

Summary of Preparatory Study for Development Study (M/P)

1. Title of the Cooperation Project and Name of the Project Proponent

(1) Title of the Cooperation Project

The Study on the Integrated Water Resources Management Plan in the Haouz Plain in the Kingdom of Morocco

(2) Name of the Project Proponent

Tensift Basin Hydraulic Agency (ABHT)

2. Categorization and its Reason

Category: B

This project will be categorized by B, because ① no significant environmental impacts have been identified being only either B, C or D even with considerations of the possibilities of artificial groundwater recharge as a result of the provisional scoping assessment conducted in this study, and ② significant improvements in effective utilization of the limited water resources through institutional strengthening of the line agencies and technological transfer of water resources management will be expected with the project implementation.

3. Outline of the Project and the Location

3-1 Outline of the Project

(1) Location

Haouz Plain (approximately 6,000 km²), administratively comprising the whole areas of the Marrakech Wilaya and the Al Haouz Province, and parts of the Chichaoua and El Kelaa des Sraghna Provinces.

(2) Project Description

The project will be implemented based on the following two phases:

Phase 1: Understanding of Present and Future Conditions

1) Collection and review of existing data

- ① Socio-economic conditions (administrative division, population, industry, etc.)
- ② Socio-economic development plans and other development policies/plans
- ③ Natural conditions (hydrogeology, meteorology, hydrology, land use, etc.)
- ④ Present water use conditions
- ⑤ Irrigation and water-use facilities as well as water users' associations
- ⑥ Actual conditions of farmer's water use and awareness on water issues
- ⑦ Groundwater level/flow, present abstraction amount and groundwater problems
- ⑧ Traditional waterways (Khettara) and its usage
- ⑨ Review of existing projects and studies concerning with water resources
- ⑩ Existing legal framework for water resources development and management as well as water supply and sanitation
- ⑪ Existing institutional framework for operation, maintenance and management relevant to water resources
- ⑫ Existing database related to water resources management

- 2) Study on groundwater resources potential
 - ① Potential of groundwater,
 - ② Water quality
 - ③ Present groundwater recharge
 - ④ Numerical modeling of groundwater basin (groundwater aquifer modeling, hydro-geological coefficients, model calibration)
 - ⑤ Hydrological water balance
 - ⑥ Sustainable water resources potential
- 3) Water demand projection
 - ① Domestic use
 - ② Agricultural use
 - ③ Industrial use
 - ④ Others (such as tourism)
- 4) Water balance study between water demand and potential
- 5) Study on the negative impacts on groundwater caused by over-abstraction and effluent discharge
 - ① Groundwater level declination
 - ② Depletion of groundwater potential
 - ③ Deterioration of groundwater quality
 - ④ Drying out of the existing wells
 - ⑤ Others
- 6) Stakeholders meetings (public participation)

Problems and issues on groundwater management

Phase 2: Formulation of the Master Plan for the Integrated Groundwater Resources Management

- 1) Setup of water resources management strategy
 - ① Groundwater resources development
 - ② Water supply and sanitation for urban and rural areas
 - ③ Irrigation water management
 - ④ Groundwater resources conservation
 - ⑤ Groundwater management
 - ⑥ Possibility of waste water reuse for irrigation
 - ⑦ Public participation in groundwater resources management
- 2) Formulation of the master plan
 - ① Proper groundwater utilization plan
 - Definition of proper groundwater use concept to keep sound water cycle and natural/social environment as well as sustainable groundwater use
 - Best mixed policy of water sources and water uses (agriculture, industry, people's livelihood, tourism, etc.)
 - Formulation of groundwater utilization regulation
 - Permission and prohibition on groundwater abstraction
 - ② Groundwater monitoring plan
 - Structure, distribution and number of monitoring wells
 - Monitoring system
 - Data arrangement and reporting
 - Evaluation and recommendation
 - ③ Groundwater management plan
 - Groundwater management method in cases of normal, drought and disaster times
 - Possibility of artificial groundwater recharge

- Groundwater management manual
- Groundwater management system (responsible body/person for groundwater management, monitoring body/person, transmission of monitoring information, public relations and guidance)
- ④ Plan for institutional and organizational strengthening
 - Capacity development of ABHT
 - Plan for regulatory framework for water resources management, especially conserving groundwater for sustainable use
 - Public participation (communication and coordination among stakeholders, raising general awareness on water problems and solutions)
 - Water demand management
 - Saving of irrigation water use (improvement of irrigation efficiency, creating non-agriculture employment opportunities)
- ⑤ Operation and maintenance plan
- ⑥ Initial environmental examination (IEE)
 Technical assistance on initial environmental examination (IEE) for environmental and social consideration (including public consultation with communities and stakeholders) shall be conducted for groundwater management.
- ⑦ Implementation plan
- ⑧ Cost estimate
- 3) Evaluation on the master plan
- 4) Proposal of action plans
 - ① Selection of priority projects
 - ② Action plans
- 5) Stakeholders meetings (public participation)
 - ① Discussion on the master plan
 - ② Discussion on the action plan

Outline of the project is summarized in Table 3.1.

Table 3.1 Format of Project Description

Item	Description
Name of Cooperation Project	The Study on the Integrated Water Resources Management Plan in the Haouz Plain in the Kingdom of Morocco
Project Proponent	Tensift Basin Hydraulic Agency (ABHT)
Background	Due to over-abstraction of groundwater for uses of large-scale irrigated agriculture and tourist industry as well as advancement in the recent urbanization of Marrakech, the groundwater level in the Haouz Plain that has been served with rich groundwater aquifers is gradually declining year by year. Furthermore, this situation has been aggravated by deterioration of groundwater quality due to the flow of untreated waste water from olive-oil mills and leather industry into the Tensift river.
Objectives	The objectives of the project are to formulate a master plan for integrated groundwater resources management in the plain, and to strengthen the institutional and personnel capabilities of ABHT through carrying-out of the M/P study.
Location	Haouz Plain (approximately 6,000 km ²), administratively comprising the whole areas of the Marrakech Wilaya and the Al Haouz Province, and parts of the Chichaoua and El Kelaa des Sraghna Provinces.
Population of beneficiaries	Approximately 1.56 million people
Project components	
• Type of project	Improvements of integrated water resources management
• Major property	Management of drinking, agricultural and industrial water
• Water sources and water quality	Water sources: ground water Water quality: a high saline concentration in groundwater has been observed in some parts of the plain.
• Facilities	Formulation of a structural plan would depend on the result of the M/P study.
Others	The Moroccan government has adopted a strategy to promote the rationalized utilization of limited water resources with a shift of the national policy from the importance of water resources development to that of water resources management.

Note: The format has been filled on the basis of the available existing data and information.

3-2 Outline of the Location

Outline of the project site is summarized in Table 3.2.

Table 3.2 Format of Site Description

Present Situation		Description
Social Environment	Affected and/or related peoples/groups: (livelihood/population/gender factor/residents/squatters/NGOs/the poor/indigenous, ethnic and vulnerable people/people's perception to the project, etc.)	A direct benefit of the project will be provided for a population of approximately 1.56 million (estimated in 2000). A great number of inter- and intra-migrants flocked to the Haouz Plain for temporary or permanent employment opportunities. Arabs are predominant with the rest being an ethnic minority group of the Berbere.
	Land use and utilization of local resources: (urban area/farmlands/industrial and commercial zone/historic site/scenic spot/fishing ground/coastal industrial zone/historical assets, etc.)	Based on the agricultural data of ORMVAH and DPA, the land use patterns comprise cultivated land at 48%, forests, rivers and lakes at 23%, and barren land (including abandoned fields) at 29%. An industrial zone centering on agro-based industries is located in Marrakech.
	Public facilities/social institutions: (local decision-making institutions/education/transportation network/drinking water/wells, reservoirs, water supply/electricity/sewerage/garbage, bus or ferry terminals, etc.)	The local decision-making institutions in the plain are diverse and include line agencies of ABHT, ORMVAH, DPA, ONEP, RADEEMA, BE, and regional and provincial governments, and other governmental organizations. Schooling comprises six years for primary education and five years for secondary education. The illiteracy rate for rural areas is low at 42%, compared to that for urban areas at 82% despite women still lagging behind compared to men. The reasons behind this are the important role of children in agricultural activities, poor household economy, and parent's ignorance of the importance of education. Most children either not attending school at all or dropping out prior to completion of primary level education belong to the most impoverished segment of the rural population. Access to safe drinking water is ensured through the house connection water supply system in urban areas and partly in rural areas, but in most of the rural areas the principal source of water is dependent on unprotected wells. In rural areas, fuel wood is the dominant source of energy, and agricultural residues are also used as a substitute. This will eventually lead to depletion of forest resources in the hilly region of the plain.
	Economy: (agriculture/fishery/industry/commerce/tourism, etc.)	The major economic activities are predominantly irrigated agriculture, livestock production, tourism, agro-based industries (food processing), textile, and leather. Marrakech located in the middle of the plain is known as an international tourist center.
	Public health and sanitation: (illness/infectious diseases such as HIV/AIDS, hospitals, sanitary habits, etc.)	Drinking water is in many locations of the rural areas unsanitary resulting in a high incidence among the rural population of water borne disease such as diarrhea. Rural health centers have been established in the rural areas of the plain which offer health and medical related services (inoculations, antenatal education, advice on child-rearing, etc.).
Natural Environment	Topography and geology: (Steep slopes/soft ground/wetlands/faults, etc.)	The Haouz Plain is located on the northern slope of the High Atlas range in the southwest of Morocco, and is generally flat on an alluvial plain with some hilly areas to the south.
	Flora and fauna, and their habitants: (protected area/national parks/habitats of rare species/mangroves/coral reefs/aquatic life, etc.)	There is no major natural habitat area with wildlife in the plain, nor are there any national parks or local protected areas.
	Coast and marine zone: (erosion/sedimentation/current/tide/water depth, etc.)	Some areas of the plain are susceptible to erosion due to the local typical rainfall pattern being in a short period with concentrated rainfall.
	Lakes, river system, coast and/or climate: (water quality and quantity, rainfall, etc.)	The plain belongs to a semi-arid climatic zone with an annual rainfall of 240 mm. The groundwater quality is in some locations deteriorated due to untreated waste water from olive-oil mills and leather industry.

Present Situation		Description
Pollution	Present pollution: (air, water, sewage, noise, vibration, etc.)	Due to over-abstraction of groundwater for uses of large-scale irrigated agriculture and tourist industry as well as advancement in the recent urbanization of Marrakech, the groundwater level in the plain that holds rich groundwater aquifers is gradually declining year by year. The air is polluted mainly by emissions from vehicles and the industrial estate in Marrakech (SO ₂). Raw sewage flows into the Tensift river.
	Complains which people have upmost concern:	It is reported that a majority of complaints are related to waste water from olive-oil mills.
	Measures taken for pollution: (institutional measures such as regulation/compensation, etc.)	The Environmental Protection and Management law (No. 11-03) and the Air Pollution Control law (No. 13-03) were promulgated in 2003. Government controls on waste water discharges from olive-oil mills and water quality for drinking and irrigation purposes are strictly executed.
Others	Gender	The respective roles of men and women within rural society are clearly demarcated. In addition to household chores (cooking, water fetching, cleaning, laundry, child-care, etc.), women also care for livestock and are engaged in forming. Moreover, women are relegated to a subordinate status with no female presence being seen on executive committees of water users' associations. In the above manner, the role of women is strictly limited to domestic chores and certain agricultural activities, while men have the opportunity to pursue public sector activities in addition to agriculture related duties. This traditional demarcation of male and female roles in conjunction with other factors such as illiteracy, ignorance and poverty are seen as formidable barrier suppressing female motivation to actively participate in the organizational and institutional activities of rural society.

Note: The format has been filled on the basis of the available existing data and information.

4. Legal Framework of Environmental and Social Considerations

4-1 Law

Law of water resources: Water law (Loi 10-95 and Dahir No. 1-95-154) comprising 13 chapters and 123 articles

Law of EIA: EIA law (Loi 12-03) comprising 4 chapters and 20 articles

4-2 Competent Agency

Department of Environment (DE), Ministry of Land Management, Water and Environment (MATEE)

4-3 Projects subject to EIA

In accordance with the EIA law, projects which require the EIA process are categorized as follows:

- ① Infrastructure projects such as roads and highways, railway, airport, port, dam, reservoir, and urban and industrial estate planning
- ② Industrial projects such as mining, cement, energy, chemicals, metal, food, textile, pulp, leather, and pottery
- ③ Agricultural projects such as agricultural development and afforestation
- ④ Special projects such as fish-culture and other cultures

Implementation of this project does not require EIA. The concept of a strategic environmental assessment has not yet been integrated into policy making, programming and planning in the water resources sector.

4-4 Procedures

The EIA procedure is illustrated in Fig. 4.1 as attached hereto. There are two EIA evaluation committees, i.e. National EIA committee (CNEIE) responsible for the case where a project cost exceeds 200,000 DH, and Regional EIA committee responsible for that being less than 200,000 DH.

4-5 Information Disclosure and Stakeholders Participation

(1) Information disclosure

In principle, information on environmental assessment will be disclosed for public review in ABHT and the regional environmental bureau of the Ministry of Land Management, Water and Environment.

(2) Stakeholders participation

The EIA process includes public participation and consultation to help ABHT achieve public acceptance of the project. In this line, opening of stakeholders meetings is planned in this project, i.e. stakeholders meeting with topics related to problems and issues on groundwater management in the Phase 1 and that for discussion on the master and action plans in the Phase 2.

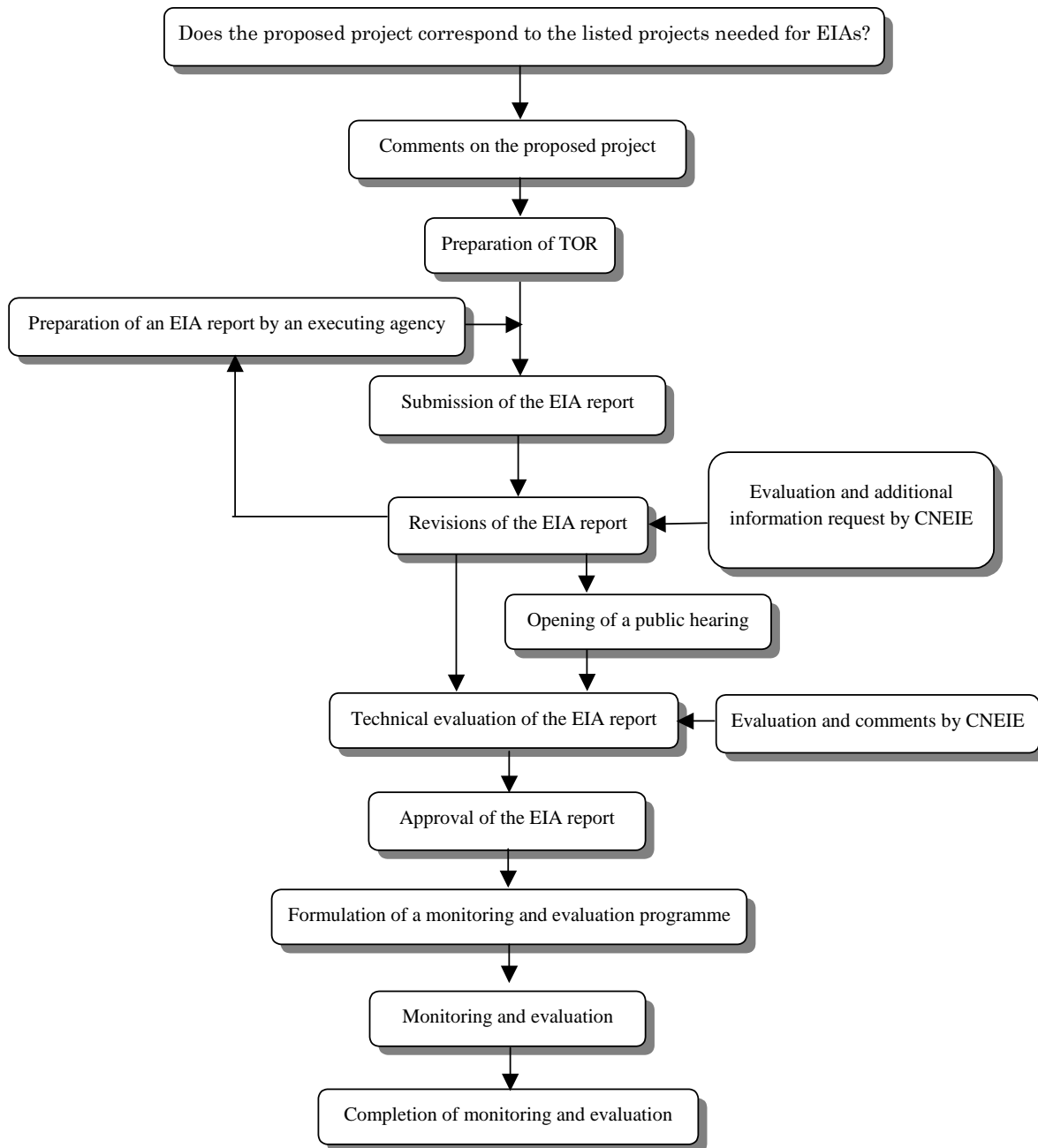


Fig. 4.1 EIA Procedure

Source: Department of Environment, Ministry of Land Management, Water and Environment

5. Provisional Scoping

Provisional scoping has been made **as follows**.

5-1 Adverse Impacts

A checklist for scoping in case of the integrated water resources management project are shown in Table 5.1.

Table 5.1 Checklist for Scoping

Impacts		Rating	Brief Description	
Social Environment	1	Involuntary resettlement	D	No impact is expected.
	2	Local economy such as employment and livelihood	C	Impact may become clear as study progress.
	3	Land use and utilization of local resources	C	Impact may become clear as study progress.
	4	Social institutions such as social infrastructure and local decision-making institutions	C	Impact may become clear as study progress.
	5	Existing social infrastructures and services	C	Impact may become clear as study progress.
	6	The poor, indigenous and ethnic people	C	Impact may become clear as study progress.
	7	Misdistribution of benefit and damage	C	Impact may become clear as study progress.
	8	Cultural heritage	D	No impact is expected.
	9	Local conflict of interests	D	All inhabitants will be benefited by the project implementation without local conflict of interests.
	10	Water usage or water rights and rights of common	C	Impact may become clear as study progress.
	11	Sanitation	C	Impact may become clear as study progress.
	12	Hazards (risk) and infectious diseases such as HIV/AIDS	D	No impact is expected.
Natural Environment	13	Topography and geographical features	C	Impact may become clear as study progress.
	14	Soil erosion	C	Impact may become clear as study progress.
	15	Groundwater	C	Impact may become clear as study progress.
	16	Hydrological situation	C	Impact may become clear as study progress.
	17	Coastal zone (mangroves, coral reefs, tidal flats, etc.)	C	Impact may become clear as study progress.
	18	Flora, fauna and biodiversity	C	Impact may become clear as study progress.
	19	Meteorology	C	Impact may become clear as study progress.
	20	Landscape	C	Impact may become clear as study progress.
	21	Global warming	D	No casual relationship with global warming is expected.
Pollution	22	Air pollution	D	No impact is expected.
	23	Water pollution	C	Impact may become clear as study progress.
	24	Soil contamination	C	Impact may become clear as study progress.
	25	Waste	D	No impact is expected.
	26	Noise and vibration	D	No impact is expected.
	27	Ground subsidence	C	Impact may become clear as study progress.
	28	Offensive odor	D	No impact is expected.
	29	Bottom sediment	D	No impact is expected.
	30	Accidents	C	Impact may become clear as study progress.

Rating A: Serious impact is expected.

B: Some impact is expected.

C: Extent of impact is unknown (Examination is needed. Impacts may become clear as study progresses.)

D: No impact is expected. IEE/EIA is not necessary.

5-2 Alternatives

Project alternatives including a without project case are shown in Table 5.2.

Table 5.2 Summary of Alternatives

Alternatives	Description
No action	Gradual declination in the groundwater level will be continued. The water resource will be continuously developed without the proper plan over the future.
Proposed Project	The proposed project aims at formulation of a master plan for integrated water resources management including surface and ground water in the Haouz Plain, and strengthening of the institutional and personnel capabilities of ABHT through carrying-out of the M/P study.
Alternative	The alternatives will be studied based on the results of water demand projection and water resource potential study.

6. Examination of Environmental and Social Considerations

6-1 Budget

ABHT will arrange the budget necessary for the M/P study.

6-2 Organization

ABHT was established in 2000 as per the water law No. 10-95 in 1995 and its decree No. 2-00-479 in 2000, and has been functional from April in 2002 onwards. It is an autonomous organization on a self-support accounting basis under the jurisdiction of the Ministry of Land Management, Water and Environment, responsible for integrated groundwater resources management in the Tensift river basin.

6-3 Personnel and Experience of Project Proponent

ABHT is staffed with 41 competent personnel (inclusive of 9 engineers). It has rich experience on integrated water resources management with donor countries including Japan.

6-4 Framework and Operating Procedure regarding Information Disclosure and Public Participation)

Information disclosure and public participation will be made by ABHT through opening of stakeholders meetings and seminars. ABHT will involve a wide range of participations representing affected farmers, water users' associations, community leaders, NGOs, local governments, water resources-related agencies, and environmental management agencies. Opening of stakeholders meetings is planned in the M/P study, i.e. stakeholders meeting with topics related to problems and issues on groundwater management in the Phase 1 and that for discussion on the master and action plans in the Phase 2.