detail in order to permit its comparison with the zero-option (if no interventions will be undertaken). For the development of all interventions in the four specified areas, the following steps should be followed:

- ! problem analysis for physical, social and institutional aspects;
- ! identification of all relevant sectoral options for each study area;
- ! selection of sectoral options with respect to problems, potential and needs;
- ! combinations of selected sectoral options into coherent alternatives;
- ! comparison of the alternatives with the zero option (=autonomous development) and indication about what appears the best possible alternative for each area. The best alternative of the possible interventions will then be presented as the project-proposal for final decision making.

3.2.4

Physical aspects

Potential new water sources for all four areas should be selected on the basis of availability of sufficient quantities of water of good quality (chemical composition):

- ! risk of pollution of unconfined aquifers in the Nisab and Beihan areas should be minimized;
- ! upstream areas of the aquifer systems should be protected against overpumping and contamination;
- ! infiltration of untreated waste water and dumping of solid waste in wadi beds should be avoided.

Since most ground water is abstracted for agricultural activities, allocation between agriculture and public water supply must be regulated; reduction of well water for agriculture and use for drinking water purposes only, in particular for those wells which produce good quality water and which are located nearby the existing well field or at/or around the new well field.

Identification of water supply projects should always be linked with measures to protect the ground water quality. If ground water development of an aquifer is proposed and the aquifer is not threatened by infiltration of polluted water the link with water quality measures is not important.

3.2.5

Social aspects

The execution of sewerage systems should anyhow be part of the identified projects as problems related to sewerage rank first for intervention. As 62% of the demand for more water is for washing, cleaning and bathing and only 23% for drinking water, supply of different water qualities should be considered. Present habits take this differentiation into account. Proposals should take into account the weak capability of the governmental institutions in the water sector and therefore their capacity should and can be strengthened as participants indicated their willingness to pay high water tariffs and to pay for sanitation services. Any proposal should combine institutional reform with some sort of community approach and involvement. Local water rights should be taken into account in any water supply proposal and land rights and rights of passage should be considered in any sewerage proposal.

3.2.6

Institutional framework

Foremost, there is a need for the establishment of an advisory office, staffed by a limited number of persons, including 1 – 2 expatriate advisors (see ToR-project manager page a145) assisted by 4 – 5 Yemeni technical counterparts, if possible chosen with the consent of the representatives of district and local level. This team will be placed under the authority of the Governor of Shabwah, that will be delegated to the chairman of the board (see below). During this preparatory phase, the team should receive sufficient budget for elaborating the project proposal according to the DGIS/EIA guidelines. Their tasks should include:

- ! elaborate an inventory of existing technical departments within the government, involved in the water and sanitation sectors, their strengths and weaknesses and their current activities;
- ! elaborate an inventory of completed and ongoing projects in order to acquire a thorough understanding of principles and practices of community organisation;
- ! analyse budget allocations from the central authorities in order to reach agreement as to funding from project-budgets (see page a71);
- ! analyse the functioning of the Project development fund, that was created in 1984.

Based on this, the team should elaborate project proposals together with actors at province, (sub)district and local levels, to be submitted to the Advisory Board within 6 months of the establishment of this advisory office. It is recommended to review the identified project proposals on basis of the criteria as determined in the Commission's scoping advice of October 1993. The Commission is prepared to execute the review.

In line with the developments of the Yemeni National Water Strategy, it is recommended to prepare ground water management plans in order to assist achieving sustainable ground water use. For each aquifer in a study area, a water management plan should be elaborated. A precondition for ground water management is the availability of data on subsurface characteristics ground water levels and ground water quality and therefore the set up of a ground water monitoring system should get high priority⁶]. An essential part of the monitoring system is the availability of a reliable laboratory service that is able to analyse adequately chemical and bacteriological compositions of water samples.

Additionally, there is a need for the establishment of a Project Board, that will include a person appointed by the Governor (chairperson), heads of the most important technical departments, project representatives in the area, expatriate technical advisors, representatives of religious organisations and NGOs in the province and a representative of the Dutch Embassy in Sana'a. This board will be charged to review the proposals elaborated by the advisory office, taking the EIA conditions as mentioned earlier as points of departure for their approval. Furthermore, the board should formulate policies and decide on priorities and annual plans to be elaborated on a continuous basis.

Once the project has been approved, after 6 months preparatory phase by the Yemeni and Netherlands authorities, the activities mentioned on page a72 can be initiated. In order to speed up the implementation, DGIS can initiate recruitment for the consultancy team, which will participate in the advisory office at the beginning of the preparatory phase. Additionally, the project manager/social scientist should be recruited by DGIS in order not to lose time with tender procedures.

6 The UNDP (Water Resources Branch United Nations Department for Development and Management Services) formulated a project: strengthening of water resources management capabilities. The overall development objective of this project is: to establish and safeguard the water resources, basis for sustainable, economic and social development for the present and future generations of the Republic of Yemen; by enhancing the capacity-building process for water resources planning, management and protection, thus ensuring rational water resources use. The following two areas have been selected for implementation: the Abyan Delta and the Wadi Al-Masila area. This project is well-linked with the Commissions' recommendations for sustainable ground water use. Therefore it is recommended to consider whether Shabwah Governorate as a whole, or a number of selected areas, should be added to the two selected areas for implementation of the UNDP project.