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R2004-0072/1

May 6, 2004

**For meeting of
Board: Tuesday, May 25, 2004**

FROM: Vice President and Corporate Secretary

Iran: Ahwaz and Shiraz Water Supply and Sanitation Project

Project Appraisal Document

Attached is the Project Appraisal Document regarding a proposed loan to the Islamic Republic of Iran for a Ahwaz and Shiraz Water Supply and Sanitation Project (R2004-0072).

This project will be discussed at a meeting of the Executive Directors on

Tuesday, May 25, 2004.

Distribution:

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Report No: 27223-IRN

PROJECT APPRAISAL DOCUMENT
ON A
PROPOSED LOAN
IN THE AMOUNT OF US\$ 279.00 MILLION
TO THE ISLAMIC REPUBLIC OF IRAN

FOR A

AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT

April 29, 2004

**Finance, Private Sector and Infrastructure Group
Middle East and North Africa Region**

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CURRENCY EQUIVALENTS
(Exchange Rate Effective as of February 2004)

Currency Unit = Iranian Rial (IR)

10,000 Rials = US\$1.19

US\$1.0 = 8,400 Rials

FISCAL YEAR
March 21 -- March 20

ABBREVIATIONS AND ACRONYMS

APL	=	Adaptable Program Loan	LCS	=	Least Cost Selection
AWWC	=	Ahwaz Water and Wastewater Company	MEAF	=	Ministry of Economic Affairs and Finance
BOT	=	Build Operate Transfer	MOE	=	Ministry of Energy
CAS	=	Country Assistance Strategy	MPO	=	Management and Planning Organization
CB	=	Central Bank	NCB	=	National Competitive Bidding
CBO	=		NGO	=	Non-Governmental Organization
CHO	=	Cultural Heritage Organization	NWVEC	=	National Water and Wastewater Engineering Company
COA	=	Court of Accounts	NPV	=	Net Present Value
CPAR	=	Country Procurement Assessment Review	O&M	=	Operation and Maintenance
CQ	=	Consultants Qualification	PAD	=	Project Appraisal Document
DBO	=	Design-Build-Operate	PER	=	Public Expenditure Review
DOE	=	Department of Environment	PFS	=	Project Financial Statements
EA	=	Environmental Assessment	QCBS	=	Quality and Cost Based Selection Method
EMP	=	Environmental Management Plan	RAP	=	Resettlement Action Plan
EOI	=	Expressions of Interest	RFP	=	Request for Proposal
FDI	=	Foreign Direct Investment	SA	=	Special Account
FEF	=	Front-End Fee	SBD	=	Standard Bidding Document
FMR	=	Financial Monitoring Reports	SOE	=	Statement of Expenditures
GFA	=	Gross Fixed Assets	TA	=	Technical Assistance
GOI	=	Government of Iran	TOR	=	Terms of Reference
GPN	=	General Procurement Notice	TSE	=	Tehran Stock Exchange
IAS	=	International Accounting Standards	TSU	=	Technical Support Unit
IBRD	=	International Bank for Reconstruction and Development	UFW	=	Unaccounted for Water
ICB	=	International Competitive Bidding	UNDB	=	UN Development Business
ICR	=	Implementation Completion Report	WBI	=	World Bank Institute
IDA	=	International Development Association	WHO	=	World Health Organization
IRR	=	Internal Rate of Return	WR	=	Working Ratio
ISA	=	International Standards on Auditing	WSS	=	Water Supply and Sanitation
LAP	=	Land Acquisition Plan	WTP	=	Willingness to Pay
			WWCs	=	Water and Wastewater Companies
			WWTP	=	Wastewater Treatment Plant

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ISLAMIC REPUBLIC OF IRAN
AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT

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MAP(S)

Map of Iran

Map: Ahwaz Water Supply Project

Map: Ahwaz Sanitation Project

Map: Shiraz Water Supply Project

Map: Shiraz Sanitation Project

Map: Ahwaz Karoon River

ISLAMIC REPUBLIC OF IRAN
AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT

Project Appraisal Document

Middle East and North Africa Region
 Finance, Private Sector and Infrastructure Department

Date: April 29, 2004 Sector Manager/Director: Emmanuel Forestier/Françoise Clottes Country Manager/Director: Joseph P. Saba Project ID: P071191 Lending Instrument: Specific Investment Loan (SIL)	Team Leader: Mohammed Benouahi Sector(s): Sewerage (60%), Water supply (30%), Central Central government administration (10%) Theme(s): Pollution management and environmental Health (P), Infrastructure services for private sector development (P), Access to urban services for the Poor (P), Other financial and private sector development (S), Gender (S)
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Project Financing Data

Loan Credit Grant Guarantee Other:

For Loans/Credits/Others:

Loan Currency: United States Dollar

Total Bank Financing (US\$m): 279.00

Borrower Rationale for Choice of Loan Terms Available on File: Yes

Proposed Terms (IBRD): Variable-Spread Loan (VSL)

Grace period (years): 5

Years to maturity: 17

Commitment fee: 0.75%

Front end fee (FEF) on Bank loan: 1.00%

Financing Plan (US\$m):	Source	Local	Foreign	Total
BORROWER		132.72	0.00	132.72
IBRD		103.61	175.39	279.00
Customers (Connection Fees)		58.10		58.10
Total:		294.43	175.39	469.82

Borrower: ISLAMIC REPUBLIC OF IRAN

Responsible agency: NWWEC, AHWAZ AND SHIRAZ, Water and Wastewater Companies

National Water and Wastewater Engineering Company (NWWEC)

Address: # 8, Shahid Abdollah-zadeh Street, Keshavars Boulevard, Tehran, Iran

Contact Person: Mr. Elahi Panah, TSU Director for water and wastewater projects

Tel: 98-21-895 3319

Fax: 98-21-895 5795

Email: elahipanah@nww.co.ir

Estimated Disbursements (Bank FY/US\$m):

FY	2005	2006	2007	2008	2009				
Annual	22.53	60.66	80.24	75.98	39.59				
Cumulative	22.53	83.19	163.43	239.41	279.00				

Project implementation period 5 years (2004-2009)

Expected effectiveness date: October 1, 2004

Expected closing date: September 30, 2009

A. Project Development Objectives

1. Project development objectives: (see Annex 1)

The main objectives are to:

- (a) enhance the quality of life in the proposed cities, Ahwaz and Shiraz, particularly in poor areas by:
(i) improving access to satisfactory water supply and significantly increasing coverage of sanitation services; and (ii) improving environmental, hygiene and health conditions, as well as promoting reuse of treated effluents;
- (b) strengthen and develop the capacity of Ahwaz and Shiraz Water and Wastewater Companies (WWCs), and assist the latter in improving their efficiency, sustainability and financial autonomy; and
- (c) initiate sector reforms, particularly with respect to institutional arrangements, the regulatory framework, demand management, as well as prepare a sanitation strategy.

2. Key performance indicators: (see Annex 1)

Key performance indicators, which are detailed in Annex 13 and agreed upon with the Government include:

- (a) Population coverage of sanitation services and expansion of water production capacity and connections;
- (b) Level of recovery of costs of operation and maintenance (O&M) and capital expenditures, as measured by the working ratio;
- (c) Quantities and quality of treated effluents and their reuse; and
- (d) Unaccounted for water (UFW).

B. Strategic Context

1. Sector-related Country Assistance Strategy (CAS) goal supported by the project: (see Annex 1)

Document number: 22055 IRN (Interim Assistance Strategy) **Date of latest CAS discussion:** April 16, 2001

General Context

In the last decade, following almost two decades of war, debt crisis and international isolation which depreciated the capital stock and disrupted economic and institutional development, Iran embarked on a far-reaching political, economic and social reform program.

A very broad spectrum of Iran's political actors and society in general has embraced the overall principles and processes of the Third (FYDP) Five Year Development Plan 1999-2004. Complex debate has centered on the speed, the dislocations, burden and social implications of the reform process, in particular with respect to the planned removal of energy sector subsidies. Mindful of the transition costs, the government has operated with great caution to avoid social dislocation.

Achievements during the period of the Third FYDP have been impressive. Iran has practically no external debt, high foreign reserves, no major balance of payments pressures and a moderate fiscal deficit, which now reflects increasingly explicit subsidies, including indirect subsidies (largely in the energy sector).

Growth has been robust with real GDP growing on a 6 percent average during 2000/01 – 2002/03, reaching 7.4 percent over the past year. Structural reforms have advanced with gains in financial markets, trade and price liberalization and tax policy. Institutional reforms have included increased decentralization and greater accountability in budget and public expenditure process. Education and health have realized significant gains. Inclusion of women has improved with high female education enrollment at all levels. Female inclusion in the labor force is markedly better (and high by MNA standards) but still insufficient. Efforts to move from an economy driven by state dominance and subsidies to increased private sector participation have had some success, though private FDI and domestic investment remains low by international standards. Improvements in the investment climate for the private sector have gone forward, though slowly. Investment for the run-down economic infrastructure has picked up, but remains constrained, more by the lack of access to best practice and best technology than finance. Social programs targeting poverty and the disadvantaged have undergone reform, but accountability and results remain uncertain. Finally, following a long period of neglect, efficient resource management and environmentally sustainable development have become priorities.

As Iran embarks on the Fourth FYDP this year, it is at a critical junction. Continuing the direction of the Third FYDP, there is broad consensus on four pillars of the Fourth FYDP:

- Achieving fast, sustainable growth, relying on the transition to a market economy.
- Sharing the fruits of growth, addressing the needs of the poor and disadvantaged.
- Enhancing natural resource management and the environment.
- Building an efficient, accountable and transparent public sector.

These pillars represent goals about which there is little debate.

Regarding the water sector, which is one of the pillars of the Fourth FYDR, mentioned above, there is broad agreement among different groups in Iran on the direction of the reform agenda. However, less consensus exist on the paths to be taken to achieve the agenda. Through various consultation processes, working documents outlining the essence of the long-term strategies in the above sectors have been drafted (i.e. Long-Term Water Development Policy Guidelines) calling for the executive branch to start putting together a program for implementation. As it is the case with other economic sectors, Iran is at an important juncture in which it can accelerate its reform process and leap forward toward modernization of the water sector or at best slow down and underachieve its potential while jeopardizing the sustainability of its natural resources.

The Bank's assistance strategy can play a critical role in facilitating Iran's transition and modernization through a consistent program combining activities on infrastructure development and knowledge generation on one hand, and actions aimed at bridging the gaps between physical resources management and people/institutions capacity building on another hand.

The main issues affecting the water sector in Iran have been identified through various assessments: low water use efficiency in urban and rural uses; limited participation by stakeholders in development planning and management; large needs for rehabilitation and development of hydraulic infrastructure for sustainable water usage; problems of pollution caused by the discharge of untreated wastewater into public waterways and aquifers; and weak institutions involved in the sector and limited coordination among stakeholders (See also Para. B 2 and B3).

Past involvement of the World Bank in Iran water sector has been limited and fragmented due to various factors. As a result, significant knowledge gaps have emerged. Opportunities to reverse this trend have been sought in the context of the April 16, 2001 Interim Assistance Strategy (2001-2004) through dialogue, leading to the identification of promising Bank financed infrastructure projects in water supply

and sanitation, and irrigation. The emphasis in the dialogue is slowly changing from a narrowly focused provision of commercial financing to a potential strategic partnership in development as Iran is embarking onto a reform agenda aimed at promoting growth in a socially and environmentally sustainable way and focusing on competitiveness and inclusion into the global economy. The objectives of the Fourth FYDP and the needs for implementation of the reform agenda open new opportunities for partnership in terms of technical assistance and a lending portfolio aimed at well targeted interventions focusing on integrating people, institutions and resources while combining infrastructure with knowledge for the water sector. The Bank should use the large infrastructure needs in the sector to promote capacity building, and institutional development. The assistance strategy for Iran in meeting the water sector challenges needs to be centered on the following interventions:

- **Pricing policy reforms** in water as gradual ways to improve service delivery requiring a particular attention to cost recovery and investment financing;
- **Design tariff schemes** to help poor communities retain/improve their livelihoods and access to basic services in lieu of the current broad interventions and not well conceived cross subsidy system (Water Supply and Sanitation);
- **Capacity building of sector institutions** such as the Regional Water Boards, the Regional Water and Wastewater Companies, The National Water and Wastewater Engineering Company etc. The capacity building effort will include technical, operational, financial management, planning, budgeting and other activities related to improving the efficiency of water service delivery; and
- **Manage and plan land and water resources** in a well coordinated and integrated way allowing allocation of resources between sectors and regions in an efficient and socially and environmentally sustainable manner.

The Bank's assistance over the next 10 years puts water supply, sanitation and hygiene, irrigation and drainage, and water resource management at par in a strategic framework supported by the following four pillars:

- Recognizing that investment without reform will be ineffective in reaching the goals of environmentally and socially sustainable development;
- People and institutions should be at the center of sustainable water resource development;
- Delivering water and other related services requires substantial expenditures someone has to pay for; and
- Safeguarding water resources is a shared responsibility and involves tradeoffs.

Through flexible and simple interventions taking into considerations Iranian planning and budgeting institutions, The World Bank program will support the water sector while focusing on the political economy of change and recognizing the important implementations challenges. The Bank will not seek to intervene in all aspects of water but would identify those opportunities where it can improve implementation, establish the right framework for monitoring and evaluation and strengthen the national and provincial institutional capacity to carry out reform and achieve results.

Water supply and Sanitation Context

The Bank strategy for assisting Iran, as described above and in Interim Assistance Strategy, reviewed current development situation in Iran, progress of the process of reforms, and highlighted the development challenges and prospects faced by the country, particularly with respect to water and sanitation. It also outlined the assistance strategy that the Bank Group will follow during the next two to three following years while preparing a Country Assistance Strategy (CAS). The Interim Assistance Strategy was also complemented by an “Urban Water and Sanitation Sector Note”, which was discussed at a World Bank Institute (WBI) workshop on June 2002, and endorsed by the Government in September 2003. Government and Bank agreed on the following: (i) the strategy, (ii) the implementation program for Bank assistance to be part of the coming CAS (2004-2007), and (iii) the key performance indicators (See Annex 13) for the sector.

2. Main water supply and sanitation sector issues and Government strategy:

About 96% of the urban population is connected to public water supplies. By contrast, only about 16% is connected to public sanitary sewerage and only part of the collected sewage is treated before disposal. The bulk of sewage is discharged untreated and constitutes a major source of pollution to groundwater and a risk to public health. In a number of cities without sanitary sewerage, households discharge their sewage through open rainwater drains.

World Bank Assistance to the Sector: In addition to preparing and disseminating the Water Supply and Wastewater Sector Note in 2002 the World Bank has an active Tehran Sewerage Project.

World Bank Sector Assistance Strategy: Following the discussions that took place in September 2003, the GOI and the Bank agreed:

- (i) to adopt the main conclusions of the sector strategy note which emphasized institutional reforms, i.e., clarification and demarcation of the responsibilities of the institutions involved; streamlining of financial policies; implementation of a tariff scheme consistent with the cost recovery objective; optimization of investment; selecting appropriate least-cost technologies; addressing environmental and health concerns; and implementing an integrated water resource management.
- (ii) to implement the agreed upon strategy in the following three phases:

Phase I: Execution of the water and sanitation investment projects for the two cities of Ahwaz and Shiraz (2004-2009) and preparation and initiation of sector reforms (2004). This includes the preparation drafting of terms of reference-TOR and selection of consultants) of studies and technical assistance (TA) programs covering the following areas: demand management, customer education, institutional reforms, the regulatory framework, tariffs and cost recovery, technology and investment priorities, sanitation strategy and integrated water conservation. A new tariff policy will be drafted during this phase with WBI assistance. WBI will also assist in preparing workshops related to institutions and sanitation strategy.

Phase II: Execution of the water and sanitation investment projects for the four cities of Rasht, Anzali, Sari and Babol (2005-2010), launching of the studies prepared in phase I, and implementation of the new tariff scheme initiated and prepared in phase I.

Phase III: Implementation of reforms prepared under the first two phases. Investment projects will then be prepared for other new cities under an adaptable program loan (APL).

3. Sector issues to be addressed by the project and strategic choices:

Issues

- (a) Poor performance of water supply and on-site wastewater disposal facilities, causing increasing risk for ground and surface water pollution and health and environmental risks resulting from the discharge and re-use of untreated effluent for irrigation.
- (b) Limited technical, institutional and financial capacity of WWCs.
- (c) Lack of clarity of institutional responsibilities of sector entities.
- (d) Non transparent and inadequate tariff structures and levels.

In addressing these issues the project will aim at:

- (a) increasing coverage of sanitation services in the proposed cities in significant proportions and improving access to quality water supply;
- (b) improving the financial and operational performance of Ahwaz and Shiraz WWCs;
- (c) implementing a capacity building component for the WWCs concerned and other sector institutions; and
- (d) preparing the reform agenda that will be implemented in phases II and III defined in the strategy.

C. Project Description Summary

1. Project components (See Annex 2 for a detailed description and Annex 3 for a detailed cost breakdown):

Long-term development plans have been designed for the extension of water and wastewater system and facilities in Ahwaz and Shiraz over the period 2004-2027. These plans are formulated to serve a population of about 2.2 and 1.9 million respectively in Ahwaz and Shiraz by 2027. They are scheduled to be implemented in four phases and the project under consideration covers works proposed under phase 1 (Refer to the enclosed map). Areas to be covered will be as follows:

In Ahwaz: The water component of the project aims at improving the quality of water and regulating the pressure in the water system. This will be done by rehabilitating the existing water treatment plants and providing additional treatment to ensure adequate water quality, constructing five new reservoirs with the required pumping stations, and implementing the necessary transmission lines. Additionally, rehabilitation of the water network and implementation of 19,000 house connections will take place where needed throughout the project period. Financing of the house connections will be done from the WWC's own revenues.

To upgrade and expand the treatment capacity of the water treatment plants No. 1 and 2, dual media filtration, ozonation and activated powder injection systems are proposed to be added. In light of the lack of sufficient local experience with such technologies, a design and build contract whereby services from international experience is acquired is being considered.

The wastewater component includes the improvement and rehabilitation of the existing treatment plant in the west of Ahwaz (Choneibeh) including the construction of 9 km pipeline from the treatment plant to the proposed sludge lagoon that will be constructed under the project. Additionally, this component includes the construction of the first two modules of a new treatment plant in the east of Ahwaz, and the implementation of the wastewater collection system that are planned to connect 750,000 persons by 2007.

In Shiraz: The water component will finance works that will increase supply capacity and regulate the pressure in the water network. This will be achieved by digging and equipping 17 wells; constructing four reservoirs, the required pumping stations and pressure reducing valves; and laying and extension of the transmission and distribution system. Rehabilitation of the water network and implementation of 22,000 house connections will take place where needed throughout the project period. Financing of the house connections will be done from the WWC's own revenues. The wastewater component will include works that will extend the collection system in the city, the construction of the first two modules of a new wastewater treatment plant and the provision of outfalls from the treatment plants

For the wastewater treatment works of the first phase in both cities, it is proposed to apply the design-build-operate approach in order to optimize the design and to ensure proper operation and maintenance of completed works in the initial stages of operation while building local capacity to run the treatment plants. Build-operate and transfer-type of contracts would be considered for the subsequent phases. These contracts will increase the involvement of international private sector in providing wastewater services, which will ensure sustainable service delivery.

The project also includes operation and maintenance equipment and TA/training/consultant services for institutional development and project management, engineering design and construction supervision, updating of the wastewater development program and feasibility studies and engineering design for phase 2 investments.

Component	Indicative Costs (US\$M)	% of Total	Bank financing (US\$M)	% of -Bank-financing
AHWAZ				
Rehabilitation, improvement and expansion of water systems and facilities	77.06	16.4	39.44	14.1
Rehabilitation, improvement and expansion of wastewater systems and facilities	157.4	33.5	92.78	33.2
Provision of operation and maintenance equipment and consumer water meters for WWCs	1.15	0.2	0.92	0.3
Technical assistance/consultant services, TSU and training	17.32	3.7	15.89	5.7
SHIRAZ				
Rehabilitation, improvement and expansion of water systems and facilities	44.35	9.4	22.30	8.0
Rehabilitation, improvement and expansion of wastewater systems and facilities	154.05	32.8	90.61	32.5
Provision of operation and maintenance equipment and consumer water meters for WWCs	1.15	0.2	0.92	0.3
Technical assistance/consultant services, TSU and training	14.54	3.1	13.34	4.8
AHWAZ and SHIRAZ				
Rehabilitation, improvement and expansion of water systems and facilities	121.41	25.8	61.74	22.1
Rehabilitation, improvement and expansion of wastewater systems and facilities	311.46	66.3	183.39	65.7
Provision of operation and maintenance equipment and consumer water meters for WWCs	2.31	0.5	1.84	0.7
Technical assistance/consultant services, TSU and training	31.86	6.8	29.23	10.5
Total Project Costs	467.03	99.4	276.21	99.0
Front-end fee (1%)	2.79		2.79	
Total Financing Required	469.82	100.0	279.00	100.0

The proposed Bank loan would be US\$279.00 million. No co-financing has been raised only few institutions such as the Islamic Development Bank are active in the sector. The remaining amount of about US\$190.82 million equivalent would then be provided by Government and locally through internal cash generation. Bank financing under interceptors and laterals would, to a large extent, be limited to pipes with a size above 200 mm serving as interceptors. The cost estimates are based on prices of latest contracts awarded and on current Tehran Stock Exchange (TSE) rate of 8,400 Rials to one US\$, and future exchange rates will be adjusted to local inflation to take place during the years of project implementation.

2. Key policy and institutional reforms supported by the project:

The contribution of the project to reforms will be threefold. First, it sets well-defined financial and operational performance criteria, the main ones being to reach a working ratio equal to 0.75 and an UFW ratio below 27% by the end of the project. Meeting these criteria will require considerable effort in terms of technical, financial and commercial management. Second, it initiates the preparation of a comprehensive sector reform agenda that would be implemented in future phases (see paragraph B-2). Third, it has an upgrading component (training, TA, equipment and establishment of Technical Support Units (TSU) within WWCs and NWWEC) aimed at strengthening the overall management capacity of the companies involved.

3. Benefits and target population:

The proposed project is expected to benefit a population of about 2.4 million people, living in two large cities and representing about 3.5% of the population of Iran. While the water systems are well developed and population coverage is almost total in the two cities, sewerage coverage is very low and the need to develop adequate sewage systems is urgent. Only one wastewater treatment plant (WWTP), located in Ahwaz, is in operation at the present time and even this plant treats only part of the generated wastewater and is in need of rehabilitation. Because of the deleterious effects of the current state of living conditions and the environment, the construction of modern sewage systems is expected to generate significant health and environmental benefits.

The implementation of the project will address the water and sanitation needs of the population of the two cities, a large proportion of which is poor. The topographic characters of the cities in question and the downstream effects of water and sewage flow are such that the most polluted areas are the ones inhabited by the poorest of the population. Traditional water-related diseases such as helminthes, hepatitis A, conjunctivitis, skin diseases, and to a lesser extent typhoid and cholera are quite prevalent.

4. Institutional and implementation arrangements:

Sector Organization: Several institutions are involved in the sector. At the central government level it is under the responsibility of the Ministry of Energy (MOE), with a deputy minister specifically in charge of water and sanitation. At the regional level eleven Water Boards manage and allocate water resources while thirty-three provincial and city WWCs provide supply water and wastewater services. These WWCs are assisted by NWWEC in matters of policy, investment planning, human resources development, and in the establishment of standardized systems and procedures. Finally, the National Economic Council sets tariff policy for the whole country, with some differentiation across regions.

Implementation Arrangements

Project Management

Each WWC will be responsible for the management and implementation of its project and for subsequent operation and maintenance of the facilities that will be built. TSUs will be established within each WWC and the NWWEC to strengthen capacity within Government institutions. Responsibilities of the TSUs in WWCs will include planning coordination, monitoring and reporting while the TSU in NWWEC will also be in charge of consolidating periodic reports for all implementing agencies. NWWEC will also assist the WWCs in preparing International Competitive Bidding (ICBs) and large value consultancies. TSUs will report directly to their respective WWCs and NWWEC. During negotiations of the project, agreement has been reached on the TSUs' staffing levels and responsibilities.

Project Implementation and Schedule

WWCs/TSUs will use local consultants for engineering design and construction supervision for routine works, but would need foreign expertise for complex works such as wastewater treatment works. Final agreement on these arrangements has been reached during negotiations.

Important packages of the project, estimated at a total amount of about US\$80 million, are at a final design stage and are scheduled for the first year of the implementation period. MOE and WWCs have agreed to hire consultants to prepare tendering documents to be ready for execution by Bank loan effectiveness. Still a satisfactory implementation of the Project requires that: (i) WWCs be supported by competent TSUs; and (ii) the Management and Planning Organization (MPO) and WWCs provide counterpart funds on a timely basis.

Project Monitoring and Supervision

Fulfillment of the key performance indicators will be monitored along with the execution of the project and TSUs are expected to play a major role in both monitoring and supervising the project.

Bank supervision will also be needed, which will require significant resources, particularly in the first two years of implementation. In addition, capacity building will require a major effort. On average, two to three supervision missions per year will be needed with approximately 25 staff weeks for each year, i.e. 125 staff weeks for the whole project implementation period.

Financial Management

The Ahwaz and Shiraz Water and Waste Water Companies (WWC) operate as private sector entities and the financial systems in place are based on the principles and procedures of the trading law of The Islamic Republic of Iran. The responsibility for the project implementation will be assigned to the respective WWC and the NWWEC. Each of these water companies will be assisted by a TSU to follow on the project activities including the preparation of the project accounts and financial statements. The IBRD loan will be lent to The Islamic Republic of Iran who will channel part of the proceeds and make available the counterpart financing, on-budget transfer basis, to the WWCs while the balance of the loan will be channeled in the form of liability. The repayment of the capital and all cost associated with the part of the loan, made available as liability, such as commission and commitment fees would be the responsibility of the respective WWC. As per applicable rules the WWCs have to meet certain internal requirements, requested by the Ministry of Finance, prior to receiving this part of the loan proceeds. The decision to process the funds in the form of loans or grants will depend on the nature of the activity financed with all sewerage capital investment to be financed through budget transfers from the central government to the

WWCs. The part of the project made available to the water companies on budget transfers basis will be implemented through the regulations governing the national budget processes. All payments, under this part of the project, will be subject to the applicable government controls. These controls are applied by the 1) MPO with mandate to allocate the needed funds, from the loan proceeds and counterpart funds through a framework agreement with the WWCs; 2) the Ministry of Economic Affairs and Finance (MEAF) who assigns the financial controllers responsible for payments control, co-signing of checks, keeping accounts of the spending unit and providing monthly financial reports to the treasury; and 3) the Court of Accounts (COA) who performs post audits to the transactions and payments under this part of the project. The flow of the funds to be channeled on lending basis to the companies will be subject to the policies, procedures and controls in place at the water companies. These controls have been found to be adequate. Accordingly these procedures and controls being the government and the WWC, plus the engagement of an external independent auditor, will be used to follow on the overall project funds being the loan proceeds and the counter part financing. While part of the technical assistant component of the project, will be implemented by The NWWEC who operates as a private sector entity and collect fees from the WWC across the country.

The two WWC and the NWWEC are equipped with accounting systems that are capable of generating year-end financial statements. However, it was observed that the accounting systems require enhancement to become capable of generating timely project reports including the Bank required Financial Monitoring Reports (FMRs). To overcome this limitation in the project reporting the NWWEC, who overview and monitor the operations of the WWC in the country, has proposed to open a cost center within the present accounting systems used by the WWCs. This cost center will be configured to report on transactions relating to the project including the source and use of funds and the activities financed through the project funds. It was agreed that a version of the system will be configured to reflect this additional cost center prior to end of June 2004. The services of a financial officer, to be domiciled within each of the TSUs, will be required prior to project effectiveness. This officer has to collaborate with the MEAF controller, maintain the project accounts with the help of the configured accounting system, prepare the project budget and consolidate the accounts for the generation of the project Financial Monitoring Reports (FMRs). In order to institutionalize these tasks the financial officer will prepare, with the assistance of a consultant, a project manual for financial procedures detailing the tasks and procedures for the project including the flow of funds and information between the various units implementing the project.

The NWWEC will submit to the Bank, quarterly and within 45 days from the end of the Iran Hejri calendar quarter, a set of FMRs presented in English detailing the project financial status at each of the two water companies and the consolidation of the over all activities. The FMR format was prepared and agreed with the borrower.

The Borrower opted to replenish the Special Account (SA) using transaction based disbursement, by means of Statements of Expenditures (SOEs), using the SA for those expenditures below the disbursement letter threshold, and by direct payments accompanied by supporting documentation for the balance. The Project's financial statements will be audited annually by an external independent auditor, acceptable to the Bank, in accordance with internationally accepted auditing standards. The WWCs will submit the project audit reports and the entity audited financial statements to the Bank not later than six months following the closing of the fiscal year subject to the audit. The fiscal year in The Islamic Republic of Iran follows the Hejri Solar Calendar thus starting on March 21, xx and ending on March 20, xx+1. The project audit Terms of Reference (TOR) will be prepared and submitted for the Bank's no objection, no later than nine months prior to the end of each fiscal year.

As the different portions of the loan, depending on the channeling modality, will be subject to different regulations and controls, and to ensure that funds are available for project implementation five US \$ Special accounts will be opened in addition to the accounts for the counter part financing. Each water company will open two US \$ Special Accounts and will follow on the project withdrawal applications

and direct payment requests relating to its activities. While the NWWEC will manage the fifth \$ SA which will be used to finance the TA activities with scope to cover the two WWCs.

D. Project Rationale

1. Project alternatives considered and reasons for rejection:

Rationale for Selecting the Cities

The two cities have been selected for eligibility under the proposed project from a list of prioritized urban areas included in the five-year development plan. This selection is based on the criteria of existing environmental conditions, including important environmental externalities going beyond the city's geographical boundaries, sewerage conditions and threat to health, existing social conditions, and progress in project preparation. The degree of pollution or pollution threat is the main selection criterion. In Ahwaz the main source of water, the Karoon River, is highly polluted by wastewater discharges. This river, which is the largest in Iran, is also the source of water for other important cities located downstream of Ahwaz. The city of Shiraz, which has a rich cultural heritage and a great tourism potential, has a weak wastewater collection system and no treatment facilities.

Alternatives Considered

Alternatives analyzed are of strategic and technical nature:

- (i) **Strategic: Public utilities versus private sector approach:** Currently, neither the local legal and institutional environment nor the international conditions are favorable for the jump-start into advanced forms of private sector involvement such as build-operate-transfer (BOTs) or concessions. Deep reforms have yet to be implemented in many areas: procurement regulations, foreign exchange regulations, banking (there are currently only public banks), foreign participation, labor regulations, etc. Lifting constraints and creating an enabling environment for the development of the private sector is an important objective for Iran in general, regardless of what takes place in the water sector. The fulfillment of this objective takes a macroeconomic and institutional dimension that goes beyond the water sector. Some of these reforms may be fostered through this project but most of them require important structural horizontal actions rather than sector-specific actions. Discussions about other arrangements such as service or management contracts are also premature before a proper enabling environment is put in place, the legal framework is overhauled and the reforms listed above, particularly in the area of pricing, are implemented.
- (ii) **Technical:** In the course of the preparation of the development program, different alternatives were evaluated with respect to the number and location of treatment works, on-site sanitation, alignments for the trunk main systems, method of pipe-laying, pipe materials, and phasing for program implementation.
 - (a) The option of on-site sanitation was found unfeasible in Ahwaz and Shiraz due to high water tables. The borrower expressed the concern of polluting the water tables in case of improper construction of on-site sanitation. Furthermore, the government has already invested significant resources in the upgrading and expansion or in the construction of treatment plants (Choneibeh in Ahwaz, Emergency Zone in Shiraz). Finally, various parts of the trunk mains are being implemented with local financing.
 - (b) For the wastewater treatment works alternative treatment processes; activated sludge, oxidation ditches, oxidation ponds and aerated lagoons, and site locations were evaluated with the activated sludge method proved to be the least cost solution. The comparison

between the different alternatives took into account investment, long-term operation and maintenance costs as well as evaporation and seepage costs. Under the project all treatment plants will be tendered as a design-build-operate (DBO) contract, consequently the final treatment process will be agreed upon through bidding.

- (c) Various options have also been analyzed on the handling of sludge, which will be treated sufficiently to ensure its use for soil conditioning; and
- (d) For the wastewater treatment works considerations have also been given to conventional financing versus a DBO contract. For phase 1, it was also proposed to apply the DBO approach in order to optimize the design and to ensure proper operation and maintenance of completed works.

2. Major related projects financed by the Bank and/or other development agencies (completed, on-going and planned)

Sector Issue	Project	Latest Supervision (PSR) Ratings (Bank-financed projects only)	
		Implementation Progress (IP)	Development Objective (DO)
Bank-financed COMPLETED - Improved flood protection for human life, property and infrastructure; - Improved flood protection for human life and agricultural areas. - Reconstruction and rehabilitation of infrastructure ONGOING - Improved sanitary and environmental conditions	Tehran Drainage Project		
	Sistan Flood Project		
	Earthquake Recovery Project		
	Tehran Sewerage Project	S	S
Other development agencies N/A			

3. Lessons learned and reflected in the project design:

The lessons learned from the Tehran Sewerage Project will be incorporated in the design of this project. The experience with this project highlights the need to: (i) establish strong project management capacity through locating TSUs within Government entities and WWCs rather than outside and to retain institutional capacity within government institutions; (ii) plan and finance the necessary household connections to the water distribution and wastewater collection networks; (iii) familiarize the Borrower's staff with Bank requirements, including those related to safeguards; (iv) have an appropriate tariff scheme to ensure the financial viability of the WWCs; and (v) consider a selective use of the private sector.

4. Indications of borrower commitment and ownership:

Borrower commitment and ownership are reflected through (i) Government giving high priority to the sector, particularly to wastewater in its long-term planning and its request to the Bank for continued support to the sector; (ii) MOE financing from its own budget the background studies and its willingness to pay (WTP) for detailed engineering and preparation of tenders for this project; (iii) WWCs taking initiatives to respond quickly to the Bank's requirements and formally agreeing on the proposed strategy in the sector and future collaboration with the Bank; and (iv) willingness of Government to fund urgent

operations (construction of network, wastewater treatment plants, etc.) in many cities, including the ones being considered in this project, prior to the proposed project implementation.

5. Value added of Bank support in this project:

The value added of Bank support would mainly include: (i) addressing a long standing problem, i.e. lack of wastewater collection systems within an appropriate policy and financial framework; (ii) assisting the Government in the preparation of sector reforms; (iii) introducing key financial and operational indicators that would improve the efficiency of the WWCs; (iv) providing foreign exchange that is essential for the purchase of mechanical and electrical equipment for water and wastewater treatment works; (v) raising the level of awareness and attention to environmental, health and social issues; and (vi) fostering competition through the involvement of international contractors for major civil works contracts and equipment.

E. Summary Project Analysis (Detailed assessments are in the project file, see Annex 8) (limit to 2 to 3 pages with one table)

1. Economic (see Annex 4):

- Cost benefit NPV=US\$ million; ERR = % (see Annex 4)
- Cost effectiveness
- Other (specify)

The benefits expected under the project from the provision of modern sewerage systems are better health for the targeted population, protection of the limited water resources, provision of an alternative source of water for irrigation and reduction in the cost of environmental degradation. The main health effect would be a significant reduction in water-borne diseases, mainly in diarrhea and dysentery. These diseases result in various economic costs - workdays missed for adults and schooldays missed for youngsters during the sickness period, the cost of medication and eventually of hospitalization. In addition, there will be a significant improvement in the living conditions of targeted population. The water component will provide safe and affordable drinkable water to the expanding population in the two cities.

Water in Shiraz: The population of Shiraz, which is estimated at about 1.2 million inhabitants in 2003, enjoys almost total coverage by the water supply network. Planned investment is therefore needed to meet the needs of future additional population as well as to rehabilitate parts of the existing network. Since water demand is projected over a longer horizon (beyond 2027), this appraisal assumes that other investments will be carried out at least up to that year.

In the hypothetical situation of no project households and other users would have to find alternative means of meeting their needs, essentially by purchasing water from water vendors at high prices and by investment in storage capacity. The avoidance of such cost is the main benefit of the project. Secondly, given the advantage of house connection over buying and storing water and the huge difference in cost, the project will allow households to consume a larger volume of water than under the alternative, which will increase their welfare (their consumer surplus). Thirdly, the Shiraz WWC provides water in much better hygienic conditions than water vendors, which reduces health hazards. All these benefits will rise in the future as population increases.

Even if benefits are limited to the first component, i.e. the cost of water in the absence of the project, the investment is largely justified, yielding an IRR higher than 40% (Annex 4). Sensitivity analysis shows that IRR remains high, at about 25%, even if benefits are cut by as much as 20% and cost raised in the same proportion as compared to the base scenario. The cost of water under alternative means of supply is

estimated at about one US dollar per cum against less than ten cents only for pipe water. Taking into account the other two types of benefits will result in an even higher economic return.

Water in Ahwaz: Like Shiraz, the population of Ahwaz, which reached over 1.1 inhabitants in 2003, is fully covered by the water distribution network, but capacity needs to be expanded in treatment and storage, as well as in the transmission and distribution network in order to meet the future needs of a fast growing population.

Economic benefits are similar to those for Shiraz water project. Once again, even if benefits are limited to the avoidance of the cost of water under the alternative to the project, the estimated economic IRR is found to be very high, equal to 32% in the base case and remaining close to 20% even under unfavorable assumptions concerning costs and benefits. For Ahwaz, the alternative to meet water demand, which will be in this case much lower than under the project, is through the purchase of bottled water, which is partially used during summer time, and more likely through the purchase of bulk water from water vendors. This alternative supply is very costly, estimated at about US\$ 1 per m³.

Wastewater in Shiraz: Three types of benefits are separately assessed: avoidance of the cost of alternative methods of sewage discharge if the project is not undertaken, health benefits and finally the increase in agricultural value-added that would result from the use of treated wastewater in irrigation.

Under conservative assumptions concerning the health benefits the IRR is close to 20%. The main benefit of the project is saving the cost of absorption wells as an alternative to discharge wastewater, which accounts for more than 80% of total economic benefits over the period 2004-2027.

Health benefits are underestimated if they are based only on the illness cases reported to Shiraz public health services. There are many other cases that are not reported to these services, those that are handled by private hospitals or clinics or by referring to pharmacies. According to the socio-economic survey carried out in preparation for the Project, about 7.5% of households had at least one case of diarrhea during the two weeks preceding the surveys. Based on this information and on conservative assumptions concerning the effects of improper discharge of wastewater on health, health benefits are estimated to be much larger than what the official data imply and IRR rises to over 40%. The latter still exceeds 15% even if benefits or cost are respectively lower and higher than in the base scenario (Annex 4).

Wastewater in Ahwaz: Benefits are assessed according to the same method as for Shiraz, relying on the same three types of economic benefits. In the case of Ahwaz, there may be an additional fourth benefit, a less polluted environment in and along the Karoon River, which would stimulate and improve the quality of recreational activities in the city.

Once again it is believed that official health data underestimate the real extent of water-borne diseases. The socio-economic survey for Ahwaz gives about the same ratio for the incidence of diarrhea among the population as in Shiraz, which is much higher than the implied official ratio. Based on survey results the IRR is estimated in the base scenario at about 8.5% (5.7% based on Health Department data). It declines to less than 5% if cost or benefits change unfavorably by 20%. The saving of the cost of discharge to absorption wells accounts for a large proportion of the project benefits.

These values are much lower than for water. Still they are acceptable, especially when considering that the project will generate other benefits that are difficult to measure, the main one being the significant improvement in the environment and in the quality of life, starting with immediate surroundings.

Tariff Policy: The current system comprises connection rights, subscription fees and water consumption tariffs in addition to the house connection fees, which are directly borne by the customer. All these components are set and revised on a periodic basis by the National Economic Council.

Connection rights for water are currently based on dwelling size and a city adjustment coefficient, which depends on several factors the most important of which are the cost of water supply and population density. Average connection fees are about US\$310 for the whole country and the minimum fee is approximately equal to US\$150. Ahwaz fee is estimated at about US\$280 in 2003. With a few exceptions, the connection fee for wastewater is the same as that for water. These fees have been regularly increased in the last five years, at the rate of 10% annually in all these years with the exception of the year 2000 in which the fee was increased by 15%. In addition to connection fees, the WWCs charge the customer the full cost for house connection.

Regarding water consumption, the current system is based on a fixed fee that depends only on the size of the connection pipe and on the type of customer (household or other types), and on a volumetric charge based on increasing block-tariffs. The fixed fee, or the subscription fee, is about 2,000 Rials (25 US cents) for most domestic customers while the structure of variable tariffs is based on a complex formula. The formula is the same for all WWCs and there is no volumetric charge if consumption falls below 5 cum per month. Above this minimum, prices increase with the level of consumption and generally vary across companies. The average volumetric tariff for the country stood at about 6 US cents in 2002 and it varied from 2 cents for monthly consumption below 20 cum, to about 4.5 cents and 12.5 cents respectively for 20-40 and for more than 40 cum of monthly consumption (Annex 4).

Tariffs and water bills are low even if when related to income and they are extremely low by comparison with tariffs practiced in recent years in other countries with similar and even lower per capita income than Iran, Tariffs in Jordan, Tunisia and Yemen, for instance, are between five and fifteen times higher than in Tehran and several times higher than the average tariff in all of Iran (Annex 4).

New measures introduced in the system have given conflicting signals as to the direction the tariff structure is taking. On the one hand tariffs have been raised in greater proportions for higher than for lower consumption brackets. In addition to the regular increases, the Council introduced since 2001 a penalty or surcharge for consumption exceeding a certain volume varying across cities in the range of 18 to 25 cum per month (24 cum for Ahwaz and 20 cum for Shiraz). This penalty was set for the year 2002 at 100% of the tariff given by the formula for consumption above the cut-off volume. It has been raised to 150% in 2003 and is expected to be further increased to 200% in 2004. These changes are thus widening the tariff gap between low and high consumption brackets. On the other hand the decision has been taken to set lower bound and upper bounds for tariffs, defined with respect to average cost. In 2002 the lower bound was set at one fourth of average cost and the upper bound at three times the average cost. This adjustment explains the significant increase in the average tariff for the low consumption category of 0 to 20 cum per month between the years 2001 and 2002. These changes reduce tariff differences between consumption brackets and therefore work in the opposite direction of the first measures of tariff increases. Moreover, and in spite of these increases, revenues from water sales, and from wastewater when applicable, do not cover operation and maintenance cost in most cases. The working ratio for Ahwaz WWC is estimated at 96% and 90% respectively for the budget years 2001-2002 and 2002-2003 while for Shiraz it has been estimated at 107% and 92% for the same years. These ratios are currently significantly above the ratio of 75% targeted for the end of the project period.

The rate structure is needlessly complex for both volumetric rates and connection fees. Volumetric tariffs are based on complex formulas that differ across consumption brackets and WWCs. Because of this complexity the tariff structure lacks transparency. Moreover, the structure is such that rates increase by more than threefold when consumption rises from 20 cum or less to slightly higher volumes. This sharp

change may not be an issue under the existing system in which tariffs are generally low but deserves to be reviewed under a new framework in which tariffs would be based on costs and rebalanced between consumption brackets.

Regarding sewage bills they are currently levied and collected only in city neighborhoods where a network exists and are based on water bills (70%). Since these services have been very limited, or practically non-existent, the need has not yet been felt by the WWCs to properly assess the costs involved. As these services develop costs should be assessed separately from water so as to evaluate the appropriateness of the existing tariff structure.

All these shortcomings point to the need for a consistent and comprehensive tariff reform. Aware of this need, the Government has appointed a working group to that effect. According to members of this group, the proposed reform will be in line with the objectives set in the draft Fourth Development Plan (2005-2009), which are simple and transparent tariff structures and full cost recovery for water supply and wastewater services.

Since most urban households are already connected to the water network and only a few are connected to a sewerage network that is yet to be constructed in most cases, the issues of willingness to pay and affordability of connection rights may arise. In order to ease the burden the government has facilitated household access to bank credit for this purpose. For water consumption, a guiding objective is to gradually narrow the block rate spread, which is too wide under the existing system, to move ultimately to a unique cost-based tariff system and to provide income subsidies to the poor. This implies that the tariff reform, along with significant improvements in productivity and in the management of these companies, should aim at reducing this ratio towards the 75% target. The principles stated in the Fourth Development Plan are sound and point in the right direction of an efficiency based tariff policy. Guided by these principles, a comprehensive and consistent reform should replace the inconsistent piecemeal approach of recent years. A workshop on comprehensive tariff reforms is scheduled under the Project, to be organized jointly with WBI and with a follow-up on recommendations.

2. Financial (see Annex 4 and Annex 5):
NPV=US\$ million; FRR = %)

The project will generate financial benefits to the Ahwaz and Shiraz WWCs from several sources, including: increased water sales and disposal of wastewater made possible through the investments undertaken under the project; income from connection fees made possible from the new water and wastewater connections due to the project and the increased tariff that will be implemented in order to meet financial performance targets agreed to between the Government of Iran and the World Bank. The analysis has been conducted in current terms based on net cash flows generated by the project over a 25-year period. The analysis shows that the financial rate of return (FRR) for Ahwaz would be 13.3% and 10.2% for Shiraz both of which are above the 10% assumed cost of capital. Detailed analysis is presented under Annex 5.

Financial Cost-Benefit Analysis (US\$ million)

	Ahwaz	Shiraz
	PVs @ 10%	
Financial costs	265.9	238.6
Investment	207.7	199.5
Increased salary and utility costs	39.5	24.4
Increased maintenance costs	18.7	14.7
Financial Benefits	324.2	263.3
Increased revenue from water sales and wastewater disposal services	305.8	230.1
Increased revenue from subscription fees	2.7	3.4
Increased income from connection fees	15.1	29.3
Savings from reduced UFW	0.6	0.6
Net Financial Benefit	58.3	24.7
FRR	13.3%	10.2%

Financial Assessment of the Water and Wastewater Companies (WWCs):

A detailed analysis has been carried out for the Ahwaz and Shiraz WWCs dealing with the past, current and future financial performance of the WWCs. The detailed analysis is presented in Annex 5 whereas the section below summarizes the financial situation of the WWCs and the implications of the proposed project on their likely future financial performance.

Past and current performance of the Wastewater Companies: Both the Ahwaz and Shiraz WWCs have been incurring significant net losses in the past which are projected to continue in the year ending March 20, 2004. While both companies have achieved working ratios (operating expenses/operating revenue) below 1 in the past, insufficient past spending on maintenance resulted in underestimation of the working ratios achieved. Maintenance spending as a percentage of gross fixed assets was as low as 0.29% in 2002/03 in Shiraz and 1.5% on average in Ahwaz. The industry standard calls for 2.5%-3%.

The financial performance of the companies is further aggravated by high water losses resulting in a much larger need for water to pass through the system than is billed for. Water losses were as high as 45% in 1999/00 and have come down to about 37.7% in 2002/03 in Ahwaz and have averaged about 30% in the past in Shiraz. Of the water that passes through the system, only about 73% was paid for in terms of collections in 2002/03 in Ahwaz. The collection performance has remained the same in 2003/04 at about 74%. Nonetheless, at the end of 2002/03, the accumulated accounts receivables equaled 12 months of billings. In Shiraz, collection performance has been very good in the past but is estimated to have deteriorated in 2003/04 possibly as an effect of increased tariff in 2002/03. The good collection performance of the past has resulted in relatively manageable accounts receivables, which reached 5.6 months at the end of 2002/03.

Future Financial Performance of the WWCs: Projections to assess the future financial position and performance of the WWCs have been carried out for the period 2004/5-2013/14. The project financial analysis presented above was estimated over the project's 25 year expected lifetime. The key assumptions for the projections are presented in Annex 5. Detailed assumptions are recorded in the project files.

The projections for the future financial performance have been anchored by the financial targets agreed between the Government of Iran and the World Bank during their sector strategy discussions in September 2003. These targets comprise the following:

- Working ratio of 0.75 by the financial year 2008/09 (operating expenses excluding depreciation and interest/operating revenue).
- Labor productivity reaching 3 by project completion (expressed as number of staff per 1,000 water connections).
- Accounts receivables reduced to 4 months by 2008/09.
- Unaccounted for water to reach 27% by 2008/09.

The targets aim to gradually improve the financial and operational performance of the WWCs by achieving cost recovery of O&M, and part of capital investment. Meeting these targets will require increases in the water and sanitation tariff, but will also depend on simultaneous improvements in collection performance and a significant reduction in water losses. The main targets will be covenanted in the loan agreements, particularly the working ratio, collection ratio and UFW. The analysis assumes that the cost is governed by a Bank loan to the company. The Government is assumed to cover in grant form the cost of water components not covered by the Bank loan or connections fees as well as the cost of the wastewater components not covered by connection fees.

Likely Future Financial Performance of Ahwaz: As illustrated in Annex 5, meeting the targets under the agreed financing arrangements will require a significant tariff increase of 84% in 2004/05. After this year it would fall to about 32% and then lie around 15% during the rest of the project implementation period. The average tariff increase between 2004/05 and 2008/09 would be about 32%. However, a net deficit would be incurred to the WWC because what remains from the revenues once operating expenses are covered is still insufficient to cover depreciation and financial charges. The net accumulated deficit would amount to US\$7.9 over the period 2004/05-2013/14. As a second scenario, the tariff increase required to achieve full cost recovery, has also been analyzed, which shows that the tariff increase would initially (in 2004/05) need to be much larger at 100%, but the average tariff increase during the project implementation period would practically be the same, 33%. A key prerequisite for both scenarios, however, is that an aggressive action plan on improving collections is implemented which includes the writing-off of accounts receivables that are deemed unlikely to be collected. Annex 5 presents a breakdown of each company's accounts receivables and the assumptions deployed to achieve the target of accounts receivables not exceeding 4 months by 2008/09. Similar effort should be made on reducing water losses. UFW is high, particularly for Ahwaz.

Likely Future Financial Performance of Shiraz WWC: As illustrated in Annex 5, the tariff increases required differ significantly in the base and second scenario. In the base scenario - which targets the tariff increase required to meet the working ratio target of 0.75 by 2008/09 - the tariff increase is very significant in the year 2004/05, about 70% and would be greatly reduced the year thereafter to about 23%. The average tariff increase between 2004/05 and 2008/09 would be about 34%. A net deficit of US\$10.4 million would be incurred due to what remains from the revenues once operating expenses are covered is still insufficient to cover depreciation and financial charges. As in the case of Ahwaz, the impact on the required tariff increase differs significantly when seeking full cost recovery. In this case, the required tariff increase in 2004/05 would be 88% and the average increase would be 36%. However, an important issue is that in the base scenario, Shiraz would have to work hard to improve its performance beyond meeting the financial targets agreed to in order to avoid negative cash flow in the years 2004-2008. The cash flow position would be much better under the scenario where tariffs are increased for full cost-recovery. The cash flow issues above-mentioned can also be positively affected by improving efficiently of operations and by reducing UFW to less than agreed upon target of 27% by end of project.

3. Technical:

The project is technically sound as investments under the project were selected based on a comprehensive water and wastewater development plan of the Ahwaz and Shiraz. During the preparation of these plans, different technical alternatives were analyzed and the most feasible one was selected. The feasibility criteria took into account technical, economical, environmental, health, and social factors of each alternative. In both cities, phasing of works is planned in a way to optimize the operation of the water system by dividing the project area into pressure zones, reducing as a result pumping costs. For wastewater, surveys of wastewater characteristics were carried out and most suitable treatment process (activated sludge) was selected for the two cities. To achieve the project objectives however, the implementation capacity of Ahwaz and Shiraz water and wastewater companies should be raised. The rate of connections and implementation of the secondary network is key to ensure proper operation of the treatment plants (proposed and the ones under construction).

4. Institutional:

4.1 Executing agencies:

Two main executing agencies will implement this project: Ahwaz and Shiraz Water and Wastewater Companies. The NWVEC and the Department of Environment (DOE) will also be involved.

4.2 Project management:

The WWCs, assisted by their TSUs, will plan and manage their project components. They will supervise construction works, consultants and O&M. They will be in charge of all procurement issues and will be supported by the NWVEC in procurement using ICBs and large consultancies. The NWVEC will consolidate periodic reports, and would prepare with the support of consultants all ICBs related to the project. DOE will be responsible for its component, which is mainly capacity building of the enforcement role of the regional departments of environment. TORs will be prepared for key TSU staff.

4.3 Procurement issues:

Lessons learned from past and ongoing Bank-financed projects in Iran show difficulties when applying fiduciary requirements for these projects. There are several procedures and practices under the current procurement framework in Iran that do not fully conform with the Bank procurement practices. Among these difficulties is the approach for recruiting consultants including, restrictions regarding hiring international consultants, restrictions on participation of foreign bidders, restrictions on invitations to bidding to the list of qualified contactors by MPO, absence of clear evaluation criteria in bidding documents etc.

The most important impediment for procurement under Bank projects is the non-adherence to Loan Agreements. Some institutions that are involved in implementation do not acknowledge the precedence of procurement arrangements stated in loan agreements over national procedures. Some discrepancies exist between the Bank Guidelines and procedures and some of the national procedures. While procurement under ICB can be conducted according to the Bank Guidelines with some constraints, the situation is more difficult when it comes to the selection of consultants and national competitive bidding. The following two agreements have been reached with the government for loan effectiveness:

- (i) Agreement on the applicability of the Bank Guidelines for the selection and employment of consultants and procurement under ICB. This will be ensured by providing a one-year, renewable exemption for all procurement packages under the project, which will be carried in accordance with the loan agreement (the list of these packages are provided in Annex 14). This will be later replaced by the framework agreement that the Government and the Bank are currently working on to address all fiduciary issues for Bank financed projects; and

- (ii) Agreement on National Competitive Bidding (NCB) procedures that will be acceptable to the Bank. This should include the development of an NCB document that will be acceptable to the Bank. This can either be based on a modified national document or a modified version of the Standard Bidding Documents (SBD) of the Bank.

The second main issue is the limited capacity in the WWCs to conduct procurement according to the Bank Guidelines. The current capacity for these companies is limited to conducting local and national level procurement and mainly for works and recruitment of design and supervision engineering firms. Weak knowledge of English language is also a serious constraint. The capacity of the WWCs should be enhanced by recruiting competent procurement officers for concerned WWCs, and at NWWEC. These officers will have the task of ensuring that Bank procedures are followed during the different phases of the procurement cycle. It is essential that procurement officers be recruited by July 2004 in order to familiarize themselves with the project and the Bank procedures. Upon recruitment, intensive training on the Bank procurement procedures should be carried.

The project will be implemented in the two WWCs. The majority of the procurement packages should be launched during the first two years. To prepare for the project and ensure that the first year bidding packages will be ready by loan effectiveness, the WWCs should recruit consultants to commence the design and preparation of bidding documents activities for the different works. A critical sub-component is the procurement process for the design and construction of Waste Water Treatment Plants. Taking into consideration the required periods for recruiting a consultant to carry out the assignment for the design and supervision, pre-qualification of contractors, tendering and award of contracts and the construction phase; this sub-component is already on a tight schedule and the process for long listing of consultants for the design and supervision should be launched by June 2004.

4.4 Financial Management issues:

The discussions with the government revealed that part of the loan proceeds will be channeled to the WWCs in the form of budget transfers while the balance will be transferred in the form of liability where the repayment of the capital and all cost associated with the interest and commitment fees would be the responsibility of the WWC. These additional costs will have impact on the financial status of the WWCs. While the funds channeled in the form of budget transfers, and the counter part financing for part of the funds channeled in the form of liability can only be disbursed after the budget lines are opened within the government budget and a framework agreement detailing the activities to be financed is signed between the MPO and each of the WWCs.

To mitigate the risk of the WWCs not being able to make available part of the project counterpart funds, the support of the MPO is required through committing to provide these funds, to the water companies. This can be achieved through the framework agreements to be signed with the WWCs. Also, the Bank will assist the WWC and the NWWEC to achieve the objectives of the project financial arrangements through the launch of workshops and initial intense supervision. (Financial management arrangements are detailed in Annex 6).

5. Environmental: Environmental Category: A (Full Assessment)

- 5.1 Summarize the steps undertaken for environmental assessment and EMP preparation (including consultation and disclosure) and the significant issues and their treatment emerging from this analysis.

The proposed project is an environmental and social improvement operation. It has been classified as Category "A" because of the extension of water treatment plants, the construction of wastewater

treatment plants, the re-use of sludge and treated effluent, the potential impact from the discharge of industrial effluents, and the presence of archeological sites in the city of Shiraz.

Environmental assessment (EA) studies including environmental management plans (EMP) were prepared for the two cities in compliance with the requirements of the Islamic Republic of Iran as well as the World Bank Procedures, including Operational Policy OP 4.01 “Environmental Assessment” and Operational Policy Note OPN 11.03 “Cultural Heritage”. The reports covered three major areas: (i) Project description, legal and regulatory framework, and baseline conditions; (ii) Analysis of impacts and design alternatives; and (iii) Environmental Management Plan.

The EA indicated that the execution of the project will have positive impacts in terms of reducing pollution of natural resources, will generate significant economical, social and public health benefits, and will enable the government to enforce existing environmental regulations and standards.

Major environmental issues are: (i) risk of poor performance of water treatment facilities that would lead to insufficient water quantity of inadequate quality if the water supply system is not properly maintained and monitored; (ii) possible discharge of toxic/harmful industrial substances into the wastewater collection network because of lack of enforcement on the provision of the required pre-treatment; and (iii) use of treated effluent for irrigation and of treated sludge for soil conditioning could, in case of any adverse diversions in treatment quality, cause a health threat to people.

Other issues are mainly related to inconvenience to be experienced during construction such as disruption of traffic pattern, disrupted access to residential or/and other buildings, change in the landscape (loss of vegetation), noise nuisance, air pollution due to dust formation, safety hazard from construction activities and inappropriate disposal of excavated materials and construction debris.

Mitigation measures to ensure that potential adverse environmental impacts are minimized were identified and include:

- Routine maintenance of the water supply system and regular monitoring of water quality including water sources, treatment plants and reservoirs;
- Connections will be provided only to industries that pre-treat their effluents to levels which comply with the World Bank Environmental Guidelines mentioned in the “Pollution Prevention and Abatement Handbook”;
- Restricting the use of treated effluents for irrigation in case World Health Organization (WHO) Guidelines cannot be met;
- Drying of sludge for one year, before its use as soil conditioner, to ensure elimination of nematode eggs;
- Construction activities will be coordinated with all concerned authorities prior to the start of the construction works. In addition Good Practice Environmental Procedures will be adopted.

5.2 What are the main features of the EMP and are they adequate?

The EMP covers all components funded by the project as well as existing water supply sources and wastewater treatment facilities including any facilities that are under construction. The plan outlines the measures incorporated in the design, construction and operation of the project to mitigate potential environmental impacts. It also includes a monitoring program, institutional arrangement for implementing the various tasks as well as capacity building and technical assistance for key stakeholders involved in the

project. The cost of implementing the EMP was estimated and appropriate budgetary allocations were provided as part of the project cost.

- 5.3 For Category A and B projects, timeline and status of EA:
Date of receipt of final draft: January 2004.

EA reports have been made available at the Info Shop and a number of locations in Iran including: Department of Environment, Ministry of Energy, and WWCs.

- 5.4 How have stakeholders been consulted at the stage of (a) environmental screening and (b) draft EA report on the environmental impacts and proposed environment management plan? Describe mechanisms of consultation that were used and which groups were consulted?

At the initiation of the project, technical, financial, environmental and social issues associated with the project were discussed in meetings attended by consultants, representatives of City Councils, Municipalities, WWCs and various other stakeholders. Further consultations were held during project preparation to facilitate stakeholder involvement and awareness at all levels of project implementation and to ensure that information required for decision-making is available to all interested parties.

TORs for the EA studies were developed and shared with key stakeholders in scoping meetings, which were held on April 2002. In addition the Bank team provided a one-day training on August 2002 regarding the Bank's safeguard policies.

The EA process included public consultations, which were carried out at various stages. Consultations involved line ministries, city authorities, provincial DOE, WWCs, local communities, NGOs and the public. This process was complemented by additional consultations undertaken in preparation of the Resettlement Action Plan (RAP) and the Social Assessment (SA). The EA executive summaries in English and Farsi were distributed to all concerned stakeholders. A public hearing was held in Ahwaz on October 28th, 2003 and in Shiraz on January 4th, 2004. The public hearings were attended by a large number of people including representatives of most ministries, Governors, MPs, local communities, NGOs, contractors, consultants, university professors and medias. The public did not have any restriction on the implementation of the project, on the contrary all presents welcomed the project, requested its initiation the soonest possible and asked for additional activities to solve pollution problems.

- 5.5 What mechanisms have been established to monitor and evaluate the impact of the project on the environment? Do the indicators reflect the objectives and results of the EMP?

The EMP includes monitoring activities to be conducted during construction and operation. Responsibilities for daily monitoring of construction activities and compliance with the EMP will be part of the construction supervision activities. Monitoring of environmental impacts during operation will be undertaken by the operators of the facilities, who will be supervised by the WWCs. An international consultant will assist the environment and safety officer at the TSUs in implementing and monitoring the EMP activities. The Bank will receive regular reports from the WWCs on the progress of the project including the status of EMP. Moreover, a Bank environmental specialist will participate at the supervision missions. In addition, provisions have been made for the recruitment of an international specialist to monitor the project in the mid term review and the Implementation Completion Report (ICR).

The adopted indicators reflect the objectives of the EMP and provide a basis for improved project results. Moreover, the project provides clear monitoring indicators (Annex 13) to be used for monitoring and evaluation purposes during project supervision.

6. Social:

6.1 Summarize key social issues relevant to the project objectives, and specify the project's social development outcomes.

A Social Assessment/Willingness To Pay survey was conducted and a summary is shown in Annex 4. This section draws on its findings.

Quality of life for the poor and vulnerable. The central social concern of this project is meeting a basic need of resident populations in Ahwaz and Shiraz for inadequate water and sanitation system with adverse impact on their health and immediate environment. Although water supply coverage is high, sanitation is desperately poor, particularly in unplanned and informal settlements, which are substantial in both cities. Individual infiltration sewerage systems are common: when found combination with a deteriorated potable water infrastructure, drinking water is contaminated by untreated sewage. In poor areas and informal settlements, open drains and collection of stagnant pools of wastewater are common. During summer or when it rains these create an unpleasant and unhealthy environment characterized by odor, flies and polluted stagnant water. Poor children are particularly exposed, and pedestrian communication is difficult and unpleasant. Vendors sometimes wash vegetables and other food items in water from open drains, and untreated effluent ends up being used for irrigating food crops in nearby agricultural areas, thus bringing direct, risking both public health and the wider natural environment.

Serious public health hazards are a particular risk for poor and vulnerable people in historic city centers and informal settlements, and put at risk the entire city population. During field visits, discussions with poor families revealed the high health care costs to families caused by water-borne diseases, particularly in the summer. A major positive long-term outcome of the project particularly for the very poor, would be a more livable and healthy environment, a greater sense of dignity and quality of life, better health, and reduced health care costs.

Poor tenants are particularly vulnerable, because increased property values and increased water and sewerage rates will be reflected in higher rents, possibly resulting in evictions of the poorest tenants and their replacement. Protection measures such as rent caps may be required and are discussed below, and city councils and community organizations have a significant role to play.

Although people are aware of issues in general, there is a need to influence current knowledge and attitudes. Expectations that government provides subsidies and free services will need to be moderated by increased awareness of the need for individual cost-sharing. By including stakeholders in the project implementation phase, such concerns will be addressed. (See also 6.3 below).

6.2 Participatory Approach: How are key stakeholders participating in the project?

During project preparation, meetings were conducted in Ahwaz and Shiraz to discuss the technical, financial, environmental and social issues associated with the project. These meetings were attended by the WWCs, the design consultants, members of the City Councils, Municipalities, WWCs and various other stakeholders. The EMP public workshop discussions (attended by a Bank staff member in the case of Ahwaz) were well conducted, informative, and well attended by officials and members of the public, men and women. NGOs and CBOs have already been involved, and the project is creating a space in which newly elected councils (comprising in many cases active and committed citizens), individual, citizens and the WWCs can enhance participation.

For Shiraz and Ahwaz, both of which are considerably larger cities with populations of around 1 million, mechanisms for local consultations and participation seem to be limited primarily to the Friday prayers,

and local neighborhood councils have yet to be established, but elected city councils will be closely involved in the project.

6.3 How does the project involve consultations or collaboration with NGOs or other civil society organizations?

The project has already involved NGOs and CBOs. There have been close consultations with local stakeholders that included the municipalities, members of regional authorities, local councils and residents on the street. Public consultation meetings took place in respect of the environmental assessment that included active NGOs in Ahwaz and Shiraz.

Other civil society organizations will play an important role in the public communications aspect of the project. Willingness to pay for sewerage services will not come through top-down communication from officials, but from an accurate family level appreciation of benefits and costs. A participatory action research approach is required in order for community members to work out and understand the costs and benefits of the project to them. The local health services (centers, clinics and posts) would organize workshops in which the costs of the burden of disease arising from waterborne pollution can be calculated at the family level: burden of disease on children and their development, costs of medical care, medication, treatment, transportation, hospitalization and time lost, plus working hours lost through the illness of a working individual or for care of a dependant. Anticipated savings from reduced burden of disease can be related to the costs of connection and services. This awareness can then be disseminated through community and neighborhood groups: neighborhood cooperatives, social and religious groups and adult learning, and local opinion leaders. Community-based awareness raising and information dissemination is far more effective in Iran than official communications. Public education and awareness campaigns will also be undertaken by local NGO's experienced in dealing with water and sanitation issues in coordination with the WWCs and local city councils.

6.4 What institutional arrangements have been provided to ensure the project achieves its social development outcomes?

Social development outcomes will be insured by: (i) the creation of city-wide and/or local neighborhood committees that will be established in the preparation phase of the project (see 6.2), and whose role will be to coordinate and mediate between residents, WWCs and other concerned institutions; (ii) instating public education and awareness campaigns that will also target gender differences in the use of water and sanitation services; (iii) the implementation of an equitable standard tariff against consumption that also considers the ability to pay of different income groups; and (iv) institutional capacity building that will help WWCs better understand community beliefs, knowledge and practices as well as handle customer relations; ensure maintenance and deal with complaints. Public education and awareness campaigns will be undertaken by local NGO's experienced in dealing with water and sanitation issues in coordination with the WWCs and local city councils. The MOE will have national responsibility for ensuring that the WWCs meet service standards.

6.5 How will the project monitor performance in terms of social development outcomes?

In addition, a participatory approach will be incorporated into the monitoring and evaluation of the project. These will comprise beneficiary assessments that will include residents, the neighborhood councils (where available), representatives of local groups and other concerned NGO's. These assessments, in which communities themselves can help identify the relevant indicators, will gauge changes in attitudes and practices and feed into the public relations and customer service department of the WWCs, with the aim of helping them better understand the issues at hand. These will include gender related concerns and differentiation in the use of water and sanitation services. Elected city councils will continue to be closely consulted.

As part of project preparation a comprehensive social assessment has been launched in each of the cities. This assessment, which is to establish baseline indicators at the level of households, will examine, report and make basic suggestions on: a) current health conditions of the local populations in direct relation to the existing water and wastewater systems, b) the cost to subscribers for completion of individual household connections in relation to existing systems, c) factors that could positively or negatively affect the incidence of connections to the new project; d) the levels of deprivation or poverty severe enough to hinder households from getting physical connections without supplementary support; and e) estimates of actual costs to consumers of water and wastewater systems.

During implementation, a phase II of the survey will be launched in conjunction with the execution of works. These are meant to monitor project impact on the health and income of residents. These surveys will also include both qualitative and quantitative assessments. They will take place in Ahwaz and Shiraz within 6-12 months of the establishment of connections in each of the individual cities. The areas sampled will represent different income levels, but will ensure inclusion of areas with highly vulnerable populations. The findings of these surveys will be shared with all stakeholders, and in particular with city councils.

7. Safeguard Policies:

7.1 Are any of the following safeguard policies triggered by the project?

Policy	Triggered
Environmental Assessment (OP 4.01, BP 4.01, GP 4.01)	Yes
Natural Habitats (OP 4.04, BP 4.04, GP 4.04)	No
Forestry (OP 4.36, GP 4.36)	No
Pest Management (OP 4.09)	No
Cultural Property (OPN 11.03)	Yes
Indigenous Peoples (OD 4.20)	No
Involuntary Resettlement (OP/BP 4.12)	Yes
Safety of Dams (OP 4.37, BP 4.37)	No
Projects in International Waters (OP 7.50, BP 7.50, GP 7.50)	Yes
Projects in Disputed Areas (OP 7.60, BP 7.60, GP 7.60)*	No

7.2 Describe provisions made by the project to ensure compliance with applicable safeguard policies.

Preparation of the project was comprehensive, encompassing an assessment of issues concerning environment, cultural heritage and land acquisition.

Environment and Cultural Property: The potential negative environmental impacts of the proposed project were defined in detail through the EA. The findings of the EA were the basis for the development of an EMP with a special cultural heritage component to address issues related to cultural property in Shiraz and to meet the requirements of OPN 11.03. The EMP defines appropriate prevention and mitigation measures as well as monitoring activities. Institutional strengthening has been also included in the EMP; in addition to the environment and safety officer at the project TSU, the project will provide necessary laboratory equipment to conduct required analyses. The implementation of the EMP will be an integral part of the project supervision process, and a Bank environmental specialist will participate at the supervision missions to monitor the implementation activities. The preparation of the environmental assessment included extensive public consultation and the produced documents will be disclosed at the InfoShop and in public places in Iran.

Projects in International Waters (OP 7.50): While Operational Policy 7.50 is applicable, no notification to other riparian states is required given the rehabilitation nature of the works to be financed under the project.

Cultural Property (OPN 11. 03):

Shiraz. Shiraz, the capital of Fars province, is an ancient city. It lies 35 km north of Persepolis, the most important historic site of ancient Iran, contains several other historic sites, and is an important tourist destination. Most of the works lie outside the city in barren, uninhabited or agricultural lands, well away from any areas of cultural interest. However, the sewerage lines in the city required careful treatment. The final design of the project concerning the pipelines was sent to the Cultural Heritage Organization (CHO), which has legal authority to ensure protection of archeological sites. Following careful review and recommendations, some minor changes were incorporated in the design, and CHO has now issued a permit for construction of pipelines.

Ahwaz. There are no sites of cultural value in the area.

Involuntary Resettlement OPIBP 4.12:

The implementation of the project required includes the expropriation of land for the construction of treatment plants, pumping stations and sewerage lines. Given the common characteristics of this project in each city, a Resettlement Policy Framework has been prepared together with abbreviated resettlement action plans for the first two cities. Iranian law conforms in all major respects to Bank guidelines, and provides for minimization of disturbance, advance notification to owners, compensation of all right holders at full value independently assessed, and right of negotiation and appeal. In no case are residences or current economic activities or livelihoods affected. In Ahwaz there is expropriation of an unused agricultural plot of 67 ha from 13 owners, with compensation currently being negotiated, and two small-undeveloped urban plots for pumping stations from private owners. All other land is public land expropriated by transfer with compensation from other public organizations. Full documentation is available to support the plants, and a Bank social scientist has visited the sites and confirmed the findings of the local social scientist. The project therefore complies with the requirements of OP 4.12.

F. Sustainability and Risks

1. Sustainability:

The sustainability of the project would be ensured through: (i) implementation of agreed upon reforms that cover governance, tariff setting, institutional and regulatory framework, demand management etc.; (ii) at the local level, strengthening the capacity of individual WWCs, in order to operate on a commercial basis and implement a tariff scheme that will ensure, gradually, full cost recovery; (iii) at the national level, strengthening the capacity of the NWWEC for its role in advising and guiding the WWCs, and in monitoring their performance; and (iv) increasing the participation of the private sector in operation and maintenance and other routine activities.

2. **Critical Risks** (reflecting the failure of critical assumptions found in the fourth column of Annex 1):

Risk	Risk Rating	Risk Mitigation Measure
From Outputs to Objective That the WWCs will generate sufficient revenues and build up capacity to pay for their O&M (including water meter maintenance) and part of capital Expenditures.	S	Agreement has been reached with Government on key indicators including financial ones. Government's commitment will ensure adequate tariff increases.
That the WWCs will properly benefit from actions to be taken in capacity building	M	TSU will be staffed with competent experts; in addition, a comprehensive training program will help raise WWCs capacity.
That an adequate tariff scheme will be implemented.	S	See Above
That an efficient project management capacity can be established; and that contracts will be awarded to well qualified contractors.	M	See Above
That the sector will implement reforms according to agreed upon strategy	S	Agreement has been reached with Government on sector reforms (institutions, tariffs, etc.) that will be implemented in three phases within the coming 3 years. These reforms are linked to future Bank lending.
Procurement of works, goods and services	M	This is a generic and controversial issue between the GOI and the Bank which is being addressed by obtaining an exemption by the GOI in order to use Bank procurement guidelines for the first year of implementation until a general procurement framework is agreed upon.
From Components to Outputs That local sources of financing will be made available as needed and that connections and pertinent connection fees will be collected/paid for as projected	M	Local funding is modest and Government is committed to significantly contribute to financing the investment program of the project, especially the wastewater component.
Overall Risk Rating	M	

Risk Rating - H (High Risk), S (Substantial Risk), M (Modest Risk), N(Negligible or Low Risk)

3. **Possible Controversial Aspects:**

- Bank Procurement and financial procedures: The implementation of on-going projects has been hampered by MPO's reluctance to apply Bank guidelines procedures systematically. The Bank is currently working with the authorities on a framework that will cover all fiduciaries aspects. In addition, in the context of the proposed project, assurances were obtained that all procurement packages will be carried out in accordance to the Bank guidelines. It was agreed during negotiations (see paragraph 6 of minutes of negotiation) that the Government will issue an approval to that effect, no later than July 31, 2004 to cover procurement packages for the first year of the project, until an agreement is reached between the Government and the Bank on a general framework.
- MPO not contributing financially to the projects.

G. Main Loan Conditions:

1. Conditions of Effectiveness:

- (a) Each of the Ahwaz and Shiraz Subsidiary Loan Agreements has been authorized and executed on behalf of the Borrower;
- (b) Each of the Ahwaz and Shiraz Project Agreements has been authorized;
- (c) TSU has been established within each of the WWCs with competent staff, particularly: Project Manager, Procurement and Financial Management specialists; and
- (d) NWWEC has employed a Project Manager, an engineer, a procurement specialist and an environmental specialist with adequate qualification and experience.

2. Other [classify according to covenant types used in the Legal Agreements.]


Having dated covenants in the loan agreements that will include main targets agreed upon with Government particularly, working ratio, 0.75 by end of project, UFW to reach 27% by end of project and accounts receivable /collection ratio to reach 4 months by end of project (see Annex 13)

H. Readiness for Implementation

- 1. a) The engineering design documents for the first year's activities are complete and ready for the start of project implementation.
- 1. b) Not applicable.
- 2. The procurement documents for the first year's activities are complete and ready for the start of project implementation.
- 3. The Project Implementation Plan has been appraised and found to be realistic and of satisfactory quality.
- 4. The following items are lacking and are discussed under loan conditions (Section G):

I. Compliance with Bank Policies


- 1. This project complies with all applicable Bank policies.
- 2. The following exceptions to Bank policies are recommended for approval. The project complies with all other applicable Bank policies.



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Annex 1: Project Design Summary

ISLAMIC REPUBLIC OF IRAN

AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT

Hierarchy of Objectives	Key Performance Indicators	Data Collection Strategy	Critical Assumptions
Sector-related CAS Goal:	Sector Indicators:	Sector/ country reports:	(from Goal to Bank Mission)
<p>1. Initiate policy dialogue on the reform program; and</p> <p>2. Initiate targeted lending in key social and environment areas.</p>	<p>1. Changes to take place in the process of tariff approvals; and adjustments in tariff structures and levels and institutional and regulatory framework.</p> <p>2. Compliance with socio-economic, health and environmental criteria.</p>	<p>Progress reporting in conjunction with implementation of recommendations made in the agreed upon sector reforms in particular Sector Note, which focus on:</p> <ul style="list-style-type: none"> - Regulatory framework; - Institutions; - Tariffs; and - Capacity Building - Environment/Health Issues 	<p>1. Government will deliver commitments on its related to tariff approvals and tariff adjustments.</p> <p>2. That the government commitment in strengthening the capacity of sector institutions and prioritization of sector investments and implement agreed upon sector strategy reforms.</p>
Project Development Objective:	Outcome / Impact Indicators:	Project reports:	(from Objective to Goal)
<p>(a) to enhance the quality of life in the proposed cities, Ahwaz and Shiraz, particularly in poor areas by: (i) improving access to satisfactory water supply and significantly increasing coverage of sanitation services in significant proportions; and (ii) improving environmental, hygiene, and health conditions, as well as promoting, as well as promoting reuse of treated effluents.</p> <p>(b) to strengthen and develop the capacity of Ahwaz and Shiraz Water and Wastewater Companies (WWCs) and assist the latter in improving their efficiency, sustainability and financial autonomy, and</p> <p>(c) to initiate sector reforms, particularly with respect to institutional arrangements, the regulatory framework, demand management, as well as prepare a sanitation strategy.</p>	<ul style="list-style-type: none"> - Increase in the number of population connected to wastewater collection and disposal services. - Decrease in water related diseases. - Increase in quantities of treated effluents to be used in irrigation. - Generation of sufficient revenues to cover O&M and reasonable portion of capital investment costs. - Decrease in UfW from 41% to 27% in five years. - Initiate study on tariff restructuring and on tariff adjustments - Target of working ratio to reach 0.75 by end of project. 	<p>The development of adequate progress and monitoring systems.</p>	<p>(a) That the demand for connections will be sustained and that a health program is adopted.</p> <p>(b) That there will be WWCs commitment to capacity building and that the WWCs will develop adequate O&M capacity.</p> <p>(c) That a new tariff scheme is studies and proposed in the 4th FYDP.</p>

Hierarchy of Objectives	Key Performance Indicators	Data Collection Strategy	Critical Assumptions
Output from each Component:	Output Indicators:	Project reports:	(from Outputs to Objective)
<p>(a) For Water Supply:</p> <ul style="list-style-type: none"> - water production transmission and distribution facilities in Ahwaz; - water zoning distribution and storage facilities in Shiraz; <p>(b) For Wastewater:</p> <ul style="list-style-type: none"> - wastewater collection, treatment and disposal facilities in Ahwaz; - wastewater collection, treatment and disposal facilities in Shiraz; <p>(c) Provision of operation and maintenance equipment and water meters.</p> <p>(d) Capacity building, TA, training and consulting services.</p>	<ul style="list-style-type: none"> - Increase in water production capacity by 12,000 m³/d and 60,000 m³/d in Ahwaz and Shiraz, respectively. - Increase of numbers of house connections, by 23,000 and 50,000 in Ahwaz and Shiraz, respectively. - Establishment of efficient financial, technical environmental and procurement systems in the TSU of the WWCs and NWVEC. - Reach an UfW of 27% by the end of the project in the two cities. Also decrease in A/R to 4 months - Seminars and workshops for WWCs and other sector institutions on the following topics: technical, procurement, financial management, environment and utility management. 	<p>The development of adequate progress and monitoring systems.</p>	<p>That an efficient project management capacity can be established; and that contracts will be awarded to well qualified contractors.</p> <p>That the WWCs will develop adequate capacity in operation and maintenance.</p> <p>That the WWCs will develop capacity in areas of technical, procurement, financial management, environment, and utility management.</p>
Project Components / Sub-components:	Inputs: (budget for each component)	Project reports:	(from Components to Outputs)
<p>(a) Rehabilitation/extension of the existing water supply networks in:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Ahwaz <input type="checkbox"/> Shiraz <p>(b) Extension of wastewater collection and disposal facilities in:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Ahwaz <input type="checkbox"/> Shiraz <p>(c) Provision of operation and consumer water meters for WWCs.</p> <p>(d) Capacity building, TA, training and consulting services</p>	<ul style="list-style-type: none"> - US\$ 77.06 million - US\$ 44.4 million - US\$ 157.4 million - US\$ 154.06 million - US\$ 2.3 million - US\$ 31.86 million 	<p>The development of adequate progress and monitoring systems and of reporting.</p>	<p>That local sources of financing will be made available as needed, and that connections and pertinent connection fees will be achieved/paid for as projected.</p>

Annex 2: Detailed Project Description

ISLAMIC REPUBLIC OF IRAN AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION

The project consist of the following four components, details of the breakdown of components 1 and 2 are presented in Annex 2A, (Costs include physical and price contingencies, figures in parenthesis are the amounts to be financed by Bank Loan):

Project Component 1 – US\$ 121.41 million (US\$ 61.74 million)

Rehabilitation, improvement and expansion of water systems and facilities

This component will provide funds to improve water services in Ahwaz and Shiraz based on their comprehensive development plans. This component is divided into the following sub-components:

1.a Water Resources – US\$ 18.98 million (US\$ 9.49 million)

In Ahwaz, this component will finance the rehabilitation of the Emergency Water Treatment Plant and Water Treatment Plants 1 and 2, as well as the expansion of Water Treatment Plant 2.

In Shiraz, this component will finance the drilling of 17 wells.

1.b Water Supply- US\$ 102.43 million (US\$ 52.25 million)

In Ahwaz and Shiraz, This component will finance the rehabilitation and expansion of water networks including transmission lines, as well as the construction of new reservoirs and new pumping stations.

Project Component 2 - US\$ 311.46 million (US\$ 183.39 million)

Rehabilitation, improvement and expansion of wastewater systems and facilities

This component will provide funds to improve wastewater services in Ahwaz and Shiraz based on their comprehensive development plans. This component is divided into the following sub-components; details of the breakdown of these subcomponents are presented in Annex 2a:

2.a Wastewater trunk mains- US\$ 121.59 million (US\$ 64.00 million)

In Ahwaz, this component will provide financing for the construction of the remaining segments of the Eastern and Western trunk mains 60 km, which are the main wastewater conveyors to the two wastewater treatment plants in the two zones.

In Shiraz, this component will provide financing for the construction of the remaining segments of the Emergency Zone trunk main and the Long-term Zone trunk main, which are the main wastewater conveyors to the two wastewater treatment plants.

2.b Laterals and interceptors- US\$ 89.43 million (US\$ 49.64 million)

In Ahwaz, this component will finance the construction of 266 km of laterals and interceptors as well as the construction of 16 pumping stations.

In Shiraz, this component will finance the construction of 740 km of laterals and interceptors.

2.c House connections – US\$ 20.29 million (US\$ 10.15 million)

About 23,000 and 50,000 house connections will be implemented under the Project in Ahwaz and Shiraz.

2.d Wastewater treatment plants and outfalls – US\$ 80.14 million (US\$ 59.60 million)

In Ahwaz, this component will provide financing for the rehabilitation of the wastewater treatment plant in the west of Ahwaz (Choneibeh), as well as the construction of the first module of the wastewater treatment plant in the east of Ahwaz.

In Shiraz, this component will provide financing for the outfall of the Emergency and the Long-term treatment plants as well as the construction of the first and second modules of the Long-term treatment Plant.

Project Component 3 - US\$ 2.31 million (US\$ 1.85 million)

Provision of operation and maintenance equipment and consumer water meters for WWCs- **US\$ 2.31 million (US\$ 1.85 million)**.

Project Component 4 - US\$ 31.86 million (US\$ 29.31 million)

Capacity building, Technical Assistance (TA), training and consulting services, which will include:

- Establishment of TSUs at the NWWEC and at each WWC- **US\$ 5.09 million (US\$ 4.69 million)**.
- Provision of TA and consulting services for institutional and capacity building including training of NWWCs staff. This would include the following studies: - **US\$ 2.79 million (US\$ 2.56 million)**.
 - Optimization of Sector Institutions. The purpose of the study is to clarify institutional responsibilities and accountabilities so as to derive the full benefits from the existing legal framework. The study will also focus on analyzing WWCs' activities and propose ways by which WWCs will be provided greater investment and financial autonomy.
 - Demand Management Programs in Water and Wastewater Companies, including leak detection exercises. This study will aim at helping WWCs identify and implement policies and instruments that will reduce consumers' losses and wastage. In order to enable them to do so, it is necessary to make a series of decisions both relating to the tariff and subsidy policies and to how the WWCs will manage the demand (Annex 13a).
 - Development of National Sanitation Strategy and Action Plan for sanitation and Hygiene in Iran. The purpose of this assignment is to assist the Government of Iran (GOI) in the development of national sanitation strategy that would increase the effectiveness and efficiency of sector investments. This will be done by providing an overall policy framework to guide decision-making and resource allocation within the sector.
 - Capacity Building Program. It is designed to strengthen the capacity of sector institutions, particularly WWCs and the NWWEC in priority areas such as: governance, financial and customers' management, operations and administration, and environmental health impact
- Provision of consulting services for engineering design, construction supervision, and any other technical studies that will be identified during the course of project preparation. This component also includes the cost of D-B-O contract, its design and supervision- **US\$19.04 million (US\$ 17.51 million)**.
- Environmental Management Plan (EMP), including mitigation measures and monitoring activities to be implemented during design, construction and operation. The plan covers key issues such as water quality and quantity, treated effluent, industrial discharges, health and safety as well as sludge re-use and disposal. Technical assistance and institutional strengthening to all concerned parties (WWCs, DOE, Ministry of Health and Medical Education and Ministry of Agriculture and Jihad) are also incorporated into the EMP- **US\$ 4.94 million (US\$ 4.55 million)**.

Ahwaz

		Project component	Cost (Bank Financing) US\$ million
1		Rehabilitation, improvement and expansion of water systems and facilities	77.06 (39.44)
	1A	Water resources: this sub-component includes the rehabilitation of the three existing water treatment plants by the construction of pre-sedimentation units as well as improving the filter beds into dual media layers, provision of activated carbon and ozonation in Treatment Plant 1 and 2. Moreover, extension of Treatment Plant 2 will be implemented to increase its capacity from 4.05 m ³ /s to 5.2 m ³ /s and extend the intake 20 m inside the river to ensure withdrawing acceptable water quality. In light of the lack of sufficient local experience with such technologies, a design and construct contract whereby services from international experience is acquired is being considered for the improvement and expansion of Treatment Plants. This component also includes renovation and replacement of various mechanical and civil processing units and installation of flow meters and data loggers at the inlets and outlets of treatment plants 1&2.	16.20 (8.10)
	1B	Water Supply: This sub-component includes the following works:	60.86 (31.34)
		Laying of 10 km steel transmission pipelines from the water treatment plants 1 and 2 to the storage reservoirs, diameter ranges from 700- 2000 mm.	
		Rehabilitation and extension of the water network with diameters ranging from 200-600 mm with a total length of 266 km.	
		Construction of five concrete square reservoirs of 50,000 m ³ capacity each in Hasir Abad area as well as construction of required pumping stations.	
2		Rehabilitation, improvement and expansion of wastewater systems and facilities	157.40 (92.78)
	2A	Construction of 60 km of concrete trunk mains in east and west of Ahwaz, out of which 2.6 km of Western trunk main with size 1200 mm and 3.5 km of the eastern trunk main with size 1600 mm will be constructed as tunnels. The eastern trunk main will collect wastewater from the eastern basin and transfer it to the proposed new treatment plant, while the western trunk main will collect the wastewater from the western basin and transfer it to the existing Choneibeh treatment plant.	89.52 (44.76)
	2B	Construction of 162 km of PE laterals and interceptors and 16 lift and pump stations. Works under this sub-component will cover an area of 1465 ha	23.10 (16.48)
	2C	Construction of 23,575 additional house connections.	5.75 (2.88)
	2D	This sub-component includes the following works: Rehabilitation and expansion of the existing treatment plant at the west of Ahwaz, Choneibeh, to meet its design capacity of 200 P.E. This will be done by replacing various mechanical parts, repairing of concrete parts, adding a new unit that will enable treating a flow of 54,575 m ³ /d and providing sludge drying lagoons and storage facilities. Construction of first two modules of the treatment plant with a capacity of 522 P.E, treating a flow of 102,000 m ³ /d. The proposed treatment process is activated sludge with nitrification and de-nitrification. As this treatment plant is proposed to be constructed as a DBO, its design will be finalized after tendering.	39.03 (28.67)

Shiraz

		Project component	Cost (Bank Financing) US\$ million
1		Rehabilitation, improvement and expansion of water systems and facilities	44.35 (22.30)
	1A	Water resources: this sub-component includes the drilling and equipping of 17 new wells tapping Karstic water resources. Total water abstracted by these wells amounts to 82,000 m ³ /d.	2.78 (1.39)
	1B	Water Supply: This sub-component includes the following works: <ul style="list-style-type: none"> - Laying of 34 km GRP transmission pipelines feeding distribution system and transmitting water from wells to reservoirs. Diameters range between 500-1200 mm. - Rehabilitation and extension of the water network including installation of pressure reducing valves. Diameters range between 200-400 mm with a total length of 235 km of PE pipes. - Construction of four concrete reservoirs Sonboleh (7500m³), Abeverdi (300 m³), R8 (20,000m³), and R20 as well as construction of two pumping stations. 	41.57 (20.91)
2		Rehabilitation, improvement and expansion of wastewater systems and facilities	154.06 (90.61)
	2A	Construction of 95 km of concrete trunk mains in the emergency and long-term areas. Diameters range between 500- 1200 mm.	32.08 (19.25)
	2B	Construction of 740 km of PE laterals and interceptors. Works under this sub-component will cover an area of 5496 ha	66.33 (33.17)
	2C	Construction of 50,000 additional house connections.	14.54 (7.27)
	2D	This sub-component includes the following works: <ul style="list-style-type: none"> - Construction of two modules with a total capacity of 100,000 m³/d in the long-term zone. To optimize the efficiency of the treatment plant, each module is designed to be capable of operation in four independent streams. However, as this treatment plant is proposed to be built under DBO contract. Its design will be finalized during the tendering process. - Construction of 20 km outfalls to discharge treated effluent for emergency plant and long-term treatment plants as well as sludge storage site. 	41.11 (30.93)

Annex 3: Estimated Project Costs

ISLAMIC REPUBLIC OF IRAN AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION

Project Cost by Component

Ahwaz

Project Component	Total	Local	Foreign
	US \$ million	US \$ million	US \$ million
Investments			
Water			
Civil Works			
Rehabilitation and Upgrading of Water Treatment Plants			
Treatment Plant 1	1.59	0.80	0.80
Treatment Plant 2	3.10	1.55	1.55
Urgent WTP	0.14	0.07	0.07
Sub-total	4.84	2.42	2.42
Expansion of Water Treatment Plant 2			
Expansion	5.14	2.57	2.57
Transmission Line to WTP2	1.31	0.79	0.52
Additional capacity for Intake	0.63	0.38	0.25
Sub-total	7.08	3.73	3.35
Construction of New Reservoirs			
Reservoir 1	2.76	1.80	0.97
Reservoir 2	2.76	1.80	0.97
Reservoir 3	2.76	1.80	0.97
Reservoir 4	2.76	1.80	0.97
Reservoir 5	2.76	1.80	0.97
Sub-total	13.81	8.98	4.83
Construction of New Pumping Station	2.11	1.27	0.85
Rehabilitation of Water Network	15.24	9.90	5.33
Distribution Lines	3.62	2.35	1.27
Supply Lines	3.81	2.48	1.33
Sub-Total	50.51	31.13	19.38
Detailed Design Water	0.61	0.12	0.49
DBO Preparation	0.57	0.11	0.46
Construction Supervision (3%)	1.52	1.21	0.30
Sub-Total Water	53.20	32.58	20.62
Wastewater			
Civil Works			
East Trunk Main	35.49	17.74	17.74
West Trunk Main	28.49	14.24	14.24
Laterals	4.50	3.15	1.35
House connections	3.52	2.82	0.70
Pumping Stations	11.58	6.95	4.63
Construction of East Treatment Plant			
Civil Works	8.87	4.44	4.44
Electrical & Mechanical Equipments	13.31	2.66	10.65
Sub-total	22.18	7.10	15.08
Rehabilitation and Expansion of West Treatment Plant	5.41	2.70	2.70
Sub-Total	111.17	54.71	56.46
Detailed Design Sewerage	1.28	0.26	1.03
DBO Preparation	1.11	0.22	0.89
Construction Supervision (3%)	2.67	2.14	0.53
Sub-Total Wastewater	116.23	57.32	58.91

Operations and Maintenance Equipment	1.00	0.20	0.80
Sub-Total Investments	170.44	90.10	80.33
Studies			
Environmental Monitoring System	2.53	0.51	2.02
Studies	0.50	0.10	0.40
Leak detection	0.20	0.04	0.16
Sub-Total Studies	3.23	0.65	2.58
Institutional Strengthening			
Capacity Building	0.50	0.10	0.40
Training	0.50	0.10	0.40
Sub-Total Institutional Strengthening	1.00	0.20	0.80
Technical Support Unit	1.80	1.44	0.36
Sub-Total Technical Support Unit	1.80	1.44	0.36
<u>Total Baseline Cost</u>	<u>176.46</u>	<u>92.39</u>	<u>84.07</u>
Physical Contingencies	20.01	10.78	9.22
Price Contingencies	56.47	49.99	6.48
<u>Total Project Cost</u>	<u>252.94</u>	<u>153.16</u>	<u>99.78</u>

Shiraz

<u>Project Component</u>	Total US \$ million	Local US \$ million	Foreign US \$ million
Investments			
Water			
Civil Works			
Transmission Lines	13.85	9.00	4.85
Construction of New Reservoirs			
Reservoir 8	1.40	0.91	0.49
Reservoir 10	2.60	1.69	0.91
Reservoir 18	0.24	0.16	0.08
Reservoir 20	0.70	0.45	0.24
Sub-total	4.94	3.21	1.73
Network			
Distribution Lines	1.43	0.93	0.50
Supply Lines	5.57	3.62	1.95
Rehabilitation of Water Network	3.33	2.17	1.17
Drilling of Wells	1.78	1.16	0.62
Sub-total	12.11	7.87	4.24
Pumping Stations	0.32	0.19	0.13
Sub-Total	31.22	20.28	10.94
Detailed Design Water	0.47	0.09	0.37
Construction Supervision (3%)	0.94	0.75	0.19
Sub-Total	32.63	21.12	11.51
Wastewater			
Civil Works			
Trunk Main Emergency Zone	3.34	1.33	2.00
Trunk Main Long Term	20.82	8.33	12.49
Laterals	14.29	10.00	4.29
Interceptors	29.48	20.64	8.84

House connections	9.01	7.21	1.80
Treatment Plant			
Construction of outfall of emergency treatment plant	4.17	1.46	2.71
Construction of Sludge Storage at Emergency WWTP	1.43	0.50	0.93
Construction of outfall of Long Term Zone	5.12	2.56	2.56
Treatment Plant for Long Term Zone First Module	9.40	4.70	4.70
Treatment Plant for Long Term Zone Second Module	8.45	4.23	4.23
Sub-total	28.57	13.45	15.13
Sub-Total	105.50	60.95	44.55
Detailed Design Sewerage	1.26	0.25	1.00
DBO Preparation	1.15	0.23	0.92
Construction Supervision (3%)	2.48	1.98	0.50
Sub-Total	110.38	63.41	46.97
Operations and Maintenance Equipment	1.00	0.20	0.80
Sub-Total	144.01	84.74	59.27
Studies			
Environmental Monitoring System	1.76	0.35	1.41
Studies	0.50	0.10	0.40
Leak detection	0.20	0.04	0.16
Sub-Total	2.46	0.49	1.97
Institutional Strengthening			
Capacity Building	0.50	0.10	0.40
Training	0.50	0.10	0.40
Sub-Total	1.00	0.20	0.80
Technical Support Unit	1.80	1.44	0.36
Sub-Total Technical Support Unit	1.80	1.44	0.36
<u>Total Baseline Cost</u>	<u>149.27</u>	<u>86.87</u>	<u>62.40</u>
Physical Contingencies	14.89	8.97	5.92
Price Contingencies	49.94	45.44	4.50
<u>Total Project Cost</u>	<u>214.10</u>	<u>141.28</u>	<u>72.82</u>
<u>Ahwaz and Shiraz</u>			
<u>Total Baseline Cost</u>	<u>325.73</u>	<u>179.26</u>	<u>146.47</u>
Physical Contingencies	34.90	19.75	15.14
Price Contingencies	106.41	95.43	10.98
<u>Total Project Cost</u>	<u>467.03</u>	<u>294.43</u>	<u>172.60</u>
Front-end fee	2.79		2.79
<u>Total Financing Required</u>	<u>469.82</u>	<u>294.43</u>	<u>175.39</u>

Project Cost by Category

Ahwaz

	Total US million	Local US million	Foreign US million
Works	234.47	143.69	90.77
Goods	1.15	0.30	0.85
Services	16.74	9.02	7.73
Training	0.58	0.15	0.43
Total Project Cost	<u>252.94</u>	<u>153.16</u>	<u>99.78</u>

Shiraz

	Total US million	Local US million	Foreign US million
Works	198.40	133.13	65.27
Goods	1.15	0.30	0.85
Services	13.97	7.70	6.27
Training	0.58	0.15	0.43
Total Project Cost	<u>214.10</u>	<u>141.28</u>	<u>72.82</u>

Ahwaz & Shiraz

	Total US million	Local US million	Foreign US million
Works	432.87	276.83	156.04
Goods	2.31	0.60	1.71
Services	30.71	16.71	14.00
Training	1.15	0.30	0.85
Total Project Cost	467.03	294.44	172.60
Front-end Fee	2.79		2.79
Total Financing Required	<u>469.82</u>	<u>294.43</u>	<u>175.39</u>

Annex 3: Estimated Project Costs
ISLAMIC REPUBLIC OF IRAN: WATER SUPPLY AND SANITATION PROJECT

Ahwaz (US \$ Million)

Investments	Baseline Cost													
	Fiscal Year		FY05		FY06		FY07		FY08		FY09		Local	Foreign
	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign		
Water														
Civil Works														
Rehabilitation and Upgrading of Water Treatment Plants														
Treatment Plant 1	1.59	0.80	0.80	0.00	0.00	0.00	0.35	0.89	0.44	0.44	0.00	0.00	0.00	0.00
Treatment Plant 2	3.10	1.85	1.85	0.00	0.00	0.00	1.38	0.69	1.73	0.86	0.86	0.00	0.00	0.00
Urgent WTP	0.14	0.07	0.13	0.06	0.06	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Sub-total	4.84	2.42	2.42	0.12	0.12	0.08	1.05	2.61	1.31	1.31	0.00	0.00	0.00	0.00
Expansion														
East Trunk Water Treatment Plant 2	5.14	2.57	2.57	0.00	0.00	0.00	2.28	1.14	2.88	1.43	1.43	0.00	0.00	0.00
Transmission Line to WTP2	1.31	0.79	0.52	0.00	0.00	0.00	0.00	0.00	0.64	0.38	0.26	0.67	0.40	0.27
Additional capacity for intake	0.63	0.38	0.25	0.00	0.00	0.00	0.00	0.31	0.18	0.18	0.12	0.32	0.19	0.13
Sub-total	7.08	3.73	3.35	0.00	0.00	0.00	2.28	1.14	3.81	2.00	1.81	0.89	0.60	0.40
Construction of New Reservoirs														
Reservoir 1	2.76	1.80	0.97	0.60	0.52	0.28	1.38	0.90	0.48	0.58	0.38	0.20	0.00	0.00
Reservoir 2	2.76	1.80	0.97	0.00	0.00	0.00	0.80	0.52	1.38	0.90	0.48	0.38	0.20	0.00
Reservoir 3	2.76	1.80	0.97	0.00	0.00	0.00	0.00	0.00	0.80	0.52	0.78	1.38	0.90	0.48
Reservoir 4	2.76	1.80	0.97	0.00	0.00	0.00	0.00	0.00	0.80	0.52	0.78	1.38	0.90	0.48
Reservoir 5	2.76	1.80	0.97	0.00	0.00	0.00	0.00	0.00	0.34	0.22	1.38	0.80	0.48	1.04
Sub-total	13.81	8.98	4.83	0.60	0.52	0.28	2.18	1.42	4.76	3.45	2.24	4.73	3.07	1.65
Construction of New Pumping Station	2.11	1.27	0.85	0.00	0.00	0.00	0.23	1.14	0.96	1.41	0.84	0.56	0.47	0.28
Rehabilitation of Water Network	15.24	9.80	5.33	0.51	0.33	0.18	3.04	1.98	4.57	2.97	1.60	4.07	2.65	1.42
Distribution Lines	3.62	2.35	1.27	0.20	0.13	0.07	1.00	0.65	1.21	0.78	0.42	1.01	0.65	0.20
Supply Lines	3.81	2.48	1.33	0.21	0.14	0.07	1.06	0.69	1.27	0.83	0.44	1.06	0.69	0.37
Sub-Total	50.51	31.13	19.38	1.65	1.18	0.67	11.90	7.06	4.83	18.32	10.97	7.35	12.33	7.34
Detailed Design Water	0.61	0.12	0.49	0.41	0.08	0.32	0.20	0.04	0.16	0.00	0.00	0.00	0.00	0.00
DB Preparation	0.57	0.11	0.46	0.57	0.11	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Supervision	1.52	1.21	0.30	0.05	0.04	0.01	0.36	0.29	0.07	0.55	0.44	0.11	0.37	0.30
Sub-Total Water	53.20	32.58	20.62	2.88	1.42	1.46	12.46	7.39	5.07	18.87	11.41	7.46	12.70	8.24
Wastewater														
Civil Works														
East Trunk Main	35.49	17.74	17.74	6.01	3.01	3.01	12.05	6.03	6.03	5.69	2.84	2.84	8.43	4.22
East Trunk Main	28.14	14.07	14.07	3.00	1.50	1.50	4.84	2.32	2.32	6.36	3.18	3.18	10.81	5.40
Leak Detection	4.50	3.15	1.35	0.00	0.00	0.00	1.27	0.88	0.38	1.61	1.13	0.48	1.24	0.86
House connections	3.52	2.82	0.70	0.00	0.00	0.00	0.88	0.70	0.18	0.88	0.71	0.18	0.88	0.70
Pumping Stations	11.58	6.95	4.63	0.00	0.00	0.00	5.55	3.33	2.22	5.79	3.47	2.31	0.25	0.15
Construction of East Treatment Plant														
Civil Works	8.87	4.44	4.44	0.00	0.00	0.00	0.00	0.00	3.24	1.62	1.62	3.55	1.77	1.77
Electrical & Mechanical Equipments	13.31	2.86	10.65	0.00	0.00	0.00	0.00	0.00	4.86	0.97	3.89	5.32	1.06	4.26
Sub-total	22.18	7.10	15.08	0.00	0.00	0.00	0.00	0.00	8.10	2.59	5.51	8.87	6.03	5.21
Rehabilitation and Expansion of West Treatment Plant	5.41	2.70	2.70	0.19	0.09	0.09	2.89	1.45	1.45	2.33	1.17	1.17	0.00	0.00
Sub-Total	111.17	54.71	56.46	8.79	4.39	4.39	27.28	14.71	12.57	30.75	15.08	16.67	30.48	14.18
Detailed Design Sewerage	1.28	0.26	1.03	0.85	0.17	0.68	0.43	0.09	0.34	0.00	0.00	0.00	0.00	0.00
DBO Preparation and Supervision	1.11	0.22	0.89	0.15	0.03	0.12	0.27	0.05	0.21	0.27	0.05	0.21	0.27	0.05
Construction Supervision	2.67	2.14	0.53	0.26	0.21	0.05	0.82	0.65	0.16	0.68	0.54	0.14	0.65	0.13
Sub-Total Wastewater	116.23	57.32	58.91	10.06	4.81	5.25	28.80	15.51	13.29	31.70	15.68	16.02	31.40	14.75
Operations and Maintenance Equipment														
Sub-Total Investments	170.44	80.10	80.33	13.11	6.26	6.85	41.46	22.94	18.52	50.77	27.13	23.64	44.30	23.03
Studies														
Environmental Monitoring Plan	2.53	0.51	2.02	0.43	0.09	0.35	0.52	0.10	0.42	0.52	0.10	0.42	0.52	0.10
Studies	0.50	0.10	0.40	0.08	0.02	0.07	0.17	0.03	0.13	0.17	0.03	0.13	0.08	0.02
Leak detection	0.20	0.04	0.16	0.02	0.00	0.02	0.04	0.01	0.04	0.01	0.04	0.01	0.04	0.01
Sub-Total Studies	3.23	0.65	2.58	0.54	0.11	0.43	0.73	0.15	0.59	0.73	0.15	0.59	0.85	0.11
Institutional Strengthening														
Capacity Building	0.50	0.10	0.40	0.06	0.01	0.04	0.11	0.02	0.09	0.11	0.02	0.09	0.11	0.02
Training	0.50	0.10	0.40	0.05	0.02	0.07	0.10	0.02	0.08	0.10	0.02	0.08	0.10	0.02
Sub-Total Institutional Strengthening	1.00	0.20	0.80	0.14	0.03	0.11	0.21	0.04	0.17	0.21	0.04	0.17	0.22	0.04
Technical Support Unit														
Sub-Total Technical Support Unit	1.80	1.44	0.36	0.31	0.25	0.06	0.37	0.30	0.07	0.37	0.30	0.07	0.37	0.30
Total Project Cost	176.46	92.39	84.07	14.10	6.84	7.45	42.78	23.43	19.35	52.10	27.62	24.48	45.55	23.50
Physical Contingencies	20.01	10.76	9.22	1.19	0.65	0.55	4.85	2.77	2.08	6.23	3.35	2.88	5.22	2.72
Price Contingencies	56.47	49.99	6.48	1.26	1.08	0.18	7.63	0.86	15.88	13.86	1.82	19.70	17.43	2.27
Total Project Cost	252.94	153.16	99.78	16.55	8.37	8.18	55.25	32.96	22.29	74.01	44.83	26.18	70.47	43.66

Annex 3: Estimated Project Costs
ISLAMIC REPUBLIC OF IRAN: WATER SUPPLY AND SANITATION PROJECT

Ahwaz (US \$ Million)

Investments	Cost with Physical Contingencies															
	FY05		FY06		FY07		FY08		FY09		FY10		FY11			
	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	
Water																
Civil Works																
Rehabilitation and Upgrading of Water Treatment Plants																
Treatment Plant 1	1.75	0.87	0.88	0.00	0.00	0.00	0.78	0.39	0.39	0.97	0.49	0.49	0.00	0.00	0.00	
Treatment Plant 2	3.41	1.71	1.70	0.00	0.00	0.00	1.51	0.76	0.76	1.90	0.95	0.95	0.00	0.00	0.00	
Urgent WTP	0.16	0.08	0.08	0.14	0.07	0.07	0.21	0.11	0.11	0.00	0.00	0.00	0.00	0.00	0.00	
Sub-total	5.32	2.66	2.66	0.14	0.07	0.07	2.31	1.15	1.15	2.87	1.44	1.44	0.00	0.00	0.00	
Expansion																
East-West Water Treatment Plant 2	5.66	2.83	2.83	0.00	0.00	0.00	2.51	1.25	1.25	3.15	1.57	1.57	0.00	0.00	0.00	
Expansion	1.44	0.86	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.28	0.74	0.44	0.30	
Transmission Line to WTP2	0.69	0.41	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.20	0.13	0.14	0.00	
Additional capacity for intake	7.79	4.11	3.68	0.00	0.00	0.00	2.51	1.25	1.25	4.19	2.20	1.99	0.00	0.00	0.00	
Sub-total	15.68	8.03	7.39	0.00	0.00	0.00	5.02	2.50	2.50	7.34	3.73	3.56	0.00	0.00	0.00	
Construction of New Reservoirs																
Reservoir 1	3.18	2.06	1.11	0.92	0.60	0.32	1.59	1.03	0.56	0.67	0.43	0.23	0.00	0.00	0.00	
Reservoir 2	3.18	2.06	1.11	0.00	0.00	0.00	0.92	0.60	0.32	1.59	1.03	0.56	0.00	0.00	0.00	
Reservoir 3	3.18	2.06	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Reservoir 4	3.18	2.06	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Reservoir 5	3.18	2.06	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Sub-total	15.68	10.32	5.56	0.92	0.60	0.32	2.51	1.63	0.88	3.97	2.58	1.39	0.00	0.00	0.00	
Construction of New Pumping Station	2.33	1.40	0.93	0.00	0.00	0.00	0.26	0.16	0.10	1.55	0.93	0.62	0.31	0.21	0.00	
Rehabilitation of Water Network	17.52	11.30	6.13	0.58	0.38	0.20	3.50	2.27	1.22	5.26	3.42	1.84	4.88	3.04	1.84	
Distribution Lines	4.16	2.71	1.46	0.23	0.15	0.08	1.15	0.75	0.40	1.39	0.90	0.49	1.16	0.75	0.41	
Supply Lines	4.38	2.85	1.53	0.24	0.16	0.08	1.22	0.79	0.43	1.46	0.95	0.51	1.22	0.79	0.43	
Sub-total	57.38	35.43	21.95	2.12	1.35	0.76	13.45	8.01	5.44	20.88	12.41	8.27	14.11	9.09	5.02	
Detailed Design Water	0.61	0.12	0.49	0.41	0.08	0.32	0.20	0.04	0.16	0.00	0.00	0.00	0.00	0.00	0.00	
DB Preparation	0.57	0.11	0.46	0.57	0.11	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Construction Supervision	1.72	1.38	0.34	0.06	0.05	0.01	0.40	0.32	0.08	0.62	0.50	0.12	0.42	0.34	0.08	
Sub-Total Water	60.28	37.04	23.24	3.16	1.60	1.56	14.06	8.37	5.69	21.30	12.91	8.39	14.53	9.43	5.10	
Wastewater																
Civil Works																
East Trunk Main	39.03	19.52	19.52	6.61	3.31	3.31	13.26	6.63	6.63	18.00	9.00	9.00	3.13	3.13	3.13	
West Trunk Main	31.32	15.67	15.67	5.26	2.63	2.63	7.60	3.80	3.80	10.36	5.18	5.18	1.89	1.89	1.89	
Leak	1.97	0.99	0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
House connections	3.88	3.10	0.78	0.00	0.00	0.00	1.38	0.98	0.42	1.77	1.24	0.53	1.36	0.95	0.41	
Pumping Stations	13.32	7.69	5.63	0.00	0.00	0.00	0.97	0.77	0.19	0.97	0.77	0.19	0.97	0.77	0.19	
Construction of East Treatment Plant	9.76	4.88	4.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Electrical & Mechanical Equipments	15.30	3.08	12.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Sub-total	25.06	7.94	17.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rehabilitation and Expansion of West Treatment Plant	6.22	3.11	3.11	0.21	0.11	0.11	3.33	1.66	1.66	2.88	1.34	1.34	0.00	0.00	0.00	
Sub-total	123.80	60.80	63.01	6.88	4.84	4.84	30.43	16.42	14.01	34.47	16.87	17.60	33.81	15.66	18.15	
Detailed Design Sewerage	1.28	0.26	1.03	0.65	0.17	0.68	0.43	0.09	0.34	0.00	0.00	0.00	0.00	0.00	0.00	
DBO Preparation and Supervision	1.11	0.22	0.89	0.15	0.03	0.12	0.27	0.05	0.21	0.27	0.05	0.21	0.27	0.05	0.21	
Construction Supervision	2.96	2.37	0.59	0.29	0.23	0.06	0.91	0.73	0.18	0.76	0.61	0.15	0.71	0.57	0.14	
Sub-Total Wastewater	129.16	63.64	65.51	10.97	5.27	5.70	32.04	17.29	14.75	35.50	17.53	17.57	34.79	16.28	18.50	
Operations and Maintenance Equipment	1.00	0.20	0.80	0.17	0.03	0.14	0.21	0.04	0.17	0.21	0.04	0.17	0.21	0.04	0.17	
Sub-Total Investments	190.44	100.89	89.56	14.30	6.91	7.39	46.31	25.71	20.60	57.01	30.48	26.53	49.53	25.75	23.77	
Studies																
Environmental Monitoring Plan	2.53	0.51	2.02	0.43	0.09	0.35	0.52	0.10	0.42	0.52	0.10	0.42	0.52	0.10	0.42	
Studies	0.50	0.10	0.40	0.08	0.02	0.07	0.17	0.03	0.13	0.17	0.03	0.13	0.08	0.02	0.07	
Leak detection	0.20	0.04	0.16	0.02	0.02	0.04	0.01	0.04	0.04	0.04	0.01	0.04	0.01	0.04	0.01	
Sub-Total Studies	3.23	0.65	2.58	0.54	0.11	0.43	0.73	0.15	0.59	0.73	0.15	0.59	0.65	0.13	0.52	
Institutional Strengthening																
Capacity Building	0.50	0.10	0.40	0.05	0.01	0.04	0.11	0.02	0.09	0.11	0.02	0.09	0.11	0.02	0.09	
Training	0.30	0.10	0.40	0.08	0.02	0.07	0.10	0.02	0.08	0.10	0.02	0.08	0.10	0.02	0.08	
Sub-Total Institutional Strengthening	1.00	0.20	0.80	0.14	0.03	0.11	0.21	0.04	0.17	0.21	0.04	0.17	0.22	0.04	0.17	
Technical Support Unit																
Sub-Total Technical Support Unit	1.80	1.44	0.36	0.31	0.25	0.06	0.37	0.30	0.07	0.37	0.30	0.07	0.37	0.30	0.07	
Total Project Cost	196.47	103.17	93.30	15.29	7.29	8.00	47.63	26.19	21.43	58.33	30.97	27.36	50.77	26.22	24.54	
Physical Contingencies																
Price Contingencies																
Total Project Cost																

Annex 3: Estimated Project Costs
ISLAMIC REPUBLIC OF IRAN: WATER SUPPLY AND SANITATION PROJECT

Ahwarz (US \$ Million)

	Total Bank Financing															
	FY05		FY06		FY07		FY08		FY09		Total					
	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign				
Investments	1.06	0.14	0.92	0.00	0.00	0.00	0.45	0.05	0.40	0.61	0.09	0.52	0.00	0.00	0.00	0.00
Water	2.07	0.27	1.80	0.00	0.00	0.00	0.89	0.10	0.79	1.38	0.18	1.01	0.00	0.00	0.00	0.00
Civil Works	0.08	0.00	0.08	0.00	0.00	0.00	0.07	0.01	0.06	0.09	0.00	0.09	0.00	0.00	0.00	0.00
Rehabilitation and Upgrading of Water Treatment Plants	3.22	0.42	2.80	0.00	0.00	0.00	1.35	0.15	1.20	1.79	0.27	1.52	0.00	0.00	0.00	0.00
Treatment Plant 1																
Treatment Plant 2																
Urgent WTP																
Sub-total																
Expansion of Water Treatment Plant 2																
Expansion	3.43	0.45	2.98	0.00	0.00	0.00	1.47	0.16	1.31	1.96	0.29	1.67	0.00	0.00	0.00	0.00
Transmission Line to WTP2	0.96	0.36	0.62	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.18	0.30	0.00	0.00	0.00	0.00
Additional capacity for Intake	0.47	0.17	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.09	0.15	0.24	0.09	0.15	0.00
Sub-total	4.89	0.99	3.90	0.00	0.00	0.00	1.47	0.16	1.31	2.67	0.55	2.12	0.75	0.28	0.47	0.00
Construction of New Reservoirs	1.65	0.70	1.15	0.51	0.18	0.33	0.93	0.36	0.58	0.41	0.17	0.24	0.00	0.00	0.00	0.00
Reservoir 1	2.07	0.89	1.18	0.00	0.00	0.00	0.56	0.23	0.34	1.05	0.29	0.76	0.00	0.00	0.00	0.00
Reservoir 2	1.15	0.45	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.28	0.35	0.19	0.05	0.25	0.00
Reservoir 3	2.42	1.20	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.13	0.15	1.17	0.57	0.61	0.52
Reservoir 4	2.42	1.20	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.13	0.15	1.17	0.57	0.61	0.52
Reservoir 5	11.09	5.11	5.98	0.51	0.18	0.33	1.50	0.58	0.91	2.64	1.16	1.48	3.99	1.91	2.07	2.46
Sub-total	2.43	1.44	0.99	0.00	0.00	0.00	0.25	0.15	0.11	1.60	0.85	0.66	0.57	0.35	0.22	0.00
Construction of New Pumping Station	12.17	5.58	6.59	0.32	0.12	0.21	2.10	0.82	1.28	3.44	1.48	1.95	3.46	1.67	1.79	2.85
Rehabilitation of Water Network	2.75	1.20	1.55	0.13	0.05	0.08	0.69	0.27	0.42	0.91	0.40	0.52	0.85	0.40	0.44	0.18
Distribution Lines	2.90	1.27	1.63	0.13	0.05	0.09	0.72	0.28	0.44	0.96	0.42	0.54	0.89	0.43	0.46	0.19
Supply Lines																
Sub-Total	39.44	16.00	23.44	1.17	0.39	0.78	8.08	2.40	5.67	14.02	5.22	8.80	10.40	5.04	5.46	6.68
Detailed Design Water	0.58	0.08	0.50	0.38	0.05	0.33	0.20	0.03	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DB Preparation	0.55	0.08	0.47	0.55	0.08	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Supervision	2.13	1.65	0.46	0.06	0.05	0.01	0.44	0.34	0.10	0.74	0.58	0.16	0.57	0.44	0.12	0.31
Sub-Total Water	42.70	17.83	24.87	2.16	0.57	1.59	8.72	2.78	5.94	14.76	5.80	8.96	11.06	5.48	5.98	6.00
Wastewater																
Civil Works	24.22	3.57	20.65	3.61	0.22	3.39	7.52	0.65	6.87	4.00	0.66	3.34	6.36	1.32	5.04	2.73
East Trunk Main	20.54	3.72	16.82	1.56	0.10	1.46	2.83	0.26	2.65	4.45	0.71	3.73	8.31	1.82	6.49	3.29
Laterals	3.34	1.76	1.58	0.00	0.00	0.00	0.83	0.39	0.43	1.16	0.60	0.56	0.35	0.44	0.35	0.21
House connections	2.88	2.04	0.84	0.00	0.00	0.00	0.59	0.38	0.20	0.76	0.46	0.21	0.76	0.55	0.21	0.87
Pumping Stations	13.13	7.54	5.60	0.00	0.00	0.00	0.05	3.39	2.86	6.78	3.96	2.82	0.31	0.19	0.12	0.00
Construction of East Treatment Plant	6.66	1.36	5.30	0.00	0.00	0.00	0.00	0.00	0.00	2.25	0.35	1.90	2.71	0.58	2.13	1.70
Civil Works	18.32	5.03	13.29	0.00	0.00	0.00	0.00	0.00	0.00	6.39	1.63	4.76	7.40	2.96	4.44	4.22
Electrical & Mechanical Equipments	24.97	6.39	18.58	0.00	0.00	0.00	0.00	0.00	0.00	8.64	3.98	4.66	10.11	4.84	7.47	6.22
Sub-total	3.70	0.44	3.26	0.12	0.01	0.11	1.80	0.18	1.73	1.08	0.28	1.42	0.80	0.00	0.00	0.00
Rehabilitation of and Expansion of West Treatment Plant	92.78	25.45	67.33	5.29	0.33	4.96	19.82	5.28	14.53	27.37	8.63	18.74	26.86	7.08	19.78	13.45
Sub-Total																
Detailed Design Sewerage	1.22	0.18	1.04	0.80	0.11	0.69	0.42	0.06	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DBO Preparation and Supervision	1.17	0.23	0.94	0.15	0.02	0.13	0.28	0.04	0.22	0.28	0.05	0.23	0.30	0.06	0.23	0.18
Construction Supervision	3.47	2.72	0.75	0.29	0.23	0.06	0.97	0.76	0.21	0.89	0.70	0.19	0.92	0.72	0.20	0.40
Sub-Total Wastewater	98.64	28.57	70.07	6.53	0.69	5.84	21.47	6.15	15.32	28.54	9.38	19.16	28.08	7.86	20.21	14.03
Operations and Maintenance Equipment	0.92	0.07	0.85	0.14	0.00	0.14	0.18	0.01	0.17	0.19	0.01	0.18	0.20	0.02	0.18	0.21
Sub-Total Investments	142.27	46.48	95.79	8.83	1.27	7.57	30.36	8.94	21.43	43.49	15.20	28.29	39.34	13.37	25.98	20.24
Studies	2.88	0.53	2.16	0.41	0.06	0.35	0.52	0.09	0.43	0.55	0.10	0.44	0.58	0.13	0.46	0.62
Environmental Monitoring Plan	0.51	0.09	0.42	0.08	0.01	0.07	0.17	0.03	0.14	0.18	0.03	0.14	0.09	0.02	0.07	0.00
Leak detection	0.21	0.04	0.17	0.02	0.00	0.02	0.04	0.01	0.04	0.05	0.01	0.04	0.05	0.01	0.04	0.05
Sub-Total Studies	3.41	0.66	2.75	0.51	0.07	0.44	0.73	0.12	0.61	0.77	0.15	0.62	0.72	0.15	0.57	0.67
Institutional Strengthening	0.54	0.11	0.43	0.05	0.01	0.05	0.11	0.02	0.09	0.12	0.02	0.09	0.12	0.03	0.10	0.13
Capacity Building	0.53	0.10	0.43	0.06	0.01	0.07	0.10	0.02	0.09	0.11	0.02	0.09	0.12	0.02	0.09	0.12
Training	1.07	0.21	0.86	0.13	0.02	0.11	0.21	0.04	0.18	0.23	0.04	0.18	0.24	0.05	0.19	0.25
Sub-Total Institutional Strengthening	2.34	1.96	0.38	0.31	0.24	0.06	0.41	0.34	0.08	0.47	0.39	0.08	0.54	0.46	0.08	0.61
Technical Support Unit	2.34	1.96	0.38	0.31	0.24	0.06	0.41	0.34	0.08	0.47	0.39	0.08	0.54	0.46	0.08	0.61
Sub-Total Technical Support Unit	149.08	49.31	99.78	9.79	1.61	8.18	31.72	9.43	22.29	44.96	15.78	29.18	40.84	14.03	26.81	21.78
Total Project Cost																
Physical Contingencies																
Price Contingencies																
Total Project Cost																

Annex 3. Estimated Project Costs
ISLAMIC REPUBLIC OF IRAN: WATER SUPPLY AND SANITATION PROJECT

Investments	Fiscal Year	Baseline Cost						FY07						FY08						FY09					
		Total		Local		Foreign		Total		Local		Foreign		Total		Local		Foreign		Total		Local		Foreign	
		Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign			
Water																									
Civil Works																									
Rehabilitation and Upgrading of Water Treatment Plants																									
Treatment Plant 1	13,360	6,680	6,680	0	0	0	2,961	2,961	7,439	3,719	3,719	3,719	0	0	0	0	0	0	0	0	0	0	0	0	0
Treatment Plant 2	26,064	13,032	13,032	0	0	0	5,776	5,776	14,512	7,256	7,256	7,256	0	0	0	0	0	0	0	0	0	0	0	0	0
Urgent WTP	1,200	600	600	532	68	0	68	68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-local	40,624	20,312	20,312	1,064	532	0	8,805	8,805	21,960	10,975	10,975	10,975	0	0	0	0	0	0	0	0	0	0	0	0	0
Expansion of Water Treatment Plant 2	43,300	21,650	21,650	0	0	0	19,147	19,147	9,574	9,574	9,574	12,026	0	0	0	0	0	0	0	0	0	0	0	0	0
Expansion	11,000	5,500	5,500	0	0	0	0	0	5,366	5,366	5,366	3,220	3,360	2,254	0	0	0	0	0	0	0	0	0	0	0
Transmission Line to WTP2	11,000	5,500	5,500	0	0	0	0	0	5,366	5,366	5,366	3,220	3,360	2,254	0	0	0	0	0	0	0	0	0	0	0
Additional capacity for intake	5,272	2,109	2,109	0	0	0	0	0	0	0	0	2,572	2,700	1,020	0	0	0	0	0	0	0	0	0	0	0
Sub-total	56,472	31,363	28,109	0	0	0	19,147	19,147	9,574	9,574	9,574	16,789	15,201	3,334	0	0	0	0	0	0	0	0	0	0	0
Construction of New Reservoirs																									
Reservoir 1	23,200	15,080	8,120	6,738	4,379	2,358	11,600	7,540	4,060	4,862	3,161	1,702	0	0	0	0	0	0	0	0	0	0	0	0	0
Reservoir 2	23,200	15,080	8,120	0	0	0	6,738	4,379	2,358	11,600	7,540	4,060	4,862	3,161	1,702	0	0	0	0	0	0	0	0	0	0
Reservoir 3	23,200	15,080	8,120	0	0	0	0	0	6,738	4,379	2,358	11,600	7,540	4,060	4,862	3,161	1,702	0	0	0	0	0	0	0	0
Reservoir 4	23,200	15,080	8,120	0	0	0	0	0	6,738	4,379	2,358	11,600	7,540	4,060	4,862	3,161	1,702	0	0	0	0	0	0	0	0
Reservoir 5	115,000	75,400	40,600	6,738	4,379	2,358	18,338	11,919	6,418	28,967	18,829	10,138	3,979	2,387	1,592	0	0	0	0	0	0	0	0	0	0
Sub-total	177,800	106,556	71,104	0	0	0	19,723	11,919	7,899	70,855	42,723	23,879	33,979	23,879	15,922	0	0	0	0	0	0	0	0	0	0
Construction of New Pumping Station	126,000	83,200	44,800	4,251	2,763	1,488	25,553	16,610	8,844	36,400	24,960	13,440	34,196	22,227	11,969	25,600	16,640	8,960	0	0	0	0	0	0	0
Rehabilitation of Water Network	30,400	19,760	10,640	1,683	1,094	589	8,432	5,481	2,951	10,130	6,585	3,546	8,457	5,487	2,960	1,698	1,104	594	0	0	0	0	0	0	0
Distribution Lines	32,000	20,800	11,200	1,771	1,151	620	8,876	5,769	3,107	10,663	6,931	3,732	8,902	5,786	3,116	1,787	1,162	626	0	0	0	0	0	0	0
Supply Lines																									
Sub-Total	424,256	281,491	162,765	15,506	9,920	5,587	99,929	59,342	40,588	153,909	92,153	61,756	103,578	66,710	36,868	51,333	33,367	17,957	0	0	0	0	0	0	0
Detailed Design Water	5,124	1,025	4,100	3,407	681	2,726	1,717	340	1,374	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B Preparation and Construction Supervision	12,728	10,182	2,546	465	372	93	2,998	2,398	600	4,617	3,694	923	3,107	2,486	621	1,540	1,232	308	0	0	0	0	0	0	0
Construction Supervision																									
Sub-Total Water	446,908	273,658	173,250	24,179	11,933	12,245	104,645	62,084	42,561	158,526	95,847	62,679	106,685	69,196	37,489	52,873	34,599	18,275	0	0	0	0	0	0	0
Wastewater																									
Civil Works																									
East Trunk Main	296,080	149,040	149,040	50,485	25,243	25,243	101,286	50,643	47,744	23,872	23,872	23,872	70,831	35,415	35,415	27,734	13,867	13,867	0	0	0	0	0	0	0
West Trunk Main	239,280	119,640	119,640	21,760	10,880	10,880	38,963	19,481	19,481	53,431	26,716	26,716	90,330	45,165	45,165	37,286	18,643	18,643	0	0	0	0	0	0	0
Laterals	37,840	28,488	15,352	0	0	0	1,336	1,336	0	0	0	0	1,336	1,336	1,336	0	0	0	0	0	0	0	0	0	0
Pumping Stations	7,440	3,720	3,720	0	0	0	7,386	5,916	1,470	7,395	5,916	1,479	7,415	5,932	1,483	7,395	5,916	1,479	0	0	0	0	0	0	0
Pumping Stations	97,280	56,368	38,912	0	0	0	46,600	27,960	18,640	48,598	29,158	19,438	2,084	2,084	2,084	0	0	0	0	0	0	0	0	0	0
Construction of East Treatment Plant																									
Civil Works	74,528	37,264	37,264	0	0	0	0	0	27,205	13,602	13,602	29,811	14,906	14,906	17,512	8,756	8,756	0	0	0	0	0	0	0	0
Electrical & Mechanical Equipments	111,792	22,358	89,434	0	0	0	0	0	40,807	8,161	32,646	44,717	8,943	35,773	26,268	5,254	21,014	0	0	0	0	0	0	0	0
Sub-total	186,320	59,622	126,698	0	0	0	0	0	68,012	21,764	46,248	74,528	23,849	50,679	43,780	14,010	29,770	0	0	0	0	0	0	0	0
Rehabilitation and Expansion of West Treatment Plant	45,440	22,720	22,720	1,568	784	784	24,288	12,144	12,144	19,585	9,792	9,792	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total	933,840	469,558	474,282	73,613	36,906	36,906	229,159	123,591	105,579	258,302	126,685	131,607	268,040	119,114	136,906	116,516	63,253	63,253	0	0	0	0	0	0	0
Detailed Design Sewerage	10,769	2,154	8,615	7,160	1,432	5,728	3,609	722	2,887	0	0	0	2,887	0	0	0	0	0	0	0	0	0	0	0	0
O&M Preparation and Supervision	9,316	1,863	7,453	1,297	259	1,037	2,233	447	1,786	2,233	447	1,786	2,233	447	1,786	2,233	447	1,786	2,233	447	1,786	2,233	447	1,786	
Construction Supervision	22,426	17,840	4,486	2,214	1,772	443	6,875	5,500	1,375	5,709	4,567	1,142	5,445	4,356	1,089	2,162	1,746	436	0	0	0	0	0	0	0
Sub-Total Wastewater	976,350	481,516	494,835	84,484	40,369	44,114	241,866	130,259	111,627	286,243	131,708	134,535	283,724	123,918	139,806	120,013	55,261	64,752	0	0	0	0	0	0	0
Operations and Maintenance Equipment	8,400	1,680	6,720	1,443	289	1,154	1,738	348	1,390	1,738	348	1,390	1,743	349	1,394	1,738	346	1,390	0	0	0	0	0	0	0
Sub-Total Investments	1,431,659	756,854	674,804	110,105	52,591	57,514	346,269	192,680	155,579	426,508	227,803	188,605	372,152	193,462	178,890	174,625	90,208	84,417	0	0	0	0	0	0	0
Studies																									
Environmental Monitoring Plan	21,218	4,244	16,974	3,645	729	2,916	4,390	878	3,512	4,390	878	3,512	4,402	880	3,522	4,390	878	3,512	0	0	0	0	0	0	0
Soil Survey	4,200	840	3,360	694	139	555	1,400	280	1,120	1,400	280	706	141	565	0	0	0	0	0	0	0	0	0	0	0
Leak detection	1,660	336	1,344	185	37	148	373	75	299	373	75	299	374	75	300	373	75	299	0	0	0	0	0	0	0
Sub-Total Studies	27,098	5,420	21,678	4,524	905	3,619																			

Annex 3: Estimated Project Costs
ISLAMIC REPUBLIC OF IRAN: WATER SUPPLY AND SANITATION PROJECT

Shiraz (US \$ Million)

	Cost with Physical Contingencies														
	FY05		FY06		FY07		FY08		FY09		FY09				
	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign			
Investments															
Water															
Civil Works															
Transmission Lines	15.24	9.90	5.33	2.74	1.78	0.96	8.67	5.63	3.03	3.83	2.49	1.34	0.00	0.00	0.00
Construction of New Reservoirs															
Reservoir 6	1.61	1.05	0.56	0.00	0.00	0.00	0.67	0.44	0.23	0.81	0.52	0.13	0.09	0.05	0.00
Reservoir 10	2.99	1.94	1.05	0.49	0.32	0.17	1.20	0.78	0.42	1.20	0.78	0.42	0.10	0.07	0.04
Reservoir 18	0.28	0.18	0.10	0.09	0.06	0.03	0.19	0.12	0.07	0.00	0.00	0.00	0.00	0.00	0.00
Reservoir 20	0.80	0.52	0.28	0.27	0.17	0.09	0.53	0.35	0.18	0.00	0.00	0.00	0.00	0.00	0.00
Sub-total	5.68	3.69	1.99	0.85	0.55	0.30	2.59	1.68	0.91	2.00	1.30	0.70	0.24	0.15	0.08
Network															
Distribution Lines	1.64	1.07	0.58	0.16	0.10	0.05	0.44	0.29	0.15	0.46	0.30	0.16	0.39	0.25	0.13
Supply Lines	6.40	4.16	2.24	0.38	0.25	0.13	1.07	0.69	0.37	1.99	1.30	0.70	1.97	1.28	0.69
Rehabilitation of Water Network	3.63	2.49	1.34	0.85	0.55	0.30	0.58	0.38	0.20	0.86	0.62	0.34	0.96	0.62	0.34
Drilling of Wells	2.05	1.33	0.72	0.08	0.05	0.03	0.48	0.31	0.17	0.67	0.44	0.23	0.54	0.35	0.19
Sub-total	13.93	9.05	4.87	1.47	0.95	0.51	2.57	1.67	0.90	4.08	2.65	1.43	3.86	2.51	1.35
Pumping Stations	0.35	0.21	0.14	0.00	0.00	0.00	0.35	0.21	0.14	0.00	0.00	0.00	0.00	0.00	0.00
Sub-Total	35.20	22.96	12.34	5.06	3.29	1.77	14.19	9.20	4.98	9.91	6.44	3.47	4.10	2.66	1.43
Detailed Design Water	0.47	0.09	0.37	0.31	0.06	0.25	0.16	0.03	0.13	0.00	0.00	0.00	0.00	0.00	0.00
Construction Supervision	1.06	0.84	0.21	0.15	0.12	0.03	0.43	0.34	0.09	0.30	0.24	0.06	0.12	0.10	0.02
Sub-Total	36.72	23.80	12.92	5.52	3.47	2.05	14.77	9.57	5.19	10.21	6.68	3.53	4.22	2.76	1.46
Wastewater															
Civil Works															
Trunk Main Emergency Zone	3.67	1.47	2.20	0.75	0.30	0.45	2.15	0.86	1.29	0.34	0.14	0.20	0.34	0.14	0.20
Laterals	22.90	9.16	13.74	1.88	0.75	1.13	6.88	2.67	4.01	6.52	2.61	3.91	6.63	2.65	3.98
Interceptors	15.71	11.00	4.71	1.48	0.34	1.15	4.05	2.84	1.22	4.75	3.33	1.43	4.28	2.99	1.28
House connections	32.43	22.70	9.73	1.08	0.76	0.32	8.61	6.03	2.58	9.73	6.81	2.92	8.66	6.06	2.60
Treatment Plant	9.91	7.83	1.98	0.14	0.11	0.03	1.39	1.11	0.28	3.16	2.53	0.63	3.94	3.15	0.79
Sub-Total	4.68	1.80	2.98	1.88	0.66	1.22	2.70	0.94	1.75	0.00	0.00	0.00	0.00	0.00	0.00
Construction of outfall of emergency treatment plant	1.57	0.65	1.02	0.94	0.33	0.61	0.64	0.22	0.41	0.00	0.00	0.00	0.00	0.00	0.00
Construction of Sludge Storage at Emergency WWTP	5.63	2.82	2.82	0.00	0.00	0.00	0.00	0.00	0.00	2.06	1.03	1.03	2.25	1.13	1.13
Construction of outfall of Long Term Zone	10.35	5.17	5.17	0.00	0.00	0.00	0.00	0.00	0.00	3.78	1.89	1.89	4.14	2.07	2.07
Treatment Plant for Long Term Zone First Module	9.30	4.65	4.65	0.00	0.00	0.00	0.00	0.00	0.00	3.99	1.70	1.70	3.72	1.86	1.86
Treatment Plant for Long Term Zone Second Module	31.43	14.79	16.64	2.82	0.89	1.93	3.34	1.17	2.17	9.23	4.61	4.61	10.11	5.05	5.05
Sub-Total	118.05	67.05	49.00	7.16	3.25	3.91	26.22	14.67	11.55	33.72	20.02	13.70	33.95	20.05	13.90
Detailed Design Sewerage	1.26	0.25	1.00	0.83	0.17	0.67	0.42	0.08	0.34	0.00	0.00	0.00	0.00	0.00	0.00
DEO Preparation and Supervision	1.15	0.23	0.92	0.16	0.03	0.13	0.26	0.06	0.22	0.28	0.05	0.22	0.28	0.06	0.22
Construction Supervision	2.72	2.16	0.54	0.21	0.17	0.04	0.79	0.63	0.16	0.73	0.59	0.15	0.72	0.57	0.14
Sub-Total	121.18	69.71	51.47	8.37	3.62	4.75	27.70	15.44	12.26	34.73	20.66	14.07	34.94	20.67	14.27
Operations and Maintenance Equipment	1.00	0.20	0.80	0.17	0.03	0.14	0.21	0.04	0.17	0.21	0.04	0.17	0.21	0.04	0.17
Sub-Total	158.90	93.71	65.19	14.06	7.13	6.94	42.68	25.06	17.62	45.15	27.39	17.77	39.37	23.48	15.89
Studies	1.76	0.35	1.41	0.30	0.06	0.24	0.36	0.07	0.29	0.36	0.07	0.29	0.37	0.07	0.29
Environmental Monitoring Plan	0.50	0.10	0.40	0.08	0.02	0.07	0.17	0.03	0.13	0.17	0.03	0.13	0.08	0.02	0.07
Studies	0.20	0.04	0.16	0.02	0.00	0.02	0.04	0.01	0.04	0.04	0.01	0.04	0.04	0.01	0.04
Leak detection															
Sub-Total	2.46	0.49	1.97	0.41	0.08	0.33	0.58	0.12	0.46	0.58	0.12	0.46	0.49	0.10	0.41
Institutional Strengthening	0.50	0.10	0.40	0.06	0.01	0.04	0.11	0.02	0.09	0.11	0.02	0.09	0.11	0.02	0.09
Capacity Building	0.50	0.10	0.40	0.09	0.02	0.07	0.10	0.02	0.08	0.10	0.02	0.08	0.10	0.02	0.08
Training															
Sub-Total	1.00	0.20	0.80	0.14	0.03	0.11	0.21	0.04	0.17	0.21	0.04	0.17	0.22	0.04	0.17
Technical Support Unit	1.80	1.44	0.36	0.31	0.25	0.06	0.37	0.30	0.07	0.37	0.30	0.07	0.37	0.30	0.07
Sub-Total Technical Support Unit	1.80	1.44	0.36	0.31	0.25	0.06	0.37	0.30	0.07	0.37	0.30	0.07	0.37	0.30	0.07
Total Cost	164.16	95.84	68.32	14.92	7.48	7.44	43.84	25.52	18.33	46.31	27.84	18.47	40.45	23.92	16.53
Physical Contingencies															
Price Contingencies															
Total Project Cost															

Annex 3: Estimated Project Costs
ISLAMIC REPUBLIC OF IRAN: WATER SUPPLY AND SANITATION PROJECT

Shiraz (US \$ Million)

	Cost with Physical and Price Contingencies															
	FY05		FY06		FY07		FY08		FY09		Total					
	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign				
Investments	18.14	12.59	5.55	3.05	2.07	0.98	10.17	7.02	3.15	4.92	3.50	1.42	0.00	0.00	0.00	0.00
Water																
Civil Works																
Transmission Lines	2.04	1.45	0.58	0.00	0.00	0.00	0.80	0.24	1.08	0.76	0.35	0.19	0.14	0.05	0.00	0.00
Construction of New Reservoirs	2.66	2.68	1.10	0.55	0.37	0.18	1.41	0.97	0.44	1.58	1.13	0.45	0.14	0.04	0.00	0.00
Reservoir 9	0.32	0.22	0.10	0.10	0.07	0.03	0.22	0.15	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reservoir 18	0.92	0.63	0.29	0.29	0.20	0.10	0.63	0.43	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reservoir 20	6.97	4.89	2.08	0.95	0.84	0.30	3.06	2.12	0.94	2.64	1.88	0.75	0.33	0.24	0.09	0.00
Sub-total																
Network	2.18	1.56	0.61	0.17	0.11	0.06	0.53	0.37	0.16	0.61	0.43	0.17	0.57	0.42	0.15	0.30
Distribution Lines	8.79	6.39	2.40	0.39	0.26	0.13	1.32	0.93	0.39	2.62	1.88	0.74	2.91	2.16	0.75	1.55
Supply Lines	5.05	3.64	1.43	0.92	0.62	0.30	0.71	0.50	0.21	1.26	0.90	0.36	1.42	1.05	0.37	0.75
Rehabilitation of Water Network	2.78	2.01	0.77	0.09	0.06	0.03	0.57	0.39	0.18	0.90	0.65	0.25	0.80	0.59	0.21	0.43
Drilling of Wells	18.81	13.61	5.21	1.57	1.05	0.52	3.13	2.19	0.94	5.38	3.86	1.52	5.70	4.23	1.47	3.03
Sub-total	0.43	0.28	0.15	0.00	0.00	0.00	0.43	0.28	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pumping Stations																
Sub-Total	44.35	31.36	12.98	5.57	3.76	1.81	16.78	11.80	5.18	12.94	9.25	3.68	6.03	4.47	1.56	3.03
Detailed Design Water	0.48	0.10	0.38	0.32	0.07	0.25	0.17	0.04	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Supervision	1.33	1.06	0.27	0.17	0.13	0.03	0.50	0.40	0.10	0.39	0.31	0.08	0.18	0.14	0.04	0.09
Sub-Total	46.16	32.53	13.63	6.05	3.96	2.10	17.45	12.04	5.41	13.33	9.56	3.76	6.21	4.61	1.60	3.12
Wastewater																
Civil Works	4.18	1.89	2.29	0.81	0.35	0.46	2.38	1.05	1.34	0.41	0.20	0.22	0.45	0.23	0.22	0.12
Trunk Main Emergency Zone	27.90	13.30	14.60	2.03	0.87	1.16	7.52	3.36	4.16	7.93	3.77	4.16	8.76	4.43	4.33	1.65
Trunk Main Long Term	21.69	16.85	5.04	0.54	0.39	0.15	4.96	3.69	1.27	6.31	4.79	1.51	6.44	5.04	1.40	3.44
Laterals	44.84	34.24	10.40	1.21	0.88	0.33	10.52	7.83	2.70	12.91	9.81	3.10	13.05	10.21	2.83	6.96
Interceptors	14.54	12.40	2.13	0.16	0.13	0.03	1.74	1.45	0.29	4.37	3.70	0.67	6.12	5.26	0.86	2.14
House connections																
Treatment Plant	4.95	1.89	3.06	2.02	0.76	1.25	2.93	1.12	1.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction of outfall of emergency treatment plant	1.68	0.64	1.05	1.00	0.38	0.62	0.68	0.26	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction of Sludge Storage at Emergency WWTP	7.68	4.63	3.06	0.00	0.00	0.00	0.00	0.00	0.00	2.80	1.50	1.09	3.13	1.90	1.23	1.96
Construction of outfall of Long Term Zone	14.11	8.50	5.61	0.00	0.00	0.00	0.00	0.00	0.00	4.77	2.76	2.01	5.74	3.49	2.26	3.60
Treatment Plant for Long Term Zone First Module	12.88	7.64	5.04	0.00	0.00	0.00	0.00	0.00	0.00	4.29	2.48	1.81	5.16	3.13	2.03	3.23
Treatment Plant for Long Term Zone Second Module	41.11	23.29	17.82	3.02	1.14	1.88	3.61	1.38	2.23	11.66	6.75	4.91	14.03	8.52	5.51	8.79
Sub-total	154.05	101.77	52.29	7.77	3.77	4.01	30.74	18.76	11.98	43.59	28.01	14.57	48.86	33.70	15.15	23.10
Sub-Total	1.30	0.28	1.02	0.86	0.18	0.68	0.44	0.10	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Detailed Design Sewerage	1.32	0.34	0.98	0.17	0.04	0.13	0.30	0.07	0.23	0.31	0.06	0.23	0.53	0.09	0.24	0.20
DEO Preparation and Supervision	3.59	2.87	0.72	0.23	0.19	0.05	0.92	0.74	0.16	0.96	0.77	0.19	1.04	0.84	0.21	0.43
Construction Supervision																
Sub-Total	160.26	105.25	55.00	9.03	4.17	4.86	32.40	19.66	12.74	44.86	29.86	15.00	50.23	34.63	15.60	23.73
Operations and Maintenance Equipment	1.15	0.30	0.85	0.18	0.04	0.14	0.22	0.05	0.17	0.24	0.06	0.18	0.25	0.07	0.18	0.27
Sub-Total	207.57	138.09	68.49	15.26	8.17	7.10	50.07	31.75	18.32	58.42	39.49	18.94	56.70	39.31	17.38	27.12
Studies	2.03	0.53	1.50	0.31	0.07	0.25	0.39	0.09	0.30	0.42	0.11	0.31	0.44	0.12	0.32	0.47
Environmental Monitoring Plan	0.56	0.14	0.42	0.09	0.02	0.07	0.18	0.04	0.14	0.19	0.05	0.14	0.10	0.03	0.07	0.00
Studies	0.23	0.06	0.17	0.02	0.01	0.02	0.05	0.01	0.04	0.05	0.01	0.04	0.05	0.02	0.04	0.06
Leak detection																
Sub-Total	2.82	0.73	2.09	0.42	0.09	0.33	0.62	0.14	0.48	0.66	0.17	0.49	0.59	0.16	0.43	0.53
Institutional Strengthening	0.58	0.15	0.43	0.06	0.01	0.05	0.12	0.03	0.09	0.13	0.03	0.09	0.13	0.04	0.10	0.14
Capacity Building	0.58	0.15	0.43	0.09	0.02	0.07	0.11	0.03	0.09	0.12	0.03	0.09	0.13	0.03	0.09	0.13
Training																
Sub-Total	1.16	0.30	0.86	0.15	0.03	0.11	0.23	0.05	0.18	0.24	0.06	0.18	0.26	0.07	0.19	0.28
Technical Support Unit	2.55	2.16	0.38	0.33	0.27	0.06	0.45	0.37	0.08	0.51	0.43	0.08	0.56	0.50	0.08	0.67
Sub-Total Technical Support Unit	2.55	2.16	0.38	0.33	0.27	0.06	0.45	0.37	0.08	0.51	0.43	0.08	0.56	0.50	0.08	0.67
Total Cost	214.10	141.28	72.62	16.16	8.56	7.61	51.38	32.33	19.05	59.83	40.15	19.69	58.13	40.05	18.08	26.59
Physical Contingencies																
Price Contingencies																
Total Project Cost																

Annex 3: Estimated Project Costs
ISLAMIC REPUBLIC OF IRAN: WATER SUPPLY AND SANITATION PROJECT

Shiraz (US \$ Million)

	Total Bank Financing															
	FY05			FY06			FY07			FY08			FY09			
	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	
Investments																
Water																
Civil Works																
Transmission Lines																
Construction of New Reservoirs	9.07	3.52	5.55	1.53	0.54	0.98	5.08	1.94	3.15	2.46	1.04	1.42	0.00	0.00	0.00	0.00
Reservoir 6	1.02	0.43	0.59	0.00	0.00	0.00	0.40	0.15	0.24	0.53	0.23	0.30	0.09	0.04	0.05	0.00
Reservoir 16	1.84	0.74	1.10	0.27	0.10	0.18	0.71	0.27	0.44	0.79	0.34	0.45	0.07	0.03	0.04	0.00
Reservoir 18	0.16	0.06	0.10	0.05	0.02	0.03	0.11	0.04	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reservoir 20	0.46	0.17	0.29	0.15	0.05	0.10	0.31	0.12	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-total	3.48	1.40	2.08	0.47	0.17	0.30	1.53	0.59	0.94	1.32	0.57	0.75	0.16	0.08	0.09	0.00
Network																
Distribution Lines	1.09	0.48	0.61	0.08	0.03	0.06	0.27	0.10	0.16	0.30	0.13	0.17	0.28	0.14	0.15	0.08
Supply Lines	4.40	1.99	2.40	0.20	0.06	0.13	0.66	0.27	0.39	1.31	0.57	0.74	1.46	0.70	0.75	0.78
Rehabilitation of Water Network	2.53	1.11	1.43	0.46	0.16	0.30	0.36	0.14	0.21	0.63	0.27	0.36	0.71	0.34	0.37	0.38
Drilling of Wells	1.39	0.62	0.77	0.04	0.02	0.03	0.28	0.11	0.18	0.45	0.20	0.25	0.40	0.19	0.21	0.11
Sub-total	9.41	4.20	5.21	0.78	0.26	0.52	1.56	0.62	0.94	2.69	1.17	1.52	2.85	1.38	1.47	1.52
Pumping Stations	0.34	0.19	0.15	0.00	0.00	0.00	0.34	0.19	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-Total	22.30	9.32	12.98	2.78	0.97	1.81	8.52	3.34	5.18	6.47	2.79	3.68	3.01	1.45	1.56	1.52
Detailed Design/ Water	0.45	0.06	0.38	0.29	0.04	0.25	0.15	0.02	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Supervision	1.22	0.96	0.27	0.15	0.12	0.03	0.46	0.36	0.10	0.36	0.28	0.08	0.17	0.13	0.04	0.08
Sub-Total	23.97	10.34	13.63	3.23	1.13	2.10	9.13	3.73	5.41	6.83	3.06	3.76	3.18	1.58	1.60	1.60
Wastewater																
Civil Works																
Trunk Main Emergency Zone	2.51	0.21	2.29	0.48	0.02	0.46	1.43	0.10	1.34	0.25	0.03	0.22	0.27	0.05	0.22	0.07
Trunk Main Long Term	16.74	2.14	14.60	1.22	0.06	1.16	4.51	0.35	4.16	4.76	0.60	4.16	5.26	0.93	4.33	0.99
Laterals	10.84	5.80	5.04	0.27	0.12	0.15	2.48	1.21	1.27	3.15	1.64	1.51	3.22	1.82	1.40	1.72
Interceptors	22.32	11.92	10.40	0.60	0.27	0.33	5.26	2.56	2.70	6.45	3.35	3.10	6.52	3.69	2.83	3.48
House connections	7.27	5.14	2.13	0.08	0.05	0.03	0.87	0.58	0.29	2.19	1.51	0.67	3.06	2.20	0.86	1.07
Treatment Plant																
Construction of outfall of emergency treatment plant	3.22	0.15	3.06	1.31	0.06	1.25	1.90	0.10	1.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction of Sludge Storage at Emergency WWTP	1.10	0.05	1.05	0.65	0.03	0.62	0.44	0.02	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction of outfall of Long Term Zone	3.84	0.79	3.06	0.00	0.00	0.00	0.00	0.00	0.00	1.30	2.09	1.56	0.33	1.23	0.98	0.25
Treatment Plant for Long Term Zone First Module	12.00	6.38	5.61	0.00	0.00	0.00	0.00	0.00	0.00	4.06	2.05	2.01	4.88	2.63	2.26	3.06
Treatment Plant for Long Term Zone Second Module	10.78	5.74	5.04	0.00	0.00	0.00	0.00	0.00	0.00	3.65	1.84	1.81	4.39	2.36	2.03	2.75
Sub-total	30.93	13.11	17.82	1.96	0.09	1.88	2.35	0.12	2.23	9.00	4.09	4.91	10.83	5.32	5.51	6.79
Sub-Total	90.61	38.32	52.29	4.62	0.62	4.01	16.90	4.92	11.98	25.80	11.23	14.57	29.17	14.01	15.15	14.12
Detailed Design Sewerage	1.19	0.17	1.02	0.79	0.11	0.68	0.41	0.06	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DBO Preparation and Supervision	1.21	0.23	0.98	0.15	0.02	0.13	0.27	0.05	0.23	0.28	0.65	0.23	0.31	0.07	0.24	0.14
Construction Supervision	3.30	2.58	0.72	0.21	0.17	0.05	0.85	0.66	0.18	0.66	0.69	0.19	0.86	0.75	0.21	0.39
Sub-Total	96.31	41.31	55.00	5.78	0.92	4.86	18.43	5.69	12.74	26.97	11.97	15.00	30.43	14.83	15.60	14.70
Operations and Maintenance Equipment	0.92	0.07	0.85	0.14	0.00	0.14	0.18	0.01	0.17	0.19	0.01	0.18	0.20	0.02	0.18	0.21
Sub-Total	121.21	51.72	69.49	9.15	2.06	7.10	27.74	9.42	18.32	33.98	15.05	18.94	33.82	16.43	17.38	16.51
Studies																
Environmental Monitoring Plan	1.87	0.37	1.50	0.29	0.04	0.25	0.36	0.06	0.30	0.38	0.07	0.31	0.41	0.09	0.32	0.43
Studies	0.51	0.09	0.42	0.08	0.01	0.07	0.17	0.03	0.14	0.18	0.03	0.14	0.09	0.02	0.07	0.00
Leak detection	0.21	0.04	0.17	0.02	0.00	0.02	0.04	0.01	0.04	0.05	0.01	0.04	0.05	0.01	0.04	0.05
Sub-Total	2.59	0.50	2.09	0.39	0.06	0.33	0.57	0.09	0.48	0.60	0.11	0.49	0.55	0.12	0.43	0.48
Institutional Strengthening																
Capacity Building	0.54	0.11	0.43	0.05	0.01	0.05	0.11	0.02	0.09	0.12	0.02	0.09	0.12	0.03	0.10	0.13
Training	0.53	0.10	0.43	0.08	0.01	0.07	0.10	0.02	0.09	0.11	0.02	0.09	0.12	0.02	0.09	0.12
Sub-Total	1.07	0.21	0.86	0.13	0.02	0.11	0.21	0.04	0.18	0.23	0.04	0.18	0.24	0.05	0.19	0.25
Technical Support Unit	2.34	1.96	0.38	0.31	0.24	0.06	0.41	0.34	0.08	0.47	0.39	0.08	0.54	0.46	0.08	0.61
Sub-Total Technical Support Unit	2.34	1.96	0.38	0.31	0.24	0.06	0.41	0.34	0.08	0.47	0.39	0.08	0.54	0.46	0.08	0.61
Total Cost	127.21	54.39	72.82	9.98	2.38	7.61	28.94	9.89	19.05	35.28	15.60	18.69	35.14	17.08	18.08	17.86
Physical Contingencies																
Price Contingencies																
Total Project Cost																

Annex 3 - Estimated Project Costs
ISLAMIC REPUBLIC OF IRAN: WATER SUPPLY AND SANITATION PROJECT

Shiraz (Rials Million)

Investments	Baseline Cost											
	Fiscal Year		FY05		FY06		FY07		FY08		FY09	
	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign
Water												
Civil Works												
Transmission Lines	116,352	75,629	40,723	20,951	13,616	7,333	65,187	43,022	23,166	29,214	18,989	10,225
Construction of New Reservoirs												
Reservoir 8	11,760	7,644	4,116	0	0	4,897	3,183	1,714	5,880	3,822	2,058	993
Reservoir 10	21,840	14,196	7,644	3,586	2,337	1,259	6,750	5,688	3,063	8,750	5,688	3,063
Reservoir 18	2,039	1,325	714	676	439	237	1,363	886	477	0	0	0
Reservoir 20	5,840	3,796	2,044	1,956	1,258	678	3,904	2,538	1,366	0	0	0
Sub-total	41,479	26,961	14,518	6,208	4,035	2,173	18,915	12,295	6,620	14,630	9,510	5,121
Network												
Distribution Lines	12,000	7,600	4,200	1,147	745	401	3,234	2,102	1,132	3,391	2,204	1,187
Supply Lines	46,776	30,404	16,372	2,785	1,810	975	7,767	5,062	2,725	14,555	9,460	5,094
Water Network	24,000	15,600	8,000	6,265	4,033	2,172	6,263	4,111	2,152	6,894	4,516	2,378
Drilling of Wells	10,739	6,824	3,515	8,282	5,392	2,890	11,804	7,753	4,132	13,984	9,384	4,600
Sub-total	101,739	66,124	35,605	10,726	6,972	3,759	31,804	20,223	10,582	29,630	19,388	10,441
Pumping Stations	2,705	1,623	862	0	0	0	2,705	1,623	1,082	0	0	0
Sub-Total	262,266	170,338	91,928	37,884	24,624	13,259	106,612	69,162	37,449	73,675	47,889	25,786
Detailed Design Water	3,934	787	3,147	2,615	523	2,092	1,318	264	1,055	0	0	0
Construction Supervision	7,868	6,294	1,574	1,137	909	227	3,198	2,559	640	2,210	1,768	442
Sub-Total	274,068	177,419	96,649	41,636	26,057	15,579	111,129	71,985	39,144	75,885	49,657	26,228
Wastewater												
Civil Works												
Trunk Main Emergency Zone	28,022	11,209	16,813	5,712	2,285	3,427	16,453	6,581	9,872	2,598	1,039	1,559
Trunk Main Long Term	174,860	89,952	104,928	14,392	5,757	8,635	51,019	20,408	30,611	49,774	19,910	29,865
Laterals	120,000	84,000	36,000	3,693	2,595	1,108	30,958	21,670	9,287	36,291	25,403	10,887
Interceptors	247,624	173,337	74,287	8,238	5,766	2,471	65,743	46,020	19,723	74,273	51,991	22,282
House connections	76,696	60,557	15,139	1,092	874	218	10,586	8,489	2,117	24,140	19,312	4,828
Treatment Plant												
Construction of outfall of emergency treatment plant	35,000	12,250	22,750	14,384	5,034	9,349	20,616	7,216	13,401	0	0	0
Construction of outfall of Long Term Zone	12,000	4,200	7,800	7,165	2,501	4,664	4,855	1,689	3,166	0	0	0
Construction of outfall of Long Term Zone First Module	70,000	30,500	39,500	0	0	0	15,680	0	15,680	7,840	7,840	7,840
Treatment Plant for Long Term Zone Second Module	71,000	36,500	34,500	0	0	0	28,937	14,419	14,519	12,968	13,600	15,800
Sub-total	240,000	112,950	127,050	21,528	7,535	13,993	25,472	8,915	16,557	70,450	35,225	35,225
Sub-Total	686,222	374,218	54,656	24,802	29,854	20,023	112,063	41,046	25,756	152,881	104,646	259,260
Detailed Design Sewerage	10,543	2,109	8,434	7,010	1,402	5,608	3,534	707	2,827	0	0	0
DfEO Preparation	9,650	1,930	7,720	1,343	269	1,075	2,313	463	1,850	2,319	464	1,855
Construction Supervision	20,797	16,637	4,159	1,840	1,312	328	6,007	4,806	1,201	5,612	4,490	1,122
Sub-Total	927,212	532,681	394,532	64,648	27,784	36,864	212,084	118,038	94,046	285,451	157,833	107,618
Operations and Maintenance Equipment												
Sub-Total	6,400	1,680	6,720	1,443	289	1,154	1,738	348	1,390	1,738	348	1,390
Studies												
Environmental Monitoring Plan	14,784	2,957	11,827	2,539	508	2,032	3,059	612	2,447	3,059	612	2,447
Studies	4,200	840	3,360	694	139	555	1,400	280	1,120	1,400	280	560
Leak detection	1,600	336	1,344	185	37	148	373	75	299	373	75	299
Sub-Total	20,684	4,133	16,551	3,419	684	2,735	4,832	966	3,866	4,832	966	3,866
Institutional Strengthening												
Capacity Building	4,200	840	3,360	463	93	370	934	187	747	934	187	747
Training	4,200	840	3,360	721	144	577	869	174	695	871	174	695
Sub-Total	8,400	1,680	6,720	1,184	237	948	1,803	361	1,442	1,803	361	1,442
Technical Support Unit												
Sub-Total Technical Support Unit	15,120	12,096	3,024	2,497	2,078	519	3,129	2,503	626	3,129	2,503	626
Total Cost	1,253,864	729,688	524,176	114,927	57,128	27,799	334,714	194,200	140,514	352,838	211,667	141,171
Physical Contingencies	125,091	75,354	49,737	10,404	5,735	4,668	33,547	20,130	13,417	36,192	22,201	13,991
Price Contingencies	419,460	381,689	37,770	10,442	9,026	1,416	63,319	57,206	6,113	113,560	103,369	10,211
Total Project Cost	1,798,414	1,166,731	611,683	135,773	71,890	63,884	431,590	271,536	160,044	502,610	337,237	165,373

Annex 3 - Estimated Project Costs
ISLAMIC REPUBLIC OF IRAN: WATER SUPPLY AND SANITATION PROJECT

Shiraz (Rials Million)

	Cost with Physical Contingencies																	
	FY05		FY06		FY07		FY08		FY09		Local	Foreign						
	Total	Foreign	Total	Foreign	Total	Foreign	Total	Foreign	Total	Foreign								
Investments																		
Water																		
Civil Works																		
Transmission Lines	127,988	83,192	44,796	23,046	14,980	8,066	72,806	47,324	25,482	32,136	20,888	11,248	0	0	0	0	0	0
Construction of New Reservoirs																		
Reservoir 8	13,524	8,791	4,733	0	0	5,632	3,661	1,971	6,762	4,395	2,867	1,100	735	396	0	0	0	0
Reservoir 10	25,116	16,325	8,791	4,135	2,688	1,447	10,663	6,541	3,522	10,063	6,541	3,522	855	299	0	0	0	0
Reservoir 18	2,345	1,524	821	777	505	272	1,568	1,019	549	0	0	0	0	0	0	0	0	0
Reservoir 20	6,716	4,365	2,351	2,226	1,447	779	4,490	2,918	1,571	0	0	0	0	0	0	0	0	0
Sub-total	47,701	31,006	16,695	7,139	4,640	2,499	21,752	14,139	7,613	16,825	10,936	5,889	1,965	1,290	695	0	0	0
Network																		
Distribution Lines	13,800	8,970	4,830	1,319	857	462	3,719	2,418	1,302	3,899	2,535	1,365	3,236	2,103	1,133	1,627	1,057	569
Supply Lines	53,792	34,965	18,627	3,203	2,062	1,121	8,955	5,821	3,134	16,738	10,680	5,866	16,367	10,769	5,799	8,329	5,414	2,915
Repair of Water Network	21,350	14,270	7,136	4,038	2,486	1,302	3,187	1,716	893	6,303	4,185	2,115	5,422	3,562	1,854	2,665	1,619	832
Drilling of Wells	17,166	11,456	5,810	3,146	1,917	1,014	4,443	2,829	1,411	3,656	2,296	1,184	3,656	2,296	1,184	1,662	1,095	502
Sub-total	116,989	76,043	40,946	12,334	8,017	4,317	21,635	14,055	7,569	34,305	22,296	12,007	32,424	21,076	11,346	16,301	10,659	5,705
Pumping Stations	2,976	1,785	1,190	0	0	0	2,976	1,785	1,190	0	0	0	0	0	0	0	0	0
Sub-Total	295,653	192,026	103,627	42,519	27,637	14,882	119,159	77,304	41,854	83,265	54,123	29,143	34,409	22,366	12,043	16,301	10,555	5,705
Detailed Design Water	3,934	767	3,147	2,615	523	2,092	1,318	264	1,055	0	0	0	0	0	0	0	0	0
Construction Supervision	8,870	7,096	1,774	1,276	1,020	255	3,575	2,860	715	2,498	1,998	500	1,032	826	206	489	391	98
Sub-Total	308,457	199,908	105,546	46,410	29,181	17,229	124,052	80,428	43,624	85,763	56,121	29,642	35,441	23,192	12,250	16,790	10,997	5,803
Wastewater																		
Civil Works																		
Trunk Main Emergency Zone	30,825	12,330	18,495	6,283	2,513	3,770	18,098	7,239	10,859	2,857	1,143	1,714	2,865	1,146	1,719	720	288	432
Laterals	192,368	76,947	115,421	15,831	6,333	9,499	56,121	22,448	33,673	54,752	21,901	32,851	55,960	22,264	33,396	10,004	4,002	6,002
Inletters	132,000	92,400	39,600	4,062	2,844	1,219	34,054	23,838	10,216	39,920	27,944	11,976	25,138	35,911	25,138	18,053	12,637	5,416
House connections	83,286	66,612	16,653	1,201	961	240	11,644	9,315	2,329	26,554	21,243	5,311	33,091	26,473	6,618	10,775	6,620	2,155
Treatment Plant																		
Construction of outfall of emergency treatment plant	38,500	13,675	24,825	15,822	5,538	2,024	22,678	7,937	14,741	0	0	0	0	0	0	0	0	0
Construction of Storage Tank at Emergency WWTTP	33,200	4,520	7,680	2,179	510	334	3,340	1,860	3,472	0	0	0	0	0	0	0	0	0
Construction of outfall of Long Term Zone First Module	47,300	23,650	23,650	0	0	0	0	0	0	17,266	8,633	8,633	18,920	9,469	9,460	11,114	5,557	5,557
Treatment Plant for Long Term Zone First Module	86,900	43,450	43,450	0	0	0	0	0	0	31,721	15,860	15,860	34,760	17,380	17,380	20,419	10,210	10,210
Sub-total	284,000	124,245	139,755	23,681	8,298	15,393	28,019	9,807	18,212	77,495	38,748	14,254	31,240	15,620	15,620	18,351	9,176	9,176
Sub-Total	974,845	563,205	411,640	60,121	27,282	32,839	220,254	123,270	96,984	283,279	188,169	115,110	285,186	188,398	116,788	126,005	76,087	49,918
Detailed Design Sewerage	10,543	2,109	8,434	7,010	1,402	5,608	3,534	707	2,827	0	0	0	0	0	0	0	0	0
DBO Preparation	9,650	1,930	7,720	1,343	289	1,075	2,313	463	1,850	2,313	463	1,850	2,319	464	1,855	1,362	272	1,090
Construction Supervision	22,876	18,301	4,575	1,804	1,443	361	6,608	5,286	1,322	6,174	4,939	1,235	6,008	4,806	1,202	2,284	1,827	457
Sub-Total	1,017,914	585,545	432,389	70,278	30,396	39,882	232,708	129,725	102,983	291,765	173,570	118,195	293,613	173,668	119,845	129,651	78,186	51,465
Operations and Maintenance Equipment																		
Sub-Total	8,400	1,680	6,720	1,443	289	1,154	1,738	348	1,390	1,738	348	1,390	1,743	349	1,394	1,738	348	1,390
Studies																		
Environmental Monitoring Plan	14,784	2,957	11,827	2,539	598	2,032	3,059	612	2,447	3,059	612	2,447	3,067	613	2,454	3,059	612	2,447
Studies	4,200	840	3,360	694	139	555	1,400	280	1,120	1,400	280	1,120	1,706	141	565	0	0	0
Leak detection	1,680	336	1,344	185	37	148	373	75	299	373	75	299	374	75	300	373	75	299
Sub-Total	20,664	4,133	16,531	3,419	684	2,735	4,832	956	3,866	4,832	956	3,866	4,148	630	3,318	3,432	686	2,746
Institutional Strengthening																		
Capacity Building	4,200	840	3,360	463	93	370	934	187	747	934	187	747	936	187	749	934	187	747
Training	4,200	840	3,360	721	144	577	869	174	695	869	174	695	174	695	174	697	669	174
Sub-Total	8,400	1,680	6,720	1,184	237	948	1,803	361	1,442	1,803	361	1,442	1,808	362	1,446	1,803	361	1,442
Technical Support Unit																		
Sub-Total Technical Support Unit	15,120	12,096	3,024	2,597	2,078	519	3,129	2,503	626	3,129	2,503	626	3,137	2,510	627	3,129	2,503	626
Total Cost	1,378,955	805,042	573,913	125,331	62,863	62,468	368,262	214,331	153,931	389,030	233,868	155,162	339,769	200,909	136,680	156,543	93,071	63,472
Physical Contingencies																		
Price Contingencies																		
Total Project Cost																		

Annex 3: Estimated Project Costs
ISLAMIC REPUBLIC OF IRAN: WATER SUPPLY AND SANITATION PROJECT

Shiraz (Rials Million)

	Cost with Physical and Price Contingencies														
	FY05			FY06			FY07			FY08			FY09		
	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign
Investments															
Water															
Civil Works															
Transmission Lines	152,358	105,766	46,593	25,844	17,376	8,468	85,396	58,973	26,422	41,319	29,416	11,903	0	0	0
Construction of New Reservoirs															
Reservoir 8	17,175	12,181	4,994	0	0	0	6,702	4,851	1,851	8,901	6,384	2,517	1,573	1,147	428
Reservoir 10	30,881	21,675	9,207	4,602	3,118	1,484	8,189	5,659	2,530	13,246	9,500	3,746	1,189	867	322
Reservoir 18	2,710	1,862	848	865	586	279	1,845	1,276	569	0	0	0	0	0	0
Reservoir 20	7,762	5,332	2,430	2,477	1,679	798	5,294	3,654	1,640	0	0	0	0	0	0
Sub-total	56,528	41,050	17,478	7,944	5,363	2,561	25,675	17,770	7,905	22,147	15,853	6,284	2,762	2,014	748
Network															
Distribution Lines	18,280	13,143	5,137	1,400	932	468	4,474	3,117	1,358	5,083	3,634	1,449	4,779	3,544	1,235
Supply Lines	73,856	53,670	20,186	3,283	2,196	1,087	11,086	7,779	3,289	22,016	15,785	6,230	24,489	18,145	6,344
Replacement of Water Network	3,476	2,426	1,050	726	503	223	1,476	1,016	460	1,724	1,243	481	2,023	1,483	540
Drilling of Wells	23,345	16,916	6,429	8,478	5,824	2,654	3,294	2,294	1,000	4,527	3,141	1,386	5,421	3,893	1,528
Sub-total	169,031	114,293	43,738	13,174	8,792	4,382	26,279	18,368	7,911	45,208	32,434	12,774	47,888	35,515	12,373
Pumping Stations	3,599	2,353	1,246	0	0	0	3,599	2,353	1,246	0	0	0	0	0	0
Sub-Total	372,517	263,462	109,056	46,762	31,551	15,211	140,949	97,464	43,485	108,674	77,734	30,941	50,649	37,528	13,121
Detailed Design Water	4,070	870	3,200	2,653	565	2,118	1,387	306	1,081	0	0	0	0	0	0
Construction Supervision	11,175	8,940	2,235	1,403	1,122	281	4,228	3,383	846	3,260	2,608	652	1,519	1,216	304
Sub-Total	387,762	273,272	114,490	50,848	33,238	17,610	146,564	101,152	45,412	111,934	80,342	31,593	52,169	38,744	13,425
Wastewater															
Civil Works															
Trunk Main Emergency Zone	35,089	15,843	19,246	6,780	2,915	3,864	20,032	8,815	11,217	3,484	1,850	1,624	3,806	1,931	1,874
Trunk Main Long Term	234,348	111,735	122,613	17,082	7,346	9,736	63,204	28,235	34,969	86,579	31,653	54,916	73,613	37,245	36,367
Laterals	182,191	139,826	42,366	4,548	3,299	1,249	41,679	31,009	10,670	53,000	40,278	12,722	54,105	42,359	11,746
Interceptors	374,984	287,619	87,375	10,144	7,358	2,786	86,380	65,737	22,653	108,411	82,377	26,035	109,591	85,799	23,792
Pulse connections	122,121	104,201	17,920	1,381	1,115	246	14,609	12,174	2,434	36,758	31,062	5,696	51,927	44,222	7,705
Treatment Plant															
Construction of outfall of emergency treatment plant	41,646	15,843	25,795	16,855	6,624	10,231	24,593	15,164	9,429	15,164	0	0	0	0	0
Construction of outfall of emergency WWTP	44,145	38,385	5,760	8,427	3,191	5,236	3,727	2,168	1,559	0	0	0	0	0	0
Construction of outfall of Long Term Zone First Module	64,622	38,885	25,737	0	0	0	0	0	0	21,816	12,624	9,193	26,255	15,941	10,314
Treatment Plant for Long Term Zone First Module	118,540	71,391	47,148	0	0	0	0	0	0	40,891	23,192	16,889	48,236	29,287	18,949
Treatment Plant for Long Term Zone Second Module	106,536	64,162	42,374	0	0	0	0	0	0	36,023	20,844	15,179	43,351	26,321	17,030
Sub-total	345,299	195,614	149,685	25,392	9,615	15,778	30,310	11,588	18,722	87,920	56,660	41,261	117,842	71,549	46,293
Sub-Total	1,294,052	854,837	439,214	65,307	31,847	13,660	258,222	157,557	100,665	365,132	243,719	122,412	410,383	283,105	127,277
Detailed Design Sewerage	10,908	2,333	8,575	7,190	1,513	5,677	3,717	820	2,898	0	0	0	0	0	0
DR0 Preparation	11,058	2,843	8,215	1,403	305	1,098	2,489	579	1,920	2,640	672	1,968	2,804	782	2,023
Construction Supervision	30,134	24,107	6,027	1,959	1,557	392	7,747	6,197	1,549	8,046	6,437	1,609	8,776	7,021	1,755
Sub-Total	1,346,151	884,120	462,031	75,860	35,033	40,827	272,185	185,154	107,032	376,816	250,628	125,990	421,963	290,908	131,055
Operations and Maintenance Equipment															
Sub-Total	9,690	2,523	7,167	1,468	316	1,172	1,878	435	1,443	1,994	505	1,479	2,108	587	1,520
Sub-Total	1,743,603	1,159,915	583,688	128,196	68,598	59,608	420,627	286,741	153,886	490,736	331,675	159,061	476,240	330,239	146,000
Studies															
Environmental Monitoring Plan	17,055	4,440	12,615	2,618	556	2,062	3,306	766	2,540	3,492	869	2,623	3,709	1,034	2,675
Studies	4,889	1,139	3,750	3,531	730	1,61	569	1,513	351	1,162	1,596	407	1,191	1,238	0
Leak detection	1,957	517	1,440	195	43	152	404	94	310	465	168	297	318	126	327
Sub-Total	23,682	6,096	17,586	3,543	760	2,783	5,222	1,210	4,012	5,516	1,404	4,112	4,990	1,380	3,610
Institutional Strengthening															
Capacity Building	4,893	1,293	3,600	487	107	380	1,009	234	775	1,056	271	784	1,132	316	817
Training	4,845	1,261	3,584	744	158	586	839	218	721	992	252	739	1,054	294	760
Sub-Total	9,738	2,554	7,184	1,231	265	965	1,948	451	1,497	2,058	524	1,534	2,186	609	1,577
Technical Support Unit															
Sub-Total Technical Support Unit	21,391	18,165	3,225	2,803	2,276	527	3,783	3,134	649	4,301	3,635	666	4,913	4,229	684
Sub-Total	21,391	18,165	3,225	2,803	2,276	527	3,783	3,134	649	4,301	3,635	666	4,913	4,229	684
Total Cost	1,798,414	1,186,731	611,683	135,773	71,890	83,884	431,590	271,538	160,044	502,610	337,237	165,373	488,329	336,458	151,871
Physical Contingencies															
Price Contingencies															
Total Project Cost															

Annex 4(a): Cost Benefit Analysis Summary
ISLAMIC REPUBLIC OF IRAN
AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION

Methodology:

The economic analysis carried out for this Project, which follows the cost-benefit approach, deals separately with each of the two cities and with the water and wastewater components. Since the Project period is relatively short (2004-2009), the analysis covers a longer period (2004-2027), which coincides with the planning horizon of the water and wastewater development programs. Both benefits and cost are therefore projected for this longer period.

Water investment components:

Benefits of water components

Without the Project a large number of households would not be connected to the water distribution system and supply capacity would fall short of an ever-expanding population. In this hypothetical situation some households would be deprived of pipe water and would need to rely on alternative sources of supply. The major benefit of the Project is therefore to avoid the cost of alternative supply, in addition to the more hygienic nature of pipe water as opposed to water sought from other sources. The alternatives to the project are the purchase of water from vendors or of bottled water. The cost that would be avoided thanks to the project is the cost of water purchased from vendors and the cost of installing, operating and maintaining household storage tanks. These benefits are estimated for the additional population that would be deprived from pipe water if the project is not implemented. It is important to stress that they should be considered as a minimum value of the true benefits since they omit the hygiene, quality and commodity advantages of access to potable pipe water. An additional benefit, which is partially taken into in this analysis, is that households will also generally consume much larger quantities of water under the Project, given the greater accessibility and lower cost of pipe water as opposed to vendors' water.

Thus, with the project new households would avoid the cost of vendors' water, which is much higher than the price they would the WWC. They will also avoid the cost of purchasing and maintaining water tanks.

Cost of the Project

The Project gives rise to two cost components, the investment cost and O&M cost. These outlays are adjusted so as to reflect economic as opposed to commercial values. Starting with the breakdown between expenses in local and foreign currencies, taxes are deducted and the local components deflated by an exchange conversion factor so as to allow for a premium on foreign exchange over its official value. In the absence of estimates on the shadow exchange rate for Iran, a 10% premium is assumed and a sensitivity analysis is introduced for this value in the simulations.

Regarding O&M cost, expenses are detailed for operating the treatment plants, broken down into energy, chemicals and labor. Economic prices are used instead of prices paid by WWC, particularly for energy for which the real cost is much higher than paid cost and labor which receives wages in the public sector that are considered higher than its opportunity cost. For energy we use Iran's export price of electricity while for labor we assume, in the absence of estimates for the shadow price of labor, a 20% difference between the latter and the actual wage.

Wastewater investment components:

Benefits: The wastewater network is very underdeveloped in both cities. Ground water, environment as well as health are threatened by the use of absorption wells and the discharge of wastewater in open ditches and canals. Furthermore, as the population grows an increasing number of households would have to incur costs associated with digging and maintaining absorption wells. Given these pecuniary and non pecuniary effects, the project is expected to generate the following benefits: (i) avoidance of cost of absorption wells and their maintenance; (ii) reduction in water-borne diseases and in their associated costs of hospitalization, medication, loss of workdays and school days; (iii) reuse of treated wastewater in irrigation with the associated increase in agricultural value-added; (iv) general improvements in the conditions of immediate neighborhoods and the environment in general with the associated improvement in the quality of life.

The present analysis focuses on the types of benefits that can be quantified. This excludes benefit (iv), which is very difficult to quantify and takes the health benefit partially into account only because the information available on water-borne diseases underestimates their real incidence among the population in the two cities. The first type of benefit [(i)] is estimated following the same methodology as for water wells. This cost also turns out to dominant other benefit components. The health benefit is estimated on the basis of the number of water-borne disease cases provided by the local health department and makes use, alternatively of the health results of the socio-economic assessment. It is also based on estimates of the proportions of hospitalized versus external patients, duration of the sickness, cost of hospitalization and external care and on assumptions concerning the opportunity cost of labor (applied to the number of work days missed). Finally, the value of treated wastewater reused in irrigation is estimated on the basis of information (collected for the Feasibility Studies) provided on water requirements, yields, crop prices and estimates of differences in yields between irrigated and rain-fed agriculture.

Estimating the IRR of the Project water components for Ahwaz and Shiraz

The different steps and results obtained by applying this methodology are shown in tables (1) and (2) of this annex respectively for Ahwaz and Shiraz. Most of the information used is provided in the feasibility studies that have been implemented for the two cities.

Row (1): The connected population is the starting point for estimating the benefits of the project. Ahwaz is already at 100% connection rate and the number of beneficiaries of the Project will be the same as the additional number of inhabitants (Row 2)

Row (3): Annual increase in the number of connections. Without the Project new households (new subscribers) would purchase storage tanks. Therefore, the new connections will equal the number of new tanks that would be installed each year. This number grows with the population.

Row (4): Per capita water consumption per day. According to projections (Feasibility Studies), this quantity will stay constant at 160 liters in Ahwaz and increase from about 140 in 2004 to 150 l in 2027 in Shiraz.

Rows (5) and (6): Annual cumulative increase in water consumption with and without the Project: The quantity in the situation without the Project represents the total quantity of water that new households would have to purchase from water vendors. This quantity will grow each period, as the number of households that would be denied the benefits of pipe water will increase. Obviously, per capita consumption will in this case be lower than if these households had access to WWC water. The present

analysis makes the assumption that they would buy only 75% of what they would consume if they were connected.

Rows (7-a) – (7-c): Cost of alternative source of water without the project: expenses on purchases of water from water vendors account for the bulk of this cost while the other two components, cost of storage tanks and maintenance, have minor values. Regional information collected in the Feasibility Studies provides estimates of over one US dollar (9000 Rials) per cum purchased from vendors.

Rows (8) - (10): Unadjusted and adjusted costs of the Project: Costs are estimated at constant 2003 values. Therefore, they do not take into account any price adjustment components. However, capital cost includes contingencies. As previously stated, shadow prices for foreign exchange and labor are used so as to reflect the opportunity cost for each of these two inputs. As tables (1) and (2) show, total cost is dominated by capital cost in initial years and by O&M cost as additional water supply increases.

Estimates of IRR: For Ahwaz the IRR is estimated at 32% and NPV at over US\$93 million in the base scenario in which the cost values are those estimated in the Feasibility Studies and the benefits are based on a price for vendors' water equal to US\$1.07. IRR remains relatively high even if total cost increases by 20% over initial projections (25% and NPV equal to US\$94 million). Assuming a 20% cost increase and a decline of benefits in the same proportions as compared to the base scenario still yield a relatively IRR, equal to 18%. For Shiraz, the return is even higher, reaching 48% in the base scenario and declining to 25% in the case combining an increase in cost and a decline in benefits by 20%. (Table 5) Other sensitivity analysis involving shadow prices show relatively high values for IRR. Thus, the Project water components largely pass the economic profitability test.

Estimating IRR for the Project wastewater components:

Tables (3) and (4) show the steps followed in estimating IRR and NPV for wastewater, respectively for Ahwaz and Shiraz. The approach is similar to that used in the analysis of the water components. The base scenario is based on the results of the socio-economic assessment carried out for the Project, which estimates the incidence of diarrhea at about 7.5% of the population, and on the assumption that the new sanitation system would result in the avoidance of 10% of the total number of cases of diarrhea. Estimated IRR is in this case relatively low for Ahwaz, equal to 8.5%. For Shiraz, IRR is much higher, equal to 42% (NPV equal to US\$ 42 million). Since the new infrastructure will be built for a period much beyond the 20027 horizon, an alternative scenario is considered using the same assumptions as in the first but extending cost-benefit analysis until the year 2052. IRR rises for Ahwaz in this case to 13%. It also increases for Shiraz. Raising cost by 20% or reducing benefits in the same proportions as compared to the base scenario still yields an IRR for Shiraz in the range of 16 to 18%, but very low values for Ahwaz, ranging between 2.5 and 3.5% (Table 5). It should be recalled that these values do not take into account the significant improvements in living conditions that the Project is likely to generate.

Even though the values of IRR are much lower for wastewater than for water, particularly in the case of Ahwaz, they basically pass the test of economic profitability. For Ahwaz, the adjustment of the number of diseases raises IRR to an acceptable level. Still the estimates are conservative ones, given that they do not include any value for the expected improvements in the environment and in the quality of life in general (less smells, cleaner recreational areas, etc.)

Table-1- Cost Benefit Analysis of the Project Water Component for Ahwaz

Year	2004	2005	2006	2007	2008	2009	2012	2017	2027
<u>A- Benefits with project</u>									
(1) Population (all connected)	1024383	1059213	1095224	1135854	1176810	1219242	1355941	1607699	2177727
(2) Incremental covered population	33683	33683	34830	36012	40630	40955	45547	52036	63151
(3) Annual increase in number of connections	4250	4370	4494	5184	4278	4376	4684	4377	4587
(4) Per capita water consumption per day (l/c/d)	160	160	160	160	160	160	160	160	160
(5) Annual cumulative increase in consumption with the project (million m3)	2.880	5.246	7.691	10.648	13.049	16.355	25.838	42.454	74.433
(6) Annual cumulative increase in consumption without the project (million m3)	2.160	3.934	5.768	7.986	9.787	12.266	19.378	31.841	55.825
(7) Total cost of alternative water provision without the project or benefits (million US\$)	2.33	4.23	6.20	8.57	10.53	13.18	20.81	34.18	59.89
(7-a) Expenses on water purchases from vendors (million US\$)	2.31	4.2	6.2	8.6	10.5	13.1	20.8	34.1	59.8
(7-b) Cost of water storage tanks (in million US\$)	0.01	0.01	0.01	0.01	0.03	0.03	0.04	0.04	0.03
(7-c) Maintenance cost of tanks (in million US\$)	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05
<u>B- Cost of project</u>									
(8) Total adjusted cost	0.7	7.1	16.8	24.3	12.4	4.9	8.6	8.6	25.4
(9-a) Unadjusted investment cost	2.87	11	14.27	10.99	5.92	4.44	2.88	3.18	0
(9-b) Total adjusted investment cost	0.5	7.3	17.2	24.5	10.8	1.9	5.0	3.3	0
(10) Total adjusted O&M cost	0.2	0.6	1.3	2.3	2.8	3.1	4.1	5.7	8.2
(11) Project net economic benefits	1.7	-2.9	-10.5	-15.7	-1.9	8.3	10.5	25.6	51.7

Table-2- Cost Benefit Analysis of the Project Water Component for Shiraz

Year	2004	2005	2006	2007	2008	2009	2012	2017	2027
<u>A- Benefits with project</u>									
(1) Population (all connected)	1263282	1292853	1323117	1354088	1383618	1413791	1508315	1662106	1935591
(2) Incremental covered population	28895	29571	30263	30972	29529	30173	32190	32616	27101
(3) Annual increase in number of connections	8625	8605	9123	9448	8486	8738	9538	10133	16123
(4) Per capita water consumption per day (l)	140.5	141.5	142.5	143.5	144	144.5	146	148	150
(5) Annual cumulative increase in consumption with the project (million m3)	3.595	7.337	11.229	14.570	16.837	19.160	27.286	40.134	62.972
(6) Annual cumulative increase in consumption without the project (million m3)	2.696	5.502	8.422	10.928	12.628	14.370	20.465	30.100	47.229
(7) Total cost of alternative water provision without the project or benefits (million US\$)	2.39	4.71	7.15	9.25	10.67	12.13	17.25	25.33	39.81
(7-a) Expenses on water purchases from vendors (million US\$)	2.25	4.6	7.0	9.1	10.5	12.0	17.1	25.1	39.4
(7-b) Cost of water storage tanks (in million US\$)	0.10	0.10	0.11	0.11	0.10	0.11	0.12	0.12	0.19
(7-c) Maintenance cost of tanks (in million US\$)	0.04	0.02	0.03	0.03	0.04	0.05	0.08	0.12	0.26
<u>B- Cost of project</u>									
(8) Total adjusted cost	0.8	13.5	13.2	6.8	5.1	2.3	4.2	5.2	8.0
(9-a) Unadjusted investment cost	0.6	14.1	13.2	5.5	3.4	0.0	1.4	1.2	1.5
(9-b) Total adjusted investment cost	0.5	12.6	11.8	4.9	3.0	0.0	1.2	1.0	1.4
(10) Total adjusted O&M cost	0.3	0.9	1.5	1.8	2.1	2.3	3.0	4.2	6.6
(11) Project net economic benefits	1.6	-8.8	-6.1	2.5	5.6	9.9	13.1	20.1	31.8

Table 3- Cost Benefit Analysis of the Wastewater Component for Ahwaz

Year	2004	2005	2006	2007	2008	2009	2012	2017	2027
<u>A- Benefits with project</u>									
(1) Population connected	414692	447647	487933	554298	610490	666683	835260	1196129	2177720
(2) Incremental covered population	32122	32955	40286	66365	56192	56192	56192	72174	98159
(3) Total number of households	4715	4715	4715	4760	4706	4706	4706	4717	4719
(4) Per capita wastewater discharged in network per day (l/c/d)	258	257	257	254	253	252	249	251	232
(5) Annual cumulative increase in water discharge with the project (million m3)	38.9	41.9	45.7	51.4	56.3	61.2	75.8	109.7	184.1
(6) Total benefits	9.9	10.2	10.6	11.2	11.6	12.1	13.5	16.5	23.0
(6-a) Total cost of alternative discharge without the project or benefits (million US\$)	5.40	5.51	5.62	5.76	5.84	5.96	6.29	6.89	7.98
(6-b) Additional value of treated water in irrigation	2.11	2.27	2.47	2.79	3.05	3.31	4.11	5.94	9.96
(6-c) Health Benefit	2.4	2.5	2.5	2.6	2.7	2.8	3.1	3.6	5.0
<u>B- Cost of project</u>									
(7) Total adjusted cost	3.2	27.7	32.7	34.6	29.3	7.7	4.8	7.1	11.4
(7-a) Unadjusted investment cost	1.69	28.41	33.33	34.65	28.28	4.16	4.2	0.3	1.3
(7-b) Total adjusted investment cost	1.5	25.7	30.2	31.5	25.7	3.8	0.2	1.1	1.5
(8) Total adjusted O&M cost	1.7	2.0	2.5	3.1	3.6	3.9	4.5	6.0	9.9
(10) Project net economic benefits	6.7	-17.5	-22.0	-23.4	-17.7	4.4	8.7	9.3	11.5

Table 4- Cost Benefit Analysis of the Wastewater Component for Shiraz

Year	2004	2005	2006	2007	2008	2009	2012	2017	2027
<u>A- Benefits with project</u>									
(1) Population connected	190446	259871	332444	408269	463469	520709	704666	1084435	1944858
(2) Incremental covered population	-	69425	72573	75825	55200	57240	63359	80481	88048
(3) Total number of households	259042	267647	276770	286218	294704	303442	331241	379268	522811
(4) Per capita wastewater discharged in network per day (l/c/d)	145	231	232	234	235	236	240	246	250
(5) Annual cumulative increase in volume of water discharge with the project (million m3)	10.079	21.902	28.176	34.870	39.720	44.854	61.729	97.371	177.468
(6) Total benefits	13.9	14.8	15.6	16.5	16.5	17.2	19.4	23.1	34.4
(6-a) Total cost of alternative discharge without the project or benefits (million US\$)	10.27	10.47	10.93	11.31	11.06	11.39	12.43	13.86	20.13
(6-b) Additional value of treated water in irrigation	0.55	1.19	1.52	1.89	2.15	2.43	3.34	5.27	9.60
(6-c) Health Benefit	3.0	3.1	3.2	3.3	3.3	3.4	3.6	4.0	4.6
<u>B- Cost of project</u>									
(7) Total adjusted cost	1.5	19.8	32.7	31.0	29.0	5.8	3.9	11.6	9.7
(7-a) Unadjusted investment cost	0.8	20.5	34.4	31.7	29.1	2.9	0.0	6.5	0.0
(7-b) Total adjusted investment cost	0.8	18.6	30.9	28.6	26.2	2.6	0.0	5.9	0
(8) Total adjusted O&M cost	0.8	1.2	1.8	2.4	2.9	3.2	3.9	5.7	9.7
(9) Project net economic benefits	12.3	-5.0	-17.1	-14.5	-12.5	11.4	15.5	11.5	24.7

Table 5- Sensitivity Analysis

	SHIRAZ	AHWAZ
WATER		
(a)- Base Scenario	48%	32%
(b)- Total cost higher by 20%	35%	25%
(c)- Total benefits lower by 20%	33%	23%
(d)- Cost higher and benefits lower by 20%	25%	18%
WASTEWATER		
(a)- Base Scenario	42%	8.5%
(b)- Total cost higher by 20%	18%	3.6%
(c)- Total benefits lower by 20%	16%	2.6%
(d)- Cost higher and benefits lower by 20%	9%	-

Tariff Policy:

The current system comprises connection rights, subscription fees and water consumption tariffs in addition to the house connection fees, which are directly borne by the customer. These fees are set and revised on a periodic basis by the National Economic Council, which is chaired by the President of the Islamic Republic of Iran and includes several government departments.

Connection rights for water are currently based on dwelling size and a city adjustment coefficient which depends on several factors the most important of which are the cost of water supply and population density. [The formulas for calculating connection fees are very similar across the WWCs. For Ahwaz the following formula was applied in the year 2002: $Y = (0.0015X^2 + 1000) * 1.91 * a * X$, where Y is the connection fee, X is the size of the dwelling and a is the city coefficient which depends on population density and the relative cost of water supply.]

Average connection fees are about US\$310 for the whole country and the minimum fee is approximately equal to US\$150. Ahwaz has a lower average fee, estimated at about US\$200 in 2002. For wastewater, the connection fee is the same as that for water with a few exceptions such as the cities of Rasht and Anzali in Guilan province where the wastewater fee is set at 90% of that for water. These fees have been regularly increased in the last five years, at the rate of 10% annually in all these years with the exception of the year 2000 in which the fee was increased by 15%. In addition to connection fees, the WWCs charge the customer the full cost for house connection which averages about US\$50.

Regarding water consumption, the current system is based on a fixed fee that depends only on the size of the connection pipe and on the type of customer (household or other types), and on a volumetric charge based on increasing block-tariffs. The fixed fee, or the subscription fee, is about 2,000 Rials (25 US cents) for most domestic customers. For the variable fee the current tariff structure is based on complex formulas. The formula used is the same for all WWCs and there is no volumetric charge if consumption falls below 5 cum per month. Above this minimum, prices increase with the level of consumption and generally vary across companies. The average volumetric tariff for the country stood at about 6 US cents in 2002 and it varied from 2 cents for monthly consumption below 20 cum, to about 4.5 cents and 12.5 cents respectively for 20-40 and for more than 40 cum of monthly consumption. A year earlier (2001), the average price paid in the bracket 0-20 was only one cent and the corresponding volumetric bill didn't exceed 18 cents against 48 cents in 2002.

Tariffs and water bills are low even if when related them to income and they are extremely low by comparison with tariffs practiced in recent years in other countries with similar and even lower per capita

income than Iran, as table-6 clearly illustrates. Tariffs in Jordan, Tunisia and Yemen are between five and fifteen times higher than in Tehran and several times higher than the average tariff in all of Iran.

Table 6 - Tariff International Comparisons

	Amman	Tunisia	Sanaa (Yemen)	Algiers	Damascus	Cairo	Tehran	All Iran
Average Price/cum (US\$)	0.62	0.32	0.26	0.22	0.06	0.06	0.04	0.01

Source: World Bank and NWWC of Iran

Average rates have been increased in proportions varying between 23 and 8% since 1999, the lowest increase being recorded in 2003. This moderate increase, which is expected to be the same in 2004, is far below the inflation rate, which has averaged about 16% in recent years. The Economic Council differentiates between what it considers as low consumption, which varies from one city to another and lies in the range of 20 to 25 cum per month, and higher consumption. Tariffs for the second category have been raised by at least twice as much in relative terms than tariffs for the first category (Table-8).

Table 7-Water Tariff Increases (1999-2004)

	1999	2000	2001	2002	2003	2004
Volumetric normal tariff						
Below the minimum	0%	10%	10%	10%	5%	5%
Above the minimum	25%	30%	20%	15%	10%	10%
Average increase	20%	23%	17%	14%	8%	8%
Connection fee	10%	15%	10%	10%	10%	10%
Subscription fee	25%	25%	25%	10%	10%	10%

However, new measures introduced in the system have given conflicting signals as to the direction the tariff structure is taking. On the one hand tariffs have been raised in greater proportions for lower than for higher consumption brackets. In addition to the regular increases, the Council introduced since 2001 a penalty or surcharge for consumption exceeding a certain volume varying across cities in the range of 18 to 25 cum per month (24 cum for Ahwaz and 20 cum for Shiraz). This penalty was set for the year 2002 at 100% of the tariff given by the formula for consumption above the cut-off volume. It has been raised to 150% in 2003 and is expected to be further increased to 200% in 2004. These changes are thus widening the tariff gap between low and high consumption brackets. On the other hand the decision has been taken to set lower bound and upper bounds for tariffs, defined with respect to average cost. In 2002 the lower bound was set at one fourth of average cost and the upper bound at three times the average cost. This adjustment explains the significant increase in the average tariff for the low consumption category of 0 to 20 cum per month between the years 2001 and 2002 (Table 5). The Council raised the lower bound to one third and reduced the upper bound to 2.5 of average cost in 2003. These changes reduce tariff differences between consumption brackets and therefore work in the opposite direction of the first measures of tariff increases. Moreover, and in spite of these increases, revenues from water sales, and from wastewater when applicable, barely cover operation and maintenance cost in most cases. The working ratio for Ahwaz WWC is estimated at 96% and 90% respectively for the budget years 2001-2002 and 2002-2003 while that for Shiraz it has been estimated at 107% and 92% for the same

years. These ratios are currently significantly above the ratio of 75% targeted for the end of the project period.

The rate structure is needlessly complex for both volumetric rates and connection fees. Volumetric tariffs are based on complex formulas that differ across consumption brackets and WWCs. Because of this complexity the tariff structure lacks transparency. Moreover, the structure is such that rates increase by more than threefold when consumption rises from 20 cum or less to slightly higher volumes. This sharp change may not be an issue under the existing system in which tariffs are generally low but deserves to be reviewed under a new framework in which tariffs would be based on costs and rebalanced between consumption brackets. It is important to stress in this regard that 15 to 20 cum of water consumed per month represents non negligible quantities which should not be associated with low income households under a cost-based tariff system. The system is even more complex and less transparent for connection rights. Given these complexities and inappropriate targeting, reform is needed in order to address the main objectives of cost recovery, efficiency, transparency and equity.

Regarding sewage bills they are currently levied and collected only in city neighborhoods where a network exists based on the water bills (70%). Since these services have been very limited, or practically non-existent, the need has not yet been felt by the WWCs to assess the costs involved. As these services develop costs should be assessed separately from water so as to evaluate the appropriateness of the existing tariff structure.

All these shortcomings point to the need for a consistent and comprehensive tariff reform. Aware of this need, the Government has appointed a working group to that effect. According to members of this group, the proposed reform will be in line with the objectives set in the draft Fourth Development Plan (2005-2009), which are simple and transparent tariff structures and full cost recovery for water supply and wastewater services.

Since most urban households are already connected to the water network and only a few are connected to a sewerage network that is yet to be constructed in most cases, the issues of willingness to pay and affordability of connection rights may arise. In order to ease the burden the government has facilitated household access to bank credit for this purpose. For water consumption, a guiding objective is to gradually narrow the block rate spread, which is too wide under the existing system, to move ultimately to a unique cost-based tariff system and to provide income subsidies to the poor. This implies that the tariff reform, along with significant improvements in productivity and in the management of these companies, should aim at reducing this ratio towards the 75% target. The principles stated in the Fourth Development Plan are sound and go in the right direction of an efficiency based tariff policy. Guided by these principles, a comprehensive and consistent reform should replace the inconsistent piecemeal approach of recent years.

Annex 4(b): Socioeconomic Survey: Analysis of Willingness to Pay and Results

ISLAMIC REPUBLIC OF IRAN

AHWAZ AND SHIRAZ-WATER SUPPLY AND SANITATION PROJECT

The poor sanitation situation and the unsuitable quality of potable water in Ahwaz have constituted a threat to public health. In both cities, Ahwaz and Shiraz, wastewater is improperly discharged into open canals, streets and surrounding areas, especially in the eastern section of Ahwaz. In addition to creating an unpleasant sight, this action has caused the spread of many water-borne infectious diseases (diarrhea, conjunctivitis, hepatitis A and B, paratyphoid, typhoid, dysentery).

Given these poor conditions it is important to assess how the inhabitants perceive and value the project. Several information-gathering techniques have been used in this SA to obtain socio-economic data and in particular to:

- gauge the attitudes of residents towards current and proposed water and wastewater services;
- elicit the willingness to pay of households of different socio-economic backgrounds for improvements in sanitation and water supply services that will be brought about by the new project; and
- identify potential problems that could disrupt the development and execution of the project, explore any potential negative results that could impact vulnerable section of the population, determine mechanisms for addressing community concerns, and guide on-going monitoring procedures.

The main approaches/techniques used consisted of:

- A sample survey of about 800 households stratified by income and wastewater connections, to obtain basic socio-economic information and data on willingness to pay (WTP) and potential affordability of increased payments for water supply and wastewater disposal;
- Focus group discussions with local residents in different parts of the city to enhance the data obtained from the household survey and to promote community participation in the design and implementation of the project; and
- Stakeholder interviews with government and non-government agencies.

The willingness survey involved about 800 households located in three different areas of each of the two cities of Ahwaz and Shiraz, which are distinguished according to the price of land. Barring data on income distribution, the survey uses the price of land as a proxy of income or standard of living. The three areas thus defined are low-income, middle-income and high-income areas and the sample includes in the case of Ahwaz respectively 390, 280 and 130 households.

Regarding willingness to pay for the project sanitation services, a distinction is made between connection fees and volumetric fees and a second distinction is made between households already connected to the sewerage network and those which are yet to be connected. The first category of households was randomly assigned a proposed additional connection fee equal to 25%, 50% or 75% of the average connection fee currently charged by the city WWC. The second category of households is divided in three sub-categories according to income level (price of land). The low-income sub-category is randomly assigned 25%, 50% and 75% of average connection fee; the middle-income sub-category is assigned between 100% and 150% of average fee while the high-income sub-category is assigned the higher

proportions of 175%, 200% and 225%. Interviewed households were asked to declare whether they would pay the proposed amount for connection or not. The interviewer explained, on the basis of the questionnaire, that connection fees were needed to cover capital cost.

The second contribution requested from households is a volumetric bill, which is supposed to cover the operation and maintenance of the sewerage network. The amounts proposed in the survey are chosen as proportions of latest bills. Five percentages, 75%, 100%, 125%, 150%, or 200%, were randomly assigned to households and converted in nominal values. Again, the question is closed, households are asked to state their willingness or unwillingness to pay the proposed amount.

Data provided by Ahwaz Water and Wastewater Company (AWWC) showed that 72% of all consumers were already connected and paid monthly fees, and the remaining customers (28%) were not connected. In the case of Shiraz only 10% of the population is already connected.

For Ahwaz, 50% of the inhabitants were located in the poorer areas, 35% in the middle class zones, and 15% in higher income level zones. These percentages were then considered in allocating questionnaires into three income groups and two categories (connected and not-connected).

For this purpose, first the total number of households was divided into connected and not-connected categories using the above percentages. As a result 580 questionnaires were allocated to connected households and 223 to unconnected ones. The next stage involved calculating the total number of households living in the poor, middle and high-income areas of the city and dividing these by the required number of questionnaires to provide the sampling interval for each income group (Table 1). These were obtained separately for connected and unconnected consumers. When these were applied to the AWWC consumer lists, the initial list of sample households was obtained.

Table- 1: Distribution of questionnaires per income groups in Ahwaz

Income group	Lower	Middle	Higher	Total
Number of questionnaires	391	283	129	803
Percentage	49%	35%	16%	100%

Monthly income averages about US\$360 among households of the sample. About 20% of these households declared that their revenue is below US\$175 per month while almost 50% put their revenue in the range of \$175 to US\$375. Differences in income level across groups are not large, implying that the breakdown of the city in zones according to the price of land does not adequately match income distribution.

Households were requested to state whether they were willing to pay a randomly assigned amount for connecting to a new sewerage network, an additional amount for an improvement in the network (rehabilitation and treatment) for those who are already connected, and an absolute amount for households that are not connected yet. They were also requested to state their willingness to pay for operation and maintenance of the sewerage network as well as for improvements in the water system through rehabilitation of the network and other actions such as the change in water intake in Ahwaz from a wastewater-polluted intake to another upstream intake.

The additional connection fee that was put forward in the survey varied between the equivalent of US\$32 and US\$96 for connected households and between US\$32 and US\$288 for non connected households. For the first category of households the proportion of a positive response varies between 42% and 49% (Table-2-a). These are relatively low positive response rates but it should be recalled that what is

requested from these households in the survey is an additional payment since they or former owners had already paid connection fees.

**Table-2-a- Willingness to pay results for wastewater connection fees in Ahwaz
(Connected households)**

Connection fee (% of average fee)	Additional connection fee (in US\$)	Percentage of respondents	
		Willing to pay	Not willing to pay
25%	32	43.5%	56.5%
50%	64	42%	58%
75%	96	49%	51%

In Shiraz the construction of the sewerage network is still in early stage and only 10% of the population is connected. The current average connection fee is estimated at about US\$340, which is much higher than in Ahwaz. The survey methodology and the WTP questionnaire are the same in both cities. Regarding WTP of an additional fee for the minority of households that are already connected, the results show that positive response proportions between 33 and almost 50% (Table-2-b). Considering that these households are asked to pay new additional fees, these proportions are not low.

**Table-2-b- Willingness to pay results for wastewater connection fees in Shiraz
(Connected households)**

Connection fee (% of average fee)	Additional connection fee (in US\$)	Percentage of respondents	
		Willing to pay	Not willing to pay
25%	85	43.8%	56.2%
50%	170	48.3%	51.7%
75%	255	33.3%	66.7%

For the second category of Ahwaz households, the non-connected ones, the amounts requested are new connection fees, varying between 32 and US\$96 in the low income area, 128 to US\$192 in the middle-income area and 224 to US\$288 in the high-income area. The positive response rates are surprisingly low, varying in the range of about 12 to 54% (Table-3-a).

**Table-3-a- Willingness to pay results for wastewater connection fees in Ahwaz
(non-connected households)**

Connection fee (% of average fee)	Connection fee (in US\$)	Percentage of respondents	
		Willing to pay	Not willing to pay
Low-income area:			
25%	32	33.3%	66.7%
50%	64	11.8%	88.2%
75%	96	43.2%	56.8%
Middle-income area:			
100%	128	45.0%	55.0%
125%	160	54.2%	45.8%
150%	192	40.0%	60.0%
High-income area:			
175%	224	30.0%	70.0%
200%	256	30.8%	69.2%
225%	288	16.7%	83.3%

For the second category of Shiraz households, the non-connected ones which account for 90% of all households, the amounts requested are new connection fees, varying between 85 and US\$255 in the low income area, 340 to US\$510 in the middle-income area and 595 to US\$765 in the high-income area. The positive response rates are in the range of about 32 to 52%, which are higher than in Ahwaz, even though the amounts requested are much higher in Shiraz (Table-3-b).

**Table-3-b- Willingness to pay results for wastewater connection fees in Shiraz
(non-connected households)**

Connection fee (% of average fee)	Connection fee (in US\$)	Percentage of respondents	
		Willing to pay	Not willing to pay
Low-income area:			
25%	85	35.3%	64.7%
50%	170	33.6%	66.4%
75%	255	31.8%	68.2%
Middle-income area:			
100%	340	41.5%	58.5%
125%	425	48.1%	58.9%
150%	510	32.0%	68.0%
High-income area:			
175%	595	52.5%	47.5%
200%	680	48.7%	51.3%
225%	765	44.4%	55.6%

All households of the survey were also requested to pay randomly assigned percentages of their water bill in order to cover the O&M expenses on the new sewerage system (Table-4-a for Ahwaz). The

corresponding average amounts vary from US\$3.4 in the sub-sample to which a 75% proportion of the water bill is assigned, up to US\$7.2 for the sub-sample that is requested to pay 200% of its water bill. The positive response rates are much higher than for connection fees, even if they all fall in a range below 50%

**Table-4-a- Willingness to pay results for wastewater O&M fees in Ahwaz
(all households)**

Percentage of current fee	Average monthly amount in each bracket (in US\$)	Percentage of respondents	
		Willing to pay	Not willing to pay
75%	3,4	43%	57%
100%	4,8	40.8%	59.2%
125%	5,3	48.3%	51.7%
150%	5,4	45%	55%
200%	7,2	45.2%	54.9%

For Shiraz, the contribution to O&M of the sewerage system, which is requested in the survey, varies between 150 and 200% of the monthly bill, which goes for the sample households from US\$5.5 to US\$6.7. WTP proportions do not exceed 50% of the number of households (Table-4-b-b).

**Table-4-b- Willingness to pay results for wastewater O&M fees in Shiraz
(all households)**

Percentage of current fee	Average monthly amount in each bracket (in US\$)	Percentage of respondents	
		Willing to pay	Not willing to pay
75%	5,5	44.2%	55.8%
100%	7,1	47.8%	52.2%
125%	5,7	49.0%	51.0%
150%	5,9	45.7%	54.3%
200%	6,7	44.9%	55.1%

Finally, households expressed their willingness to pay for expenses on improving the water supply system in Ahwaz, through the rehabilitation of worn out pipes and the transfer of the water intakes. The additional amount requested varies between 1.9 and US\$ 4.5 depending on the income level as defined in the sample. The percentages of positive responses are above 50% for the middle and high-income areas and about 45% in the low-income area. (Table-5). Results for Shiraz are similar to those of Ahwaz, although the positive response proportions are somewhat lower.

Table-5- Willingness to pay results for improvements in the water supply network in Ahwaz (all households)

Income group	Percentage of current water bill	Average monthly amount in each bracket (in US\$)	Percentage of respondents	
			Willing to pay	Not willing to pay
Low-income	25 – 75 %	1,9	44.9%	55.1%
Middle-income	100 – 150%	3,8	55.6%	44.4%
High-income	175 – 225%	4,5	55.1%	44.9%

WTP for connection, for covering O&M expenses on sewerage as well as for investment in improving the water supply system are positively correlated with the level of education of the head of the household, meaning that the higher his education, the more the head of the household is willing to pay for the new services. This relationship holds at varying acceptable degrees of statistical significance for the three types of services (connection and discharge of wastewater and improvement of the water system). As expected, the correlation between WTP and the level of income is also positive, although its statistical significance is weaker for connection fees than for use of the network.

Generally, the results of the survey have shown low levels of WTP, even though the payments requested in the survey were moderate. The relatively low levels of income in Ahwaz may partly explain the lack of strong positive response, but other social attitudes may also be at play. It is believed that all matters outside the house or the ownership of a person are the responsibility of the government. This includes matters such as provision of electricity, water, health, etc.

This insufficient interest in financial contribution to the new services does not imply that the citizens do not appreciate the importance of new sanitation services. On the contrary, according to the results of the rapid appraisal section of the questionnaire, 78% of the respondents in Ahwaz have mentioned the project as being critical, 10% have stated that people should not pay for the project, 21% have accepted to pay if the fees are not too high and if they can be paid by installments, and finally, 14% have agreed to pay unconditionally. The rest of the respondents have emphasized the fact that they are already paying taxes, so they don't see why they should pay more.

The respondents were also somewhat skeptical towards the implementation of the project by government organizations. This was especially due to previous promises and commitments made which were not materialized and left such projects unfinished in some cases. That is why 26.7% of respondents insisted on rapid implementation of the project. About 30% of respondents, despite their agreement with the idea of the project, were distrustful of project implementers and expressed concerns that the project might be mismanaged or deviated from its main goals.

The Focus Group Discussion results give a similar feedback, although they show more readiness among low-income groups living in poor districts to pay for improvement of water and wastewater services, as health problems are more critical in those neighborhoods. However, these groups believed that financing the project was the responsibility of the government. Such attitude has been cultivated by the promises made by the Government in the past to provide such services free of charge. Changes in these attitudes may be already taking place but major shifts will take time to materialize.

Affordability: The water bill is not currently an issue since the average price of water does not exceed five US cents per cum both in Ahwaz and Shiraz. Given average consumption volume and a subscription fee of 25 cents (2,000 Rials) for most households, the average monthly water bill does not exceed US\$1.5.

Given an average monthly income of US\$360 for the sample of households surveyed in Ahwaz, this water bill accounts for about 0.4% of income. Even if we assume that households tend to overstate the level of their income for social reasons, the water bill should not account for more than 0.7-0.8% of average income. Adding the sewerage component, which is set at 70% of the water consumption bill, will only add an extra US\$0.87. Thus, in the current tariff system, the average household pays about US\$2.4, subscription fee included, or about 0.67% of the average income declared in the survey. The water and wastewater bill represents similar income shares among low-income households.

Annex 5: Financial Analysis Summary

ISLAMIC REPUBLIC OF IRAN

AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION

I. Project Financial Cost-Benefit Analysis

The financial analysis compares the project costs with the project benefits. All costs and benefits are expressed in current terms and are incremental in nature, valued as the difference between the costs/benefits “with the project” and “without the project”. The analysis was carried out over the period of the average expected life of the investments of 25 years. The detailed financial analysis of each WWCs in this Annex presents the present values (PVs) of the financial flows and the NPVs and FRR for Ahwaz and Shiraz, respectively.

For the financial benefits, the WWCs will have the increased sales revenue due to the ability to meet increased demand at a higher tariff implemented to meet the financial targets agreed to and the cost savings due to reductions in water losses. On the cost side, the WWCs will have the outlays for the project’s capital cost and capital investments beyond the project period estimated in the feasibility studies, the increased salary and utility costs due to the project and the increased maintenance spending as estimated in the financial forecast.

II. Financial Assessment of the Water and Wastewater Companies (WWCs)

This Annex presents a detailed assessment of the two WWCs, including the impact on the tariff based on different scenarios for the financing of the investment costs and level of cost recovery achieved. The analysis below deals with the past, current and future financial performance of the WWCs. The financial year for the WWCs ends on March 20.

Past and Current Performance of Ahwaz

Based on audited accounts for the past four years, Ahwaz WWC has been incurring significant net losses which are projected to continue in the year ending March 20, 2004. Operating income before depreciation and interest has been positive resulting in a working ratio (operating expenses/operating revenue) below 1. However, spending on maintenance has been insufficient in the past (on average 1.5% of gross fixed assets, whereby industry standard is around 2.5-3%), which makes the achieved working ratio of 0.75 underestimated. Depreciation represents a significant expense to the WWC, reaching 26% of total revenue in 2002/03.

The financial performance of the company is further aggravated by high water losses resulting in a much larger need for water to pass through the system than is billed for. Water losses were as high as 46% in 1999/00 and have come down to about 37.7% in 2002/03. Of the water that passes through the system, only about 74% is estimated to be paid for in 2003/04. At the end of 2002/03, the accumulated accounts receivables equaled 12 months of billings.

Future Financial Performance of Ahwaz WWC

Projections to assess Ahwaz's future financial position and performance have been carried out for the period 2004/5-2013/14. The projections have been prepared based on assumptions summarized in this Annex. Detailed assumptions are recorded in the Project Files.

The projections for the future financial performance have been anchored by the financial targets agreed between the Government of Iran and the World Bank during their sector strategy discussions in September 2003. These financial targets comprise the following:

- Working ratio of 0.75 by the financial year 2008/09 (operating expenses excluding depreciation and interest/operating revenue).
- Labor productivity reaching 3 by project completion (expressed as number of staff per 1,000 water connections).
- Accounts receivables reduced to 4 months by 2008/09. (During appraisal, more analysis will be done to identify measures to reach agreed upon targets i.e., action plan for arrears, write-off etc.,).
- Unaccounted for water to reach 27% by 2008/09.

The targets aim to gradually improve the financial and operational performance of the WWC by achieving cost recovery of O&M, and part of capital investment. Meeting these targets will require increases in the water tariff, but will also depend on simultaneous improvements in collection performance and a significant reduction in water losses.

The analysis considers a base scenario whereby the financial targets agreed are achieved under the following financing arrangement (Illustrated in Table-1 below): Part of water supply investment is financed by a loan. The rest of water supply and all wastewater investment are financed by connection fees and grants from the Government. The analysis shows that, through 31,500 new water connections and 22,300 new wastewater connections, Ahwaz would be able to contribute 166 billion Rials (US\$19.7 million) to the financing of the project from new connections. This is based on a water charge (connection and installation fee) of 2.3 million rials and a wastewater charge of 2.76 million rials).

Table 1: Project Financing Scheme

	Connection fees	Bank Loan to Government passed to WCC as a Loan	Bank Loan to Government passed to WCC as a Grant	Government Grant to WCC
Water	Yes	Yes	No	Yes
Wastewater	Yes	No	Yes	Yes
Technical Support Unit, Capacity Building, Training and Studies	No	No	Yes	Yes

A second scenario which analysis the impact on the tariff if full cost recovery is to be achieved has also been included. As illustrated in Table 2 below, the base and the reference scenarios have different impact on the performance of the Ahwaz WWC. In the base scenario, the tariff increase in year 2004/05 would be significant and would reach 84%. After this year it would fall to about 32% and then lie around 15% during the rest of the project implementation period. However, a net deficit would be incurred to the company because what remains from the revenues once operating expenses are covered is still insufficient to cover depreciation and financial charges. The net accumulated deficit would amount to US\$7.9 million over the period 2004/05-2013/14.

Table 2: Ahwaz Tariff Increase Requirements

	2004/05	2005/06	2006/07	2007/08	2008/09	Total
Working ratio	0.90	0.85	0.83	0.8	0.75	
Deficit (US\$ m)						-7.9
Increase in tariff required (%)	84.8%	32.5%	14.2%	18.0%	19.6%	Average: 31.5%
Increase in tariff required (%) for full cost-recovery	100.6%	21.6%	22.1%	21.1%	15.1%	Average: 32.9%

An important issue is that in both cases Ahwaz would generate a positive cash flow position. This is achieved in part by an overall improvement in the collection performance from the current rate of about 74% to 90% by the end of the project implementation period (2008/09) while simultaneously making provisions for doubtful revenue of its billings and writing off arrears. Given the age of some of the accounts receivables listed above, it would seem likely that some write-offs should take place (see Table 3 below). It has been agreed that a detailed Action Plan be prepared and implemented during first 2 years of project execution. This action plan will identify the necessary measures to increase the collection of billings, including arrears but also, where appropriate, write-off consumer debts that are unlikely to be collected. This effort will be done in parallel to reducing the accounts receivables to agreed 4 months by 2008/09.

Table 3: Ahwaz Accounts Receivables as of 2002/03

Consumer category	Receivable (bn rials)	Number of days outstanding
Domestic	37.6	255
Industry	2.3	69
Commercial	15.7	357
Government	15.7	525
Public	11.2	196
Military	0.26	201
Other	9.8	390
	92.6	

Assumptions for projections of financial performance of Ahwaz WWC

The analysis is based on actual audited results for the years 1999/00-2002/03 and company estimates for 2003/04. The projections cover the years 2004/05-2013/14. The project implementation period is 2004/05-2008/09.

Key Assumptions for financial statements

Water demand is assumed to be increasing at the average rate of 1.5% per year as of 2004/05 (Source: company).

Water connections are assumed to be increasing at the rate of 3% per year as of 2004/05 (source: company), adding 31,500 new water connections between 2004/05 and 2008/09.

Sewerage connections are assumed to be increasing at the rate of 3% per year as of 2004/05 (source: company), adding 22,300 new connections between 2004/05 and 2008/09.

Water tariff	<u>Base scenario</u> : is assumed to be increasing as required to meet the financial targets agreed to between the Government of Iran and the World Bank (by 2008/09 a working ratio of 0.75, accounts receivables reduced to 4 months, labor productivity of 3 staff per 1,000 connections and unaccounted for water reduced to 27%.) The water supply components are assumed to be provided partly as a loan to the company. The Government is assumed to cover in grant form the cost of water components not covered by the Bank loan or connections fees as well as the cost of the sanitation components not covered by connection fees.
Sewerage charge	the charge for disposal of wastewater is calculated as a coefficient of the water sales and varies with consumer category. In Ahwaz, consumers with a connection pay for this service regardless if there is a waste water treatment plant in operation or not (Source: company, audited accounts)
Water losses	include technical and non-technical losses and were 37.72% in 2002/03 (source: company). Losses are estimated to be have been reduced to 35.6% in 2003/04 and are estimated to reduce gradually towards 27% by 2008/09 as agreed between the Government of Iran and the World Bank (Source: strategy discussions)
Water resources	90% are assumed to come from the Karoun River and 10% are from wells.
Water Production	comprises water requirements to meet demand plus losses. Reduces over lifetime of project as losses are reduced faster than demand grows.
Water cost	Ahwaz pays a water right to the regional water board for both the Karoun and the wells. The cost was 22.0 rials/m ³ in 2002/03 and is assumed to increase at the rate of inflation (Source: NWWEC)

Financial Statement

Domestic inflation	is assumed to be 16% per year as of 2003/04
Revenues	there are 4 sources of revenues for the company: water sales, water fixed subscription fee, disposal of sewerage and sewerage fixed subscription fee
Subscription fees	water: 43,800 rials/subscriber; sewerage: 40,943/subscriber (source: company). The fee is assumed to increase by 10% per year (source: Government law limiting utility tariff increases to 10%)
Salaries	are assumed to increase with the rate of inflation, 16% per year
Project salaries	project is assumed to require an additional workforce of 340 people at a cost of 6,062 million rials. (Source: feasibility study). It is assumed that they are hired gradually over 2004/05 (50%) and 2005/06 (100%). The salary cost is assumed to increase with the rate of inflation

Electricity	assumed to vary according to production volume and the tariff, 40 rials/kWh in 2003/04, is assumed to increase by the rate of inflation, 16% per year (Source: NWWEC)
Project electricity	additional electricity requirements due to project are estimated at 89 kWh per person in Ahwaz. The additional electricity needs are expected to mature gradually reaching 100% in 2007/08. (Source: feasibility study). Tariff of 40 rials/kWh in 2003/04 is assumed to increase by 16% per year (Source: NWWEC)
Chemicals	assumed to vary according to production volume and increase by the rate of inflation
Project chemicals	additional chemicals due to the project are estimated at a value of 1,119 million rials (Source: feasibility study) and are expected to reach 100% by 2007/08 and the cost increases by the rate of inflation thereafter
Maintenance	assumed as a percentage of gross fixed assets (GFA) and assumed to increase gradually towards 2.5% of GFA by 2008/09 (Source: industry practice)
Subcontracting	this is for meter reading and assumed to increase with the rate of inflation (Source: NWWEC).
Other	costs include rental of buildings, utility services for administration, vehicles, etc. Assumed to increase at 5%.
NWWEC	an administration fee is paid to the NWWEC. Assumed to increase by 25% during the project implementation period (2004/05-2008/09) to contribute to the expected increased cost of the NWWEC as it enhances its regulatory function. Assumed to increase by 5% per year after 2008/09
Provisions	Include the writing-off of 40% of its 2004/05 current account receivables over a five-year period (8% each year) and (considered bad debts) and a provision for doubtful collection of current billings equivalent to all non collected billings of the current year.
Depreciation	the current charge is based on the straight line methodology and assumed to continue. To this charge, the project assets are added which are assumed to depreciate over 25 years on average
Financial charge	comprises interest payments on borrowings. The only debt assumed to be serviced is the World Bank loan to the Government of Iran, which has been passed onto the WWC at the cost of borrowing. An average interest rate of 5.35% has been assumed in the projections based on a 10-year forecast of LIBOR and the World Bank spread. A commitment fee of 0.75% less a 0.5% waiver, i.e. 0.25% on the undisbursed amount is applied (source: World Bank Financial Products Group). It is assumed that the front-end fee of 1% of the loan amount will be borne by the Government.
Profit tax	The WWCs are exempt taxes (Source: NWWEC)

Sources and Applications of Funds

Internal sources	comprise net operating income before financial charges with the depreciation charge added back.
External sources	comprise connection fees, borrowings and grants from the Government.
Capital investments	comprise the total of capital investments undertaken by the company including the Project. During the project implementation period (2004/05-2008/09), it is not expected that the company will undertake any other capital investment.
Taxes	Taxes are exempt
Debt service	comprises interest charges and repayments on borrowings.
Working capital	is the annual change in current assets (less cash) and current liabilities

Balance Sheet

Gross fixed assets	represent the previous years gross fixed assets plus the work in progress as it is completed
Work in progress	represents the project as it is implemented starting in 2004/05
LT investments	represent investments in other companies and intangible assets (i.e. rights). Estimated to remain constant
Net Account receivables	represent previous years receivables and the portion of current years billings not collected less the provision for doubtful revenue (from arrears and current billings).
Installments	it is assumed that 70% of the consumers will pay for their connection over a 3 year period.
Inventory	represents spare parts, chemicals, etc.
Connection fees	assumed to accumulate as new consumers connect to the water supply and sewerage network. Connections fees comprise the connection right and the installation fee. (source: NWWEC)
Retained earnings/ Losses	represents accumulated earnings/losses incurred by the company
Long term debt	current long-term debt represents a loan taken by the NW&WWC on behalf of Ahwaz to finance capital investment.
Government support	represents support from the Government to finance capital investments.
World Bank Loan	the total project cost is US\$252.9 million (including US\$7.2 million for studies, technical support unit, training and capacity building.) Connection fees are estimated to cover US\$19.7 million, leaving US\$233.2 million to be

financed by the Government with support from the World Bank loan. The Bank loan is assumed to partly cover the cost of the water supply components not covered by the connection fees and the institutional support program. The cost of water components not covered by the Bank loan or connections fees as well as the cost of the sanitation components not covered by connection fees:

Connection fees:	US\$19.7 million
Bank Loan to Govt passed as Loan to Company:	US\$43.8 million
Bank Loan to Govt passed as Grant to Company:	US\$105.2 million
Govt support in the form of Grant to Company:	US\$83.7 million
Total:	US\$252.3 million

Account payables assumed to decrease in terms of period of time taken to pay suppliers (water rights, electricity, chemicals, subcontracting and other costs) to arrive at 90 days on average by the end of the project implementation period (2008/09)

Past and current performance of Shiraz

Like Ahwaz, Shiraz has incurred net losses the past four years based on its audited accounts and a loss is also estimated for the year ending March 20, 2004. The working ratio in the past has been very weak with operating expenses before depreciation and interest reaching as high as 1.17 in 2001/02 but came down in 2002/03 to 0.92 due to a significant increase in revenue as a result of a large tariff increase that year. The working ratio for 2003/04 is expected to be below 1 but to have deteriorated from 0.92 to 0.98. The situation would have been even worse had Shiraz been spending sufficiently on maintenance. Maintenance spending as a percentage of gross fixed assets was as low as 0.29% in 2002/03 when the industry standard calls for 2.5%-3%. Depreciation represents a significant expense to the WWC, for example in 2002/03 the depreciation charge accounted for 16% of total revenue.

Water losses have averaged about 30% in the past. Collection performance has been very good in the past but is estimated to have deteriorated in 2003/04 possibly as an effect due to the increased tariff in 2002/03. The good collection performance of the past has resulted in relatively manageable accounts receivables, which reached 5.6 months at the end of 2002/03.

Future Financial Performance of Shiraz WWC

Projections to assess Shiraz's future financial position have been carried out for the period 2004/5-2013/14. The assumptions for the projections are summarized below and a detailed record of the assumptions is kept in the Project Files. The projections have been undertaken with the financial targets outlined above in the section covering Ahwaz that have been agreed between the Government of Iran and the World Bank. Likewise, an analysis has been undertaken to assess the tariff required for full cost recovery as in the case of Ahwaz. The analysis shows that, through 38,000 new water connections and 50,000 new wastewater connections, Shiraz would be able to contribute 323 billion Rials (US\$38.5 million) to the financing of the project from new connections. This is based on a water charge (connection and installation fee) of 3.6 million rials and a wastewater charge of 3.5 million rials).

The tariff increases required differ in the different scenarios (see Table-4 below). In the base scenario - which targets the tariff increase required to meet the working ratio target of 0.75 by 2008/09 - the tariff increase is very significant in the year 2004/05, about 70% and would be greatly reduced thereafter to average about 34% during the project implementation period. A net deficit of US\$10.4 million would be incurred. In the second scenario (achieving full cost recovery), the tariff increase in 2004/05 would reach

88%, but the average increase for the project implementation period would only be 2.4% greater than in the base scenario.

Table 4: Shiraz Tariff Increase Requirements

	2004/05	2005/06	2006/07	2007/08	2008/09	Total
Working ratio	0.90	0.85	0.83	0.8	0.75	
Deficit (US\$ m)						-10.4
Increase in tariff required (%)	70.4%	22.6%	18.3%	31.6%	30.8%	Average: 33.6%
Increase in tariff required (%) for full cost-recovery	88.4%	14.7%	30.5%	33%	24.2%	Average: 36.6%

In Shiraz, the collection performance has been relatively good in the past with overall collection rates reaching as high as 90%. The collection performance is reported to have deteriorated in 2003/04 possibly as an effect due to the increased tariff in 2003/04. Based on the company-audited statements, the accumulated accounts receivables equaled about 24.7 billion rials (US\$2.94 million) in 2002/03. The largest debtor is the domestic consumer (50%), followed by the government (16%). The arrears from the domestic category average about 76 days and the government's arrears average 430 days (See Table-5 below).

Table 5: Shiraz Accounts Receivables as at 2002/03

Consumer category	Receivable (bn rials)	Number of days outstanding
Domestic	10.1	76
Industry	.009	67
Commercial	3.6	111
Government	4.3	431
Public	2.1	422
Military	3.3	193
Other	1.3	328
	24.7	

To meet the financial targets agreed upon to, an overall improvement in the collection performance from the current rate of about 75% to 90% by 2005/06 while simultaneously making provisions for doubtful revenue of its billings and writing off arrears is required. Given the age of some of the accounts receivables listed above, it would seem likely that some write-offs should take place. It has been agreed that a detailed Action Plan be prepared which will identify the necessary measures to increase the collection of billings, including arrears but also, where appropriate, write-off consumer debts that are unlikely to be collected. It is important to note that under both scenarios analyzed, Shiraz would have to make extra efforts to manage its working capital in order to avoid negative cash flow certain years.

Assumptions for projections of financial performance of Shiraz WWC

The analysis is based on actual audited results for the years 1999/00-2002/03 and company estimates for 2003/04. The projections cover the years 2004/05-2013/14. The project implementation period is 2004/05-208/09.

Key Assumptions for financial statements

Water demand is assumed to be increasing at the average rate of 1.3% per year as of 2004/05 (Source: company)

Water connections	are assumed to be increasing at the rate of 2.5% per year as of 2004/05 (Source: company), adding 38,000 new connections
Sewerage connections	are assumed to reach 75,000 by 2008/09 by increasing by 10,450 connections per year until that year. After 2008/09, the increase will slow to 5 % per year (Source: feasibility study)
Water tariff	Base scenario: is assumed to be increasing as required to meet the financial targets agreed to between the Government of Iran and the World Bank (by 2008/09 a working ratio of 0.75, accounts receivables reduced to 4 months, labor productivity of 3 staff per 1,000 connections and unaccounted for water reduced to 27%.) The water supply components are assumed to be provided partly as a loan to the company. The Government is assumed to cover in grant form the cost of water components not covered by the Bank loan or connections fees as well as the cost of the sanitation components not covered by connection fees.
Sewerage charge	the charge for disposal of wastewater is calculated as a coefficient of the water sales and varies with consumer category.
Water losses	include technical and non-technical losses and were 32% in 2001/02 (source: company). Losses are assumed to have improved to 30% in 2003/04 and then reduce gradually towards 27% by 2008/09 as agreed between the Government of Iran and the World Bank (source: strategy discussions)
Water resources	80% come from wells and 20% from river sources
Water Production	comprises water requirements to meet demand plus losses. Increase very slowly as demand is growing faster than the reduction in losses.
Water cost	Shiraz pays a higher price for the water from the dam than from its own wells. The cost for water from the river was 285 rials/m ³ in 2002/03 and 19.92 rials/m ³ for water from the wells. The cost is assumed to increase at 20% for the water from the dam and 10% for the water from the wells (Source: NWWEC)
Financial Statement	
Domestic inflation	is assumed to be 16% per year as of 2003/04
Revenues	there are 4 sources of revenues for the company: water sales, water fixed subscription fee, disposal of sewerage and sewerage fixed subscription fee
Subscription fees	water: 43,993 rials/subscriber; sewerage: 31,185/subscriber (source: company). The fee is assumed to increase by 10% per year (source: Government law limiting utility tariff increases to 10%)
Salaries	are assumed to increase by the rate of inflation (Source: NWWEC)

Project salaries	project is assumed to require an additional workforce of 340 people at a cost of 5,006 million rials. (Source: feasibility study). It is assumed that they are hired gradually over 2004/05 (50%) and 2005/06 (100%). The salary cost is assumed to increase with the rate of inflation
Electricity	assumed to vary according to production volume and the tariff, 40 rials/kWh in 2003/04, is assumed to increase by inflation each year (Source: NWWEC)
Project electricity	additional electricity requirements due to project are estimated at 280,100 kWh/day. The additional electricity needs are expected to mature gradually reaching 100% in 2007/08. (Source: feasibility study). Tariff of 40 rials/kWh in 2003/04 is assumed to increase by inflation every year (Source: NWWEC)
Maintenance	assumed as a percentage of gross fixed assets (GFA) and assumed to increase gradually towards 2.5% of GFA by 2008/09 (Source: industry practice)
Other	costs include rental of buildings, utility services for administration, vehicles, etc. Assumed to increase at 5% as of 2004/05.
NWWEC	an administration fee is paid to the NWWEC. Assumed to increase by 25% during the project implementation period (2004/05-2008/09) to contribute to the expected increased cost of the NWWEC as it enhances its regulatory function. Assumed to increase by 5% per year after 2008/09
Provision for Accounts receivable	Include the writing-off of 20% of its 2004/05 current account receivables over a five-year period (4% each year) and (considered bad debts) and a provision for doubtful collection of current billings equivalent to all non collected billings of the current year
Depreciation	the current charge is based on the straight line methodology and assumed to continue. To this charge, the project assets are added which are assumed to depreciate over 25 years on average
Financial charge	comprises interest payments on borrowings. The only debt assumed to be serviced is the World Bank loan to the Government of Iran, which has been passed onto the WWC at the cost of borrowing. An average interest rate of 5.35% has been assumed in the projections based on a 10-year forecast of LIBOR and the World Bank spread. A commitment fee of 0.75% less a 0.5% waiver, i.e. 0.25% on the undisbursed amount is applied (source: World Bank Financial Products Group). It is assumed that the front-end fee of 1% of the loan amount will be borne by the Government.
Profit tax	The WWCs are exempt taxes (Source: NWWEC)

Sources and Applications of Funds

Internal sources	comprise net operating income before financial charges with the depreciation charge added back.
External sources	comprise connection fees, borrowings and grants from the Government.

Capital investments comprise the total of capital investments undertaken by the company including the Project. During the project implementation period (2004/05-2008/09), it is not expected that the company will undertake any other capital investment.

Taxes Taxes are exempt

Debt service comprises interest charges and repayments on borrowings.

Working capital is the annual change in current assets (less cash) and current liabilities

Balance Sheet

Gross fixed assets represent the previous years gross fixed assets plus the work in progress as it is completed

Work in progress represents the project as it is implemented starting in 2004/05

LT investments represent investments in other companies and intangible assets. Estimated to remain constant

Account receivables represent previous years receivables and the portion of current years billings not collected. Collection performance is assumed to improve to reach the target of accounts receivables representing 4 months of billings

Installments it is assumed that 70% of the consumers will pay for their connection over a 3 year period

Inventory represents spare parts, chemicals, etc.

Connection fees assumed to accumulate as new consumers connect to the water supply and sewerage network. Connections fees comprise the connection right and the installation fee. (Source: NWWEC)

Retained earnings/losses represents accumulated earnings/losses incurred by the company

Long term debt current long-term debt represents a loan taken by the NWWEC on behalf of Shiraz to finance capital investment (Source: NWWEC)

Government support represents support from the Government to finance capital investments. (Source: NWWEC)

World Bank Loan the total project cost is US\$214.10 million (including US\$6.3 million for studies, technical support unit, training and capacity building.) Connection fees are estimated to cover US\$38.5 million, leaving US\$175.7 million to be financed by the Government with support from the World Bank loan. The Bank loan is assumed to partly cover the cost of the water supply components not covered by the connection fees and the institutional support program.

Connection fees:	US\$38.5 million
Bank Loan to Govt passed as Loan to Company:	US\$25.1 million
Bank Loan to Govt passed as Grant to Company:	US\$102.1 million
Govt support in the form of Grant to Company:	US\$48.4 million

Total: **US\$214.2 million**

Account payables

assumed to decrease in terms of period of time taken to pay suppliers (water rights, electricity, chemicals, subcontracting and other costs) to arrive at 60 days on average by the end of the project implementation period (2008/09).

Ahwaz

Base Scenario

Based on agreed upon Performance Indicators

Part of water supply investment is financed by a loan

The rest of water supply and all wastewater investment is financed by connection fees and grants from the Government

ISLAMIC REPUBLIC OF IRAN
 Always Water and Wastewater Company
 Financial Projections for the 20-Year Period
 Forecasting Scenario: Part of Water Supply Investment on Bank Loan
 Tariffs To meet Working Ratio with provision

	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
	Audited	Audited	Audited	Estimate	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Number of water connections															
Annual growth in water connections (%)	165.742	166.583	174.578	188.022	197.519	203.444	209.548	215.634	223.979	235.848	244.923	250.211	257.717	265.449	273.326
	6.9%	6.9%	4.8%	4.0%	4.0%	4.0%	4.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Water sales volume (m³)															
Domestic demand	45,473,782	51,433,201	51,631,321	57,829,624	58,697,048	60,471,166	61,370,234	62,268,907	63,123,391	64,181,882	65,144,620	66,121,789	67,113,616		
Commercial demand	1,993,210	2,751,933	3,044,461	2,882,048	2,722,279	2,763,113	2,804,560	2,846,628	2,889,328	2,932,968	2,976,658	3,021,307	3,066,877		
Government demand	900,12	1,047,43	1,197,83	1,349,88	1,502,09	1,654,20	1,806,31	1,958,42	2,110,53	2,262,64	2,414,75	2,566,86	2,718,97		
Military demand	3,249,843	3,220,886	3,202,886	3,184,930	3,166,974	3,149,018	3,131,062	3,113,106	3,095,150	3,077,194	3,059,238	3,041,282	3,023,326		
Other demand	3,241,465	3,536,557	4,113,099	1,078,426	1,094,692	1,111,021	1,127,350	1,143,679	1,159,997	1,176,326	1,192,655	1,208,984	1,225,313		
Total water sales volume	15,228,951	16,929,276	20,392,838	14,437,150	14,729,893	14,948,781	15,170,983	15,393,185	15,615,387	15,837,589	16,059,791	16,281,993	16,504,195		
Annual growth in total water demand (%)	71.088/72	79.385/80	66.244/70	86.360/80	68.272/70	68.456/70	68.640/70	68.824/70	69.008/70	69.192/70	69.376/70	69.560/70	69.744/70	69.928/70	70.112/70
	11.5%	8.5%	-1.6%	2.0%	1.5%	1.6%	1.6%	1.6%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
Number of average connections															
Annual growth in average connections (%)	109.280	113.981	122.979	134.720	140.119	144.323	148.652	153.112	157.705	162.437	167.310	172.329	177.469	182.824	188.308
	4.2%	6.0%	9.6%	4.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Tariffs (Rials/m³)															
Domestic	565.74	664.37	763.12	861.87	960.56	1,059.25	1,157.94	1,256.63	1,355.32	1,454.01	1,552.70	1,651.39	1,750.08	1,848.77	1,947.46
Commercial	1,045.07	1,316.26	1,611.45	1,934.64	2,288.83	2,674.02	3,089.21	3,534.40	4,009.59	4,514.78	5,049.97	5,615.16	6,210.35	6,835.54	7,490.73
Industrial	1,074.19	1,006.27	1,006.27	1,006.27	1,006.27	1,006.27	1,006.27	1,006.27	1,006.27	1,006.27	1,006.27	1,006.27	1,006.27	1,006.27	1,006.27
Government	900.12	1,047.43	1,197.83	1,349.88	1,502.09	1,654.20	1,806.31	1,958.42	2,110.53	2,262.64	2,414.75	2,566.86	2,718.97	2,871.08	3,023.19
Military	3,249.843	3,220.886	3,202.886	3,184.930	3,166.974	3,149.018	3,131.062	3,113.106	3,095.150	3,077.194	3,059.238	3,041.282	3,023.326	3,005.370	3,005.370
Other	422.84	453.73	501.21	551.21	601.21	651.21	701.21	751.21	801.21	851.21	901.21	951.21	1,001.21	1,051.21	1,101.21
Average Water Tariff	378.73	471.85	593.51	837.41	1,137.42	1,515.72	1,980.78	2,545.84	3,210.90	3,976.00	4,851.16	5,836.32	6,941.48	8,166.64	9,521.80
Waterstar change (as a percentage of water sales)															
Domestic	70.05%	70.05%	70.05%	70.05%	70.05%	70.05%	70.05%	70.05%	70.05%	70.05%	70.05%	70.05%	70.05%	70.05%	70.05%
Commercial	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Industrial	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Government	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Military	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Other	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Sales revenue (Rials million)															
Domestic	10,129	14,628	15,318	18,236	22,528	24,114	24,811	25,508	26,205	26,902	27,599	28,296	28,993	29,690	30,387
Commercial	2,070	3,623	4,935	5,549	6,263	7,077	7,891	8,705	9,519	10,333	11,147	11,961	12,775	13,589	14,403
Industrial	3,087	3,274	3,274	3,274	3,274	3,274	3,274	3,274	3,274	3,274	3,274	3,274	3,274	3,274	3,274
Government	2,929	4,232	5,052	6,018	7,084	8,150	9,216	10,282	11,348	12,414	13,480	14,546	15,612	16,678	17,744
Military	6,429	6,429	6,429	6,429	6,429	6,429	6,429	6,429	6,429	6,429	6,429	6,429	6,429	6,429	6,429
Other	27,165	37,718	51,453	64,351	81,249	101,147	124,045	150,943	181,841	216,739	261,637	316,535	381,433	456,331	541,229
Sewerage															
Domestic	5,850	6,102	6,354	6,606	6,858	7,110	7,362	7,614	7,866	8,118	8,370	8,622	8,874	9,126	9,378
Commercial	1,485	2,017	2,549	3,081	3,613	4,145	4,677	5,209	5,741	6,273	6,805	7,337	7,869	8,401	8,933
Industrial	1,866	1,866	1,866	1,866	1,866	1,866	1,866	1,866	1,866	1,866	1,866	1,866	1,866	1,866	1,866
Government	1,586	1,529	1,529	1,529	1,529	1,529	1,529	1,529	1,529	1,529	1,529	1,529	1,529	1,529	1,529
Military	1,172	1,172	1,172	1,172	1,172	1,172	1,172	1,172	1,172	1,172	1,172	1,172	1,172	1,172	1,172
Other	1,852	2,277	2,702	3,127	3,552	3,977	4,402	4,827	5,252	5,677	6,102	6,527	6,952	7,377	7,802
Total	13,852	17,915	22,978	28,041	33,104	38,167	43,230	48,293	53,356	58,419	63,482	68,545	73,608	78,671	83,734
Total sales revenue (Rials million)	40,247	55,834	73,665	91,594	116,143	136,224	161,841	193,044	230,941	276,422	331,903	398,384	476,865	568,346	674,827
Water losses (%)	45.77%	41.23%	38.14%	37.72%	35.80%	35.00%	33.00%	30.00%	29.00%	27.00%	27.00%	27.00%	27.00%	27.00%	27.00%
Demand (m³)															
Domestic (m ³)	71,459,725	78,946,646	80,692,465	89,665,040	91,528,410	93,391,780	95,255,150	97,118,520	98,981,890	100,845,260	102,708,630	104,572,000	106,435,370	108,298,740	110,162,110
Commercial (m ³)	60,509,278	58,129,410	58,129,410	58,129,410	58,129,410	58,129,410	58,129,410	58,129,410	58,129,410	58,129,410	58,129,410	58,129,410	58,129,410	58,129,410	58,129,410
Industrial (m ³)	132,209,000	136,986,000	140,136,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000
Growth in Water Purchases Required (%)	3%	3%	3%	-2%	-1%	1%	-2%	-3%	-3%	-3%	-3%	-3%	-3%	-3%	-3%
Supply (m³)															
Domestic	132,209,000	136,986,000	140,136,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000
Commercial	132,209,000	136,986,000	140,136,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000
Industrial	132,209,000	136,986,000	140,136,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000
Government	132,209,000	136,986,000	140,136,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000
Military	132,209,000	136,986,000	140,136,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000
Other	132,209,000	136,986,000	140,136,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000
Total	132,209,000	136,986,000	140,136,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000	136,912,000
Average Cost for Water (Rials/m³)	8.79	14.39	15.75	21.04	22.00	23.52	25.00	26.48	27.96	29.44	30.92	32.40	33.88	35.36	36.84
Domestic (Rials/m ³)	1,162	1,958	2,207	2,981	3,119	3,363	3,501	3,639	3,777	3,915	4,053	4,191	4,329	4,467	4,605
Commercial (Rials/m ³)	1,162	1,958	2,207	2,981	3,119	3,363	3,501	3,639	3,777	3,915	4,053				

ISLAMIC REPUBLIC OF IRAN
 Abbara Water and Wastewater Company
 Actual and Forecast Financial Statements For Years Ending March 20 (Rials million)
 Financing Scenario: Part of Water Supply Investment on Bank Loan
 Tariffs To meet Working Ratio with provision

	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
	Audited	Audited	Audited	Audited	Estimate	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
INCOME STATEMENT															
Revenue															
Revenue from Water Sales	26,571	39,145	42,499	54,331	62,128	115,143	156,234	181,044	216,745	263,197	274,089	294,040	329,185	369,937	413,547
Revenue from Disposal of Wastewater	13,186	18,782	16,887	22,487	29,465	51,918	68,616	78,997	93,887	113,225	117,868	126,248	140,923	167,820	181,262
Water Fixed Subscription Fees	3,377	5,220	5,897	8,319	9,511	9,802	10,996	10,399	10,711	11,032	11,363	11,704	12,055	12,417	12,790
Sewerage Fixed Subscription Fees	2,116	3,387	3,907	5,516	6,311	6,500	6,695	6,896	7,103	7,316	7,535	7,761	7,994	8,234	8,481
Miscellaneous Revenue	444	687	89	728	0	0	0	0	0	0	0	0	0	0	0
Total Revenue	45,694	67,221	69,279	91,381	107,421	184,364	241,540	277,336	328,446	394,770	410,864	439,753	489,159	548,508	616,079
Operating Expenses															
Subcontracting	20,219	27,647	33,275	37,072	43,004	46,894	57,865	67,124	77,864	90,322	104,774	121,538	140,984	163,541	189,708
Increased salary expense due to the project	1,162	1,958	3,303	4,161	2,971	3,456	3,959	4,451	5,179	5,826	6,478	7,132	7,889	8,647	9,405
Electricity for production	2,244	2,703	2,685	3,194	3,655	4,284	4,977	4,870	5,488	6,371	7,296	8,261	9,279	10,348	11,468
Chemicals & consumed materials	1,613	1,858	1,996	2,258	2,564	3,014	3,443	3,860	4,504	5,157	6,072	7,149	8,418	9,911	11,669
Increased cost for chemicals due to the project	5,622	4,663	4,810	7,469	8,573	9,892	14,374	25,253	41,455	61,906	69,604	69,604	69,604	69,604	69,604
Maintenance	973	7,006	7,856	8,559	9,928	11,517	13,380	15,497	17,977	20,853	24,190	28,060	32,550	37,757	43,799
Subcontracting	7,595	9,553	12,350	18,740	19,677	20,881	21,694	22,779	23,918	25,114	26,370	27,688	29,073	30,526	32,052
Administration in NMRVWC	806	1,162	400	580	620	773	993	1,171	1,513	1,985	2,584	3,345	4,289	5,425	6,854
Provision for accounts receivable	40,325	56,570	66,775	82,045	91,912	165,927	205,384	230,189	262,737	286,078	308,148	329,815	357,679	411,381	482,066
Total Operating Expenses	5,369	10,651	2,505	9,336	16,408	18,436	36,246	47,147	65,689	88,693	102,716	109,938	122,540	137,127	154,020
Depreciation and Financial Costs	18,368	21,736	27,813	24,167	25,000	26,867	29,729	48,294	73,160	96,838	109,154	109,154	108,154	109,154	109,154
Net Operating Income Before Financial Costs	-12,999	-11,085	-25,408	-14,930	-8,592	-8,430	6,317	-1,147	-7,470	1,855	-6,438	785	13,386	27,973	44,866
Financial Income	3,181	2,952	2,659	4,764	0	0	0	0	0	0	0	0	0	0	0
Financial Expense	825	1,514	1,513	2,313	0	1,917	5,747	12,171	17,017	19,700	18,595	17,490	16,396	15,281	14,176
Net Financial Income	2,356	748	1,046	2,450	0	-1,917	-5,747	-12,171	-17,017	-19,700	-18,595	-17,490	-16,396	-15,281	-14,176
Net Operating Income Before Tax	-10,643	-10,337	-24,362	-12,380	-8,592	-10,347	771	-13,317	-24,487	-17,845	-25,033	-16,706	-3,000	12,692	30,680
Profit Tax (%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extraordinary Income (Expense)	-2,503	-3,946	-6,260	-3,455											
Adjusted Net Profit (loss)	-13,147	-14,284	-30,622	-15,835	-8,592	-10,347	771	-13,317	-24,487	-17,845	-25,033	-16,706	-3,000	12,692	30,680

ISLAMIC REPUBLIC OF IRAN
 Ahwaz Water and Wastewater Company
 Financial Statements For Years Ending March 20 (Rials million)
 Planning Scenario For of Water Supply Investment on Bank Loan
 Tariffs To meet Working Ratio with provision

	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
CASH FLOW STATEMENT															
SOURCES															
Internal Sources															
Net Operating Income Before Financial Costs	-8,692	8,430	5,517	-1,147	-7,470	1,855	-6,438	785	13,386	27,973	44,866				
Depreciation	25,000	26,867	29,729	48,294	73,160	96,838	109,154	109,154	109,154	109,154	109,154				
Total Internal Sources	18,408	18,436	35,246	47,147	65,689	98,693	102,716	109,938	122,540	137,127	154,020				
External Sources															
Connection Fees	17,292	22,402	30,866	32,891	37,286	42,222	47,838	54,200	61,409	69,576	78,830				
World Bank Loan	0	19,535	75,094	125,960	95,018	52,613	0	0	0	0	0				
Other Loan	0	0	0	0	0	199,520	0	0	0	0	0				
Government Grants	89,875	346,170	449,831	446,415	0	0	0	0	0	0	0				
Total External Sources	17,292	151,672	452,131	608,602	578,698	294,355	47,838	54,200	61,409	69,576	78,830				
TOTAL SOURCES	33,701	150,249	488,377	655,829	644,387	393,048	150,554	164,138	183,948	206,703	232,850				
APPLICATIONS															
Capital Investment Requirements	0	139,053	464,119	621,649	621,649	591,949	307,903	0	0	0	0				
Total Capital Investment Requirements	0	139,053	464,119	621,649	621,649	591,949	307,903	0	0	0	0				
Taxes															
Import Duty on Equipment for Investment Projects	0	0	0	0	0	0	0	0	0	0	0				
Profit Tax	0	0	0	0	0	0	0	0	0	0	0				
Total Tax and Duties	0	0	0	0	0	0	0	0	0	0	0				
Debt Service															
Interest	0	1,917	5,747	12,171	17,017	19,700	18,595	17,490	16,386	15,281	14,176				
Principal	0	0	0	0	0	0	21,660	21,660	21,660	21,660	21,660				
Total Debt Service	0	1,917	5,747	12,171	17,017	19,700	40,255	39,150	38,046	36,941	35,836				
Increase (Decrease) in Working Capital	7,740	-8,832	-14,053	-11,784	-4,643	-7,568	-22,022	1,218	1,310	1,394	1,464				
TOTAL APPLICATIONS	7,740	132,138	455,812	622,036	604,322	320,034	18,233	40,369	38,356	38,335	37,301				
Surplus Funds	25,961	18,111	32,564	33,793	40,065	70,013	132,320	129,770	144,592	168,358	195,540				
Opening Cash Balance	1,697	27,068	45,348	14,346	15,747	152,091	235,705	357,525	481,295	625,887	794,255				
Closing Cash Balance	27,658	45,188	78,333	112,128	152,118	225,205	357,525	481,295	625,887	794,255	989,804				

ISLAMIC REPUBLIC OF IRAN
 Ahwaz Water and Wastewater Company
 Actual and Forecast Financial Statements For Years Ending March 20 (Rials million)
 Financing Scenario: Part of Water Supply Investment on Bank Loan
 Tariffs: To meet Working Ratio with provision

	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
BALANCE SHEET															
ASSETS															
Fixed Assets															
Gross Fixed Assets	259,217	270,894	377,379	517,429	659,490	659,490	798,543	1,262,662	1,884,311	2,476,260	2,784,163	2,784,163	2,784,163	2,784,163	2,784,163
Less: Accumulated Depreciation	80,655	106,953	138,753	189,666	214,666	241,533	271,262	319,555	392,715	489,552	586,106	707,660	817,014	926,167	1,035,321
Net Fixed Assets	178,562	164,111	238,626	327,763	444,824	417,957	527,281	943,106	1,491,596	1,986,708	2,198,057	2,076,503	1,967,149	1,857,996	1,748,842
Water-Progress	272,651	382,919	478,650	609,411	750,000	891,000	1,041,000	1,200,000	1,369,000	1,540,000	1,720,000	1,900,000	2,080,000	2,260,000	2,440,000
Total Fixed Assets	451,214	488,190	376,876	489,824	444,824	557,010	991,400	1,564,756	2,083,545	2,294,610	2,198,457	2,076,303	1,967,149	1,857,996	1,748,842
Long-Term Investments and Intangible Assets	3,934	15,891	28,825	34,050	34,050	34,050	34,050	34,050	34,050	34,050	34,050	34,050	34,050	34,050	34,050
Current Assets	1,297	2,241	3,144	1,697	27,658	45,768	78,333	112,126	152,191	225,205	357,525	481,295	625,987	794,255	989,804
Gross Commercial Accounts Receivable (customers)	51,962	65,595	68,776	92,637	120,566	166,657	227,067	282,535	331,802	371,279	402,093	424,081	448,589	476,014	506,818
Less Provision for Doubtful Revenues	21,187	27,424	33,006	43,424	56,424	73,424	93,006	120,566	152,191	198,705	258,093	338,000	441,000	571,000	741,000
Net Accounts Receivable (customers)	30,775	38,171	35,770	49,213	64,142	93,233	134,061	161,969	179,611	172,574	144,000	186,081	207,589	225,014	265,818
Other A/R (connection fees in installment)	10,391	16,912	21,042	26,155	15,131	20,548	21,200	24,019	27,214	30,834	34,934	39,581	44,845	50,809	57,567
Inventories	4,765	4,734	5,653	1,051	1,051	1,051	1,051	1,051	1,051	1,051	1,051	1,051	1,051	1,051	1,051
Other Current Assets	396	737	378	484	484	484	484	484	484	484	484	484	484	484	484
Total Current Assets	66,811	90,220	83,904	121,024	149,759	175,085	194,969	218,250	248,177	311,477	447,898	576,314	726,171	900,503	1,102,810
TOTAL ASSETS	523,958	572,301	501,405	624,898	643,764	766,145	1,220,419	1,817,055	2,365,772	2,640,137	2,667,405	2,686,667	2,727,370	2,792,549	2,885,702
EQUITIES AND LIABILITIES															
Equities															
Concession fees	105,262	124,507	147,947	183,350	200,642	223,044	253,911	288,802	324,068	366,290	414,127	468,328	529,736	599,312	678,142
Donated funds/capital	177,021	187,226	201,906	217,676	217,676	217,676	217,676	217,676	217,676	217,676	217,676	217,676	217,676	217,676	217,676
Government grant for WSS Project (World Bank)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Shareholder capital	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
Other Reserve	-17,844	-35,953	-70,883	-86,717	-95,309	-106,656	-104,866	-118,203	-142,690	-180,534	-185,657	-202,273	-205,273	-192,581	-161,891
Retained Earnings/Losses	284,788	275,929	279,070	314,506	323,207	425,137	602,944	1,272,349	1,731,542	1,955,439	1,978,244	2,015,738	2,074,147	2,156,415	2,265,935
Total Equity	184,137	181,130	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992
Long-Term Debt	32,461	60,716	88,798	161,876	161,876	161,876	161,876	161,876	161,876	161,876	161,876	161,876	161,876	161,876	161,876
Government Loan for WSS Project (World Bank)	10,048	12,696	16,058	17,097	17,097	17,097	17,097	17,097	17,097	17,097	17,097	17,097	17,097	17,097	17,097
Pension Fund	226,646	254,551	184,848	238,965	238,965	258,500	333,594	459,554	554,372	607,185	565,525	563,965	542,205	520,545	496,885
Less Current Portion															
Net Long-Term Debt															
Current Liabilities	18,774	21,967	20,220	29,294	39,459	40,375	41,748	43,019	37,594	35,380	39,842	43,270	47,234	51,795	57,089
Accounts Payables	8,214	14,648	22,623	26,476	26,476	26,476	26,476	26,476	26,476	26,476	26,476	26,476	26,476	26,476	26,476
Other Payables	5,326	3,206	14,446	15,856	15,856	15,856	15,857	15,557	15,657	15,657	15,657	15,657	15,657	15,657	15,657
Downpayments															
Other Current Liabilities															
Total Current Liabilities	32,514	41,821	57,487	71,427	81,593	82,508	83,881	85,152	79,658	77,513	103,636	107,064	111,018	115,588	120,882
TOTAL EQUITIES AND LIABILITIES	523,948	572,301	501,405	624,898	643,764	766,145	1,220,419	1,817,055	2,365,772	2,640,137	2,667,405	2,686,667	2,727,370	2,792,549	2,885,702

ISLAMIC REPUBLIC OF IRAN
 Ahwaz Water and Wastewater Company
 Actual and Forecast Financial Statements For Years Ending March 20 (Rials million)
 Tariffs To meet Working Ratio with provision

	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	
Working Ratio without provision for accounts receivable(%)	88%	84%	96%	90%	85%	58%	54%	58%	61%	62%	68%	70%	70%	70%	70%	
Working Ratio (%)	88%	84%	96%	90%	85%	58%	54%	58%	61%	62%	68%	70%	70%	70%	70%	
Working Ratio with depreciation(%)	128%	116%	137%	116%	108%	105%	97%	100%	102%	105%	105%	104%	101%	98%	95%	
Working Ratio with depreciation and interest (%)	122%	116%	137%	116%	108%	105%	97%	100%	102%	105%	105%	104%	101%	98%	95%	
Operating Ratio (%)	128%	116%	137%	116%	108%	105%	97%	100%	102%	105%	105%	104%	101%	98%	95%	
Net Operating Margin (%)	-23%	-15%	-35%	-14%	-8%	-6%	0%	-5%	-7%	-5%	-2%	-1%	-1%	2%	5%	
Debt Service Coverage Ratio						9.62	6.31	3.87	3.85	5.01	2.55	2.81	3.22	3.71	4.30	
Agreed upon Working ratio					95%	90%	85%	83%	80%	75%	75%	75%	75%	75%	75%	
Average Water Tariffs (Rial/m3)	379	472	594	637	714	1,316	1,744	1,691	2,348	2,899	2,882	3,046	3,360	3,720	4,097	
Average Water Tariffs Increase (US\$/m3)	0.05	0.05	0.07	0.06	0.09	0.11	0.11	0.21	0.28	0.33	0.34	0.36	0.40	0.44	0.49	
Average Water Tariffs Annual Increase over Project Period		24.6%	25.8%	7.4%	12.1%	84.2%	32.5%	14.2%	18.0%	19.6%	2.6%	5.7%	10.3%	10.7%	10.1%	
Adjusted Net Profit (loss) in US\$ million (US\$ = 8400 rials)	-1.6	-1.7	-3.6	-1.9	-1.0	-1.2	0.1	-1.6	-2.9	-2.1	-3.0	-2.0	-0.4	-0.4	3.7	
Number of employees		938	938	938	938	1,108	1,278	1,278	1,278	1,278	1,278	1,278	1,278	1,278	1,278	
Staff per 1000 connections (water)		5.4	5.4	4.9	2.9	3.3	3.7	3.6	3.5	3.4	3.3	3.2	3.1	3.0	2.9	
Agreed upon Staff per 1000 connections (water)										3.0	3.0	3.0	3.0	3.0	3.0	
Maintenance as a % of GFA	2.17%	1.73%	1.30%	1.44%	1.30%	1.50%	1.80%	2.00%	2.20%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	
Accounts Receivables (days)	419	360	363	373	410	712	142	166	145	30	48	45	45	45	45	
Accounts Payables (months)	13.6	11.6	11.9	12.3	13.5	12.0	10.0	8.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0	
World Bank Coverage (months)																
Annual collection rate (%)	52.901	66.009	66.792	79.491	197.696	254.973	341.779	290.668	408.103	410.864	410.864	439.753	490.159	548.508	616.079	
Annual collection rate % (over current years billings)	79.5%	95.4%	73.7%	74.0%	75.0%	75.0%	80.0%	80.0%	85.0%	90.0%	92.5%	95.0%	95.0%	95.0%	95.0%	
Accounts Payables (days)	544	499	363	377	300	275	225	180	120	90	90	91	92	93	94	
Funds needed to meet working ratio target (without provision)				-11,618	-11,618	-66,026	-86,756	-82,891	-78,249	-70,413	-41,086	-29,317	-32,677	-36,567	-41,072	
Funds needed to meet working ratio target (with provision)				-11,618	-11,618	0	0	0	0	0	0	0	0	0	0	
Funds needed to break-even (cover depreciation and interest)				-8,592	-10,347	771	-24,467	-17,845	-17,845	-17,845	-25,033	-16,706	-3,000	-3,000	12,662	30,680

ISLAMIC REPUBLIC OF IRAN
Ahwaz Water and Wastewater Company
Forecast Investment Schedule

Investment Projects/Components	FORECAST												Total
	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14		
Water Supply Project	28,695	139,845	233,175	177,887	98,354	-	-	-	-	-	-	-	677,066
Sanitation Project	100,153	309,804	374,097	399,251	189,278	-	-	-	-	-	-	-	1,375,683
Other Projects	10,205	14,270	15,377	15,611	16,261	-	-	-	-	-	-	-	71,924
Total	-	139,053	464,119	591,949	307,903	-	-	-	-	-	-	-	2,124,673
Customs Duty (%)													
VAT (%)													
Total (including contingencies and VAT)													

ISLAMIC REPUBLIC OF IRAN
Ahwaz Water and Wastewater Company
Forecast Depreciation Plan
(Rials million)

	FORECAST												
	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	
Plant in service, March 20, 2003	327,783	-	-	-	-	-	-	-	-	-	-	-	-
Construction in progress, March 20, 2003	142,061	-	-	-	-	-	-	-	-	-	-	-	-
Total fixed assets, March 20, 2003	469,824	24,167	24,167	24,167	24,167	24,167	24,167	24,167	24,167	24,167	24,167	24,167	24,167
Water Supply	-	833	-	-	-	-	-	-	-	-	-	-	-
Additions in 2003/04	28,695	-	2,700	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148
Additions in 2004/05	139,845	-	-	5,598	5,598	5,598	5,598	5,598	5,598	5,598	5,598	5,598	5,598
Additions in 2005/06	232,175	-	-	9,287	9,287	9,287	9,287	9,287	9,287	9,287	9,287	9,287	9,287
Additions in 2006/07	177,887	-	-	7,115	7,115	7,115	7,115	7,115	7,115	7,115	7,115	7,115	7,115
Additions in 2007/08	98,354	-	-	3,935	3,935	3,935	3,935	3,935	3,935	3,935	3,935	3,935	3,935
Additions in 2008/09	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2009/10	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2010/11	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2011/12	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2012/13	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Water Supply	677,066	833	2,700	1,148	6,746	16,033	23,148	27,083	27,083	27,083	27,083	27,083	27,083
Sanitation	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2003/04	100,153	-	-	4,006	4,006	4,006	4,006	4,006	4,006	4,006	4,006	4,006	4,006
Additions in 2004/05	309,804	-	-	12,396	12,396	12,396	12,396	12,396	12,396	12,396	12,396	12,396	12,396
Additions in 2005/06	374,097	-	-	14,984	14,984	14,984	14,984	14,984	14,984	14,984	14,984	14,984	14,984
Additions in 2006/07	398,251	-	-	14,364	14,364	14,364	14,364	14,364	14,364	14,364	14,364	14,364	14,364
Additions in 2007/08	193,278	-	-	15,930	15,930	15,930	15,930	15,930	15,930	15,930	15,930	15,930	15,930
Additions in 2008/09	-	-	-	7,731	7,731	7,731	7,731	7,731	7,731	7,731	7,731	7,731	7,731
Additions in 2009/10	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2010/11	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2011/12	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2012/13	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Sanitation	1,375,683	-	-	4,006	16,402	31,356	47,296	55,027	55,027	55,027	55,027	55,027	55,027
Other	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2003/04	10,205	-	-	408	408	408	408	408	408	408	408	408	408
Additions in 2004/05	14,270	-	-	571	571	571	571	571	571	571	571	571	571
Additions in 2005/06	15,377	-	-	615	615	615	615	615	615	615	615	615	615
Additions in 2006/07	15,811	-	-	632	632	632	632	632	632	632	632	632	632
Additions in 2007/08	16,261	-	-	650	650	650	650	650	650	650	650	650	650
Additions in 2008/09	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2009/10	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2010/11	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2011/12	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2012/13	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Other	71,924	-	-	408	979	1,594	2,227	2,877	2,877	2,877	2,877	2,877	2,877
Total Depreciation	25,000	26,867	29,729	48,294	73,160	96,638	109,154	109,154	109,154	109,154	109,154	109,154	109,154
Total Depreciation Norm by WSC	25,000	26,867	29,729	48,294	73,160	96,638	109,154	109,154	109,154	109,154	109,154	109,154	109,154

ISLAMIC REPUBLIC OF IRAN
Ahwas Water and Wastewater Company
Foreign Debt Schedule
(Rials million)

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Existing commercial debt											
opening balance	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992
disbursements	-	-	-	-	-	-	-	-	-	-	-
repayments	-	-	-	-	-	-	-	-	-	-	-
closing balance	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992
interest	0%	-	-	-	-	-	-	-	-	-	-
IBRD: Water Supply and Sanitation											
opening balance	368,220	19,535	19,535	94,629	220,589	315,607	368,220	346,580	324,900	303,240	281,580
disbursements	-	75,094	75,094	125,960	95,018	52,613	21,660	21,660	21,660	21,660	21,660
repayments	-	-	-	-	-	-	-	-	-	-	-
closing balance	368,220	19,535	94,629	220,589	315,607	368,220	346,580	324,900	303,240	281,580	260,920
interest	5.35%	1,045	5,063	11,802	16,885	19,700	18,541	17,382	16,223	15,085	13,906
commitment fee	0.25%	872	684	369	132	-	54	108	182	217	271
OTHER LOANS: Water Supply and Sanitation											
opening balance	-	-	-	-	-	-	-	-	-	-	-
disbursements	-	-	-	-	-	-	-	-	-	-	-
repayments	-	-	-	-	-	-	-	-	-	-	-
closing balance	-	-	-	-	-	-	-	-	-	-	-
interest	5.35%	-	-	-	-	-	-	-	-	-	-
commitment fee	0.25%	-	-	-	-	-	-	-	-	-	-
Future Borrowings:											
opening balance	-	-	-	-	-	-	-	-	-	-	-
disbursements	-	-	-	-	-	-	-	-	-	-	-
repayments	-	-	-	-	-	-	-	-	-	-	-
closing balance	-	-	-	-	-	-	-	-	-	-	-
interest	-	-	-	-	-	-	-	-	-	-	-
Total loans: opening balance	59,992	59,992	79,527	154,621	280,581	375,599	428,212	406,552	384,892	363,232	341,572
disbursements	-	19,535	75,094	125,960	95,018	52,613	21,660	21,660	21,660	21,660	21,660
repayments	-	-	-	-	-	-	-	-	-	-	-
closing balance	59,992	79,527	154,621	280,581	375,599	428,212	406,552	384,892	363,232	341,572	319,912
check closing	59,992	79,527	154,621	280,581	375,599	428,212	406,552	384,892	363,232	341,572	319,912
interest: commitment fees	-	1,917	5,747	12,171	17,017	19,700	18,595	17,490	16,388	15,281	14,176
Grants											
Total Grants	-	-	-	-	-	-	-	-	-	-	-

Ahwaz

Scenario 2

Based on full cost recovery

Part of water supply investment is financed by a loan

The rest of water supply and all wastewater investment is financed by connection fees and grants from the Government

ISLAMIC REPUBLIC OF IRAN
 Ahwaz Water and Wastewater Company
 Actual and Forecast Financial Statements For Years Ending March 20 (Rials million)
 Financing Scenario: Part of Water Supply Investment on Bank Loan
 Tariffs To achieve full cost recovery

	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	
	Audited	Audited	Audited	Audited	Estimate	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	
INCOME STATEMENT																
Revenues																
Revenue from Water Sales	26,571	39,145	42,499	54,331	62,128	126,171	155,774	493,071	237,361	277,446	293,244	306,480	331,420	360,485	390,693	
Revenue from Disposal of Wastewater	13,186	18,792	16,897	22,487	29,485	58,065	68,426	89,371	101,143	111,032	124,784	131,393	141,047	154,011	171,610	
Water Fixed Subscription Fees	3,377	5,220	5,897	8,319	9,517	9,902	10,096	10,399	10,711	11,032	11,364	11,704	12,055	12,417	12,790	
Sewerage Fixed Subscription Fees	2,116	3,367	3,907	5,516	6,311	6,500	6,695	6,896	7,103	7,316	7,535	7,761	8,000	8,234	8,461	
Financials Revenue	444	667	89	728	0	0	0	0	0	0	0	0	0	0	0	
Total Revenue	48,684	67,221	69,279	91,381	107,421	199,538	240,991	294,336	357,588	414,813	437,926	457,338	483,316	535,148	583,774	
Operating Expenses																
Salaries and Related Expenses	20,219	27,647	33,275	37,072	43,004	49,084	57,866	67,124	77,864	90,322	104,774	121,536	140,984	163,541	189,708	
Increased salary expense due to the project	1,162	1,958	3,303	4,161	2,971	3,668	3,982	7,082	8,157	9,462	10,976	12,732	14,769	17,133	19,674	
Water Rights	2,244	2,703	2,665	3,194	3,655	4,264	4,870	5,488	6,371	7,350	8,982	8,221	9,680	11,397	13,419	
Electricity for production	1,613	1,658	1,996	2,268	2,564	3,014	3,443	3,880	4,504	5,157	5,282	10,134	11,908	14,020	16,508	
Increased electricity cost due to the project	5,622	4,683	4,910	7,469	8,573	9,892	14,374	25,253	41,455	61,906	69,604	69,604	69,604	69,604	69,604	
Chemicals consumed materials	7,676	7,856	8,559	9,929	11,517	13,390	15,497	17,977	20,853	24,190	28,060	28,060	32,550	37,757	43,799	
Increased cost for chemicals due to the project	7,565	9,553	12,480	19,677	20,661	21,694	22,779	23,918	25,114	26,370	27,688	27,688	29,073	30,526	32,052	
Maintenance	906	1,162	400	590	620	63,251	73,864	71,471	1,891	1,986	1,986	2,085	2,190	2,289	2,414	
Subcontracting	40,325	56,570	66,775	82,045	91,012	169,755	205,515	233,872	267,412	286,376	310,177	330,894	367,777	410,713	460,444	
Other	5,369	10,651	2,505	9,336	16,408	28,784	35,476	60,464	90,176	116,537	127,748	126,644	125,539	124,435	123,330	
Administration to NW&WWC	18,368	21,736	27,913	24,167	23,000	26,967	29,729	48,294	73,160	96,838	109,154	109,154	109,154	109,154	109,154	
Provision for accounts receivable	-12,999	-11,065	-25,408	-14,830	-8,592	1,917	5,747	12,171	17,017	19,700	18,595	17,490	16,386	15,281	14,176	
Total Operating Expenses	82,525	108,147	124,284	148,835	165,835	205,515	240,991	294,336	357,588	414,813	437,926	457,338	483,316	535,148	583,774	
Net Operating Income Before Depreciation and Financial Costs	-33,841	-40,926	-54,985	-57,454	-58,414	-6,977	99,000	99,999	99,999	99,999	99,999	99,999	99,999	99,999	99,999	
Depreciation	18,368	21,736	27,913	24,167	23,000	26,967	29,729	48,294	73,160	96,838	109,154	109,154	109,154	109,154	109,154	
Net Operating Income Before Financial Costs	-15,473	-19,190	-27,072	-33,287	-35,414	3,010	29,271	51,288	26,830	13,161	18,839	17,490	16,386	15,281	14,176	
Financial Income	3,181	2,262	2,559	4,764	0	0	0	0	0	0	0	0	0	0	0	
Financial Expense	8,25	1,514	1,513	2,313	0	1,917	5,747	12,171	17,017	19,700	18,595	17,490	16,386	15,281	14,176	
Net Financial Income	-5,069	-9,252	-8,954	-7,549	0	-1,917	-5,747	-12,171	-17,017	-19,700	-18,595	-17,490	-16,386	-15,281	-14,176	
Net Operating Income Before Tax	-10,650	-18,442	-26,026	-40,836	-35,414	1,093	23,524	39,117	9,813	-6,539	0	0	0	0	0	
Profit Tax (x%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Extraordinary Income (Expense)	-2,503	-3,946	-6,260	-3,455	0	0	0	0	0	0	0	0	0	0	0	
Adjusted Net Profit (loss)	-13,153	-22,388	-32,286	-44,291	-35,414	1,093	23,524	39,117	9,813	-6,539	0	0	0	0	0	

ISLAMIC REPUBLIC OF IRAN
 Water and Sewerage Company
 Actual and Forecast Financial Statements For Years Ending March 20 (Rials million)
 Financing Scenario: Part of Water Supply Investment on Bank Loan
 Tariffs To achieve full cost recovery

	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
CASH FLOW STATEMENT															
SOURCES															
Internal Sources															
Income Before Financial Costs															
Depreciation	-8,592	1,917	5,747	12,171	17,017	19,700	18,595	17,490	16,386	15,281	14,176	13,071	11,966	10,861	9,756
Total Internal Sources	25,000	26,867	29,729	48,294	73,160	96,638	109,154	109,154	109,154	109,154	109,154	109,154	109,154	109,154	109,154
External Sources															
World Bank Loan	17,292	22,402	30,866	32,891	37,266	42,222	47,838	54,200	61,409	69,576	78,830	88,084	97,338	106,592	115,846
Other Loan	0	19,535	75,094	125,960	95,018	52,613	0	0	0	0	0	0	0	0	0
Government Grants	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total External Sources	17,292	41,937	105,960	158,851	132,284	94,835	47,838	54,200	61,409	69,576	78,830	88,084	97,338	106,592	115,846
TOTAL SOURCES	42,292	68,804	135,689	167,145	205,444	191,473	157,033	163,354	170,563	178,730	188,012	197,238	206,492	215,746	225,000
APPLICATIONS															
Capital Investment Requirements															
Total Capital Investment Requirements	0	139,053	484,119	621,649	591,949	307,903	0	0	0	0	0	0	0	0	0
Taxes															
Import Duty on Equipment for Investment Projects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Profit Tax	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Tax and Duties	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Debt Service															
Interest	0	1,917	5,747	12,171	17,017	19,700	18,595	17,490	16,386	15,281	14,176	13,071	11,966	10,861	9,756
Principal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Debt Service	0	1,917	5,747	12,171	17,017	19,700	18,595	17,490	16,386	15,281	14,176	13,071	11,966	10,861	9,756
Increase (Decrease) in Working Capital	7,740	-9,115	-14,336	-12,068	-4,927	-7,852	-22,022	1,218	1,310	1,394	1,464	1,538	1,612	1,686	1,760
TOTAL APPLICATIONS	7,740	131,854	455,629	621,752	604,039	319,751	18,233	18,233	18,233	18,233	18,233	18,233	18,233	18,233	18,233
Surplus Funds	25,861	28,742	32,077	47,094	64,895	91,442	157,853	140,475	147,592	155,676	164,859	174,142	183,426	192,710	201,994
Closing Cash Balance	27,658	27,658	56,399	88,478	135,871	200,706	291,548	449,201	599,577	737,269	892,945	1,057,804	1,222,656	1,387,508	1,552,360
Closing Cash Balance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ISLAMIC REPUBLIC OF IRAN
 Water and Sewerage Company
 Actual and Forecasted Statement of Financial Position For Years Ending March 20 (Rials: million)
 Financing Scenario: Part of Water Supply Investment on Bank Loan
 Tariffs to achieve full cost recovery

	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
BALANCE SHEET															
ASSETS															
Fixed Assets															
Land Assets	259,217	270,694	377,379	517,429	699,490	659,490	798,543	1,262,862	1,884,311	2,476,260	2,784,163	2,784,163	2,784,163	2,784,163	2,784,163
Buildings	186,343	186,343	38,753	69,686	214,656	241,533	271,262	319,555	382,715	489,552	598,705	707,860	817,014	926,167	1,035,321
Less: Accumulated Depreciation	178,655	184,257	23,500	30,953	444,824	431,000	327,231	393,557	493,106	1,065,707	1,185,457	1,292,000	1,401,549	1,517,996	1,648,842
Net Fixed Assets	7,688	2,086	15,253	38,733	70,832	10,533	44,031	26,000	89,609	183,845	213,248	215,860	215,615	215,167	215,321
Work-in-Progress	272,651	302,079	140,056	142,085	444,824	557,010	891,402	1,564,756	2,083,945	2,294,610	2,185,457	2,076,303	1,967,149	1,857,986	1,748,842
Total Fixed Assets	451,214	466,180	378,676	466,824	444,824	557,010	891,402	1,564,756	2,083,945	2,294,610	2,185,457	2,076,303	1,967,149	1,857,986	1,748,842
Long-Term Investments and Intangible Assets	3,934	15,891	28,825	34,050	34,050	34,050	34,050	34,050	34,050	34,050	34,050	34,050	34,050	34,050	34,050
Current Assets															
Bank	1,297	2,241	3,144	1,697	27,658	56,399	88,476	135,871	200,706	291,848	449,201	589,677	737,269	892,945	1,057,604
Government Commercial Accounts Receivable (customers)	51,962	65,595	68,776	92,637	120,566	170,201	230,449	288,316	342,954	384,445	440,157	440,157	464,823	491,560	520,769
Less: Provision for Doubtful Revenues	51,962	65,595	68,776	92,637	120,566	168,251	137,114	209,598	276,652	331,959	364,004	387,671	412,337	438,094	468,263
Net Commercial Accounts Receivable (customers)	10,391	16,912	21,042	25,155	15,131	20,548	21,200	24,019	24,019	30,824	32,496	32,496	32,496	32,496	32,496
Other A/R (connection fees in installment)	4,765	4,734	563	1,051	1,051	1,051	1,051	1,051	1,051	1,051	1,051	1,051	1,051	1,051	1,051
Inventories	396	737	378	378	484	484	484	484	484	484	484	484	484	484	484
Other Current Assets	68,811	90,220	83,904	121,024	149,759	165,432	204,546	241,144	285,558	376,703	538,157	683,279	836,135	997,776	1,169,393
Total Current Assets	68,811	90,220	83,904	121,024	149,759	165,432	204,546	241,144	285,558	376,703	538,157	683,279	836,135	997,776	1,169,393
TOTAL ASSETS	523,958	572,301	501,405	624,898	643,764	776,492	1,229,996	1,839,949	2,413,152	2,705,363	2,757,663	2,793,631	2,837,334	2,889,821	2,952,284
EQUITIES AND LIABILITIES															
EQUITY															
Connection fees	105,262	124,507	147,947	183,350	200,642	223,044	253,911	298,602	324,068	366,290	414,127	468,328	520,736	589,312	678,142
Donated funds/capital	177,021	187,226	201,906	217,676	217,676	217,676	217,676	217,676	217,676	217,676	217,676	217,676	217,676	217,676	217,676
Government grant for WSS Project (World Bank)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Shareholder capital	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
Other Reserve	-17,844	-35,953	-70,893	-86,717	-95,309	-95,309	-95,309	-95,309	-95,309	-95,309	-95,309	-95,309	-95,309	-95,309	-95,309
Retained Earnings/Losses	284,768	275,929	279,070	314,506	323,207	435,484	812,521	1,295,243	1,778,923	2,020,665	2,068,503	2,122,703	2,184,111	2,253,687	2,332,517
Total Equity	184,137	181,139	59,922	59,922	59,922	59,922	59,922	59,922	59,922	59,922	59,922	59,922	59,922	59,922	59,922
Long-Term Debt	32,461	60,718	68,738	161,676	161,676	161,676	161,676	161,676	161,676	161,676	161,676	161,676	161,676	161,676	161,676
Government Investment Support	10,048	12,696	16,058	17,097	17,097	17,097	17,097	17,097	17,097	17,097	17,097	17,097	17,097	17,097	17,097
Government Loan for WSS Project (World Bank)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pension Fund	226,646	254,551	164,848	238,965	238,965	258,500	333,584	459,554	554,572	607,185	565,523	553,865	542,205	520,545	499,865
Less Current Portion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Long-Term Debt	226,646	254,551	164,848	238,965	238,965	258,500	333,584	459,554	554,572	607,185	565,523	553,865	542,205	520,545	499,865
Current Liabilities															
Accounts Payables	18,774	21,867	20,220	29,294	38,459	40,375	41,748	43,019	37,524	35,360	38,842	43,270	47,224	51,795	57,089
Other Payables	1,116	1,116	22,443	28,477	28,477	28,477	28,476	28,476	28,476	28,476	28,476	28,476	28,476	28,476	28,476
Downpayments	5,528	5,208	14,144	15,857	15,857	15,857	15,857	15,857	15,857	15,857	15,857	15,857	15,857	15,857	15,857
Current Portion of Long-Term Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Current Liabilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Current Liabilities	32,514	41,821	57,487	71,427	81,593	82,508	83,881	85,152	79,658	77,513	103,636	107,064	111,018	115,588	120,882
TOTAL EQUITIES AND LIABILITIES	523,948	572,301	501,405	624,898	643,764	776,492	1,229,988	1,839,949	2,413,152	2,705,363	2,757,663	2,793,631	2,837,334	2,889,821	2,952,284

ISLAMIC REPUBLIC OF IRAN
Ahwas Water and Wastewater Company
Actual and Forecast Financial Statements For Years Ending March 20 (Rials million)
Financing Scenario: Part of Water Supply Investment on Bank Loan
Tariffs To achieve full cost recovery.

Financial indicators	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Working Ratio without provision for accounts receivable(%)	88%	84%	96%	90%	85%	54%	55%	55%	56%	59%	63%	67%	70%	72%	74%
Working Ratio (%)	88%	84%	95%	90%	85%	54%	55%	55%	56%	59%	63%	67%	70%	72%	74%
Working Ratio with depreciation(%)	128%	116%	131%	116%	100%	99%	85%	79%	75%	72%	71%	72%	72%	77%	79%
Working Ratio with depreciation and interest (%)	130%	118%	133%	118%	102%	100%	95%	95%	95%	95%	96%	96%	97%	97%	98%
Operating Margin (%)	12%	16%	4%	10%	10%	10%	15%	21%	100%	100%	100%	100%	100%	100%	100%
Net Operating Margin (%)	128%	116%	137%	116%	108%	95%	86%	96%	95%	95%	96%	96%	97%	97%	98%
Debt Service Coverage Ratio	-23%	-15%	-35%	-14%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Agreed upon Working ratio					15.02	6.17	4.97	3.30	3.17	3.23	3.30	3.37	3.44		
Average Water Tariffs (Rials/m3)	379	472	504	837	714	1,429	1,739	2,123	2,571	2,961	3,084	3,175	3,383	3,625	3,873
Average Water Tariffs Increase (US\$/m3)	0.05	0.06	0.07	0.08	0.17	0.21	0.25	0.31	0.37	0.35	0.37	0.38	0.40	0.46	0.48
Average Water Tariffs Annual Increase	24.5%	25.5%	7.4%	7.4%	10.1%	21.6%	22.1%	21.1%	15.2%	32.9%	4.1%	3.0%	6.5%	7.2%	6.0%
Adjusted Net Profit (m3) in US\$ million (1US\$ = 8400rials)	-1.6	-1.7	-3.6	-1.9	1.08	1,108	1,278	1,278	1,278	1,278	1,278	1,278	1,278	1,278	1,278
Number of employees	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938
Staff per 1000 connections (water)	5.4	5.4	5.4	4.9	2.9	3.3	3.7	3.6	3.5	3.0	3.0	3.0	3.0	3.0	3.0
Agreed upon Staff per 1000 connections (water)															
Maintenance as a % of GFA	2.17%	1.73%	1.30%	1.44%	1.30%	1.50%	1.80%	2.00%	2.20%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Accounts Receivables (days)	419	360	363	410	410	197	141	99	67	46	44	42	39	33	33
Accounts Receivables (months)	13.6	11.8	11.9	12.3	13.5	6.5	4.6	3.3	2.2	1.5	1.4	1.4	1.3	1.2	1.1
Accounts Payables (months)						11.0	11.0	8.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Annual Collections (Rials)	52,901	66,009	66,792	79,491	212,164	254,800	307,853	371,204	426,529	426,529	437,926	457,338	483,116	535,148	583,774
Annual Collections per current years billings	79.5%	95.4%	73.7%	73.7%	74.0%	75.0%	80.0%	85.0%	90.0%	92.5%	95.0%	95.0%	95.0%	95.0%	95.0%
Accounts Payables (days)	544	489	363	377	300	275	225	180	120	90	90	91	92	83	94
Funds needed to meet working ratio target (without provision)				-11,618	-80,200	-86,107	-99,892	-107,391	-107,391	-90,555	-68,149	-46,902	-35,635	-23,207	-6,767
Funds needed to meet working ratio target (with provision)				-11,618	-9,922	792	-12,563	-23,323	-23,323	-17,079	-24,356	-16,113	-2,817	12,469	30,151
Funds needed to break-even (cover depreciation and interest)				-6,592											

ISLAMIC REPUBLIC OF IRAN
 Ahwaz Water and Wastewater Company
 Forecast Investment Schedule

Investment Projects/Components	FORECAST											Total
	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	
Water Supply Project		28,695	109,945	232,175	177,887	98,364	-	-	-	-	-	677,066
Sanitation Project		100,153	309,904	374,097	308,251	493,278	-	-	-	-	-	1,375,683
Other Projects		10,205	14,270	15,377	15,811	16,261	-	-	-	-	-	71,924
Total		139,053	464,119	621,649	501,949	307,503	-	-	-	-	-	2,124,673
Customs Duty (%)												
VAT (%)												
Total (including contingencies and VAT)												

ISLAMIC REPUBLIC OF IRAN
 Ahwaz Water and Wastewater Company
 Forecast Depreciation Plan
 (Rials million)

Investment Projects/Components	FORECAST											Total
	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13		2013/14
Plant in service, March 20, 2003	327,763											
Construction in progress, March 20, 2003	142,061											
Total fixed assets, March 20, 2003	469,824	24,167	24,167	24,167	24,167	24,167	24,167	24,167	24,167	24,167	24,167	24,167
Water Supply		833										
Additions in 2003/04	28,695											
Additions in 2004/05	109,945	2,700	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148
Additions in 2005/06	232,175				5,598	5,598	5,598	5,598	5,598	5,598	5,598	5,598
Additions in 2006/07	177,887				9,287	9,287	9,287	9,287	9,287	9,287	9,287	9,287
Additions in 2007/08	98,364				7,115	7,115	7,115	7,115	7,115	7,115	7,115	7,115
Additions in 2008/09						3,935	3,935	3,935	3,935	3,935	3,935	3,935
Additions in 2009/10												
Additions in 2010/11												
Additions in 2011/12												
Additions in 2012/13												
Total Water Supply	677,066	833	2,700	1,148	6,746	16,033	23,148	27,063	27,083	27,083	27,083	27,083
Sanitation												
Additions in 2003/04												
Additions in 2004/05	100,153			4,006	4,006	4,006	4,006	4,006	4,006	4,006	4,006	4,006
Additions in 2005/06	309,904	2,896	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384
Additions in 2006/07	374,097				12,396	12,396	12,396	12,396	12,396	12,396	12,396	12,396
Additions in 2007/08	396,251				14,364	14,364	14,364	14,364	14,364	14,364	14,364	14,364
Additions in 2008/09	193,278				15,930	15,930	15,930	15,930	15,930	15,930	15,930	15,930
Additions in 2009/10												
Additions in 2010/11												
Additions in 2011/12												
Additions in 2012/13												
Total Sanitation	1,375,683			4,006	18,402	31,365	47,296	55,027	55,027	55,027	55,027	55,027
Other												
Additions in 2003/04												
Additions in 2004/05	10,205			408	408	408	408	408	408	408	408	408
Additions in 2005/06	14,270				571	571	571	571	571	571	571	571
Additions in 2006/07	15,377				615	615	615	615	615	615	615	615
Additions in 2007/08	15,811				632	632	632	632	632	632	632	632
Additions in 2008/09	16,261				650	650	650	650	650	650	650	650
Additions in 2009/10												
Additions in 2010/11												
Additions in 2011/12												
Additions in 2012/13												
Total Other	71,924			408	979	1,594	2,227	2,877	2,877	2,877	2,877	2,877
Total Depreciation		25,000	26,867	29,729	48,294	73,160	96,638	109,154	109,154	109,154	109,154	109,154
Total Depreciation born by WSC		25,000	26,867	29,729	48,294	73,160	96,638	109,154	109,154	109,154	109,154	109,154

ISLAMIC REPUBLIC OF IRAN
Ahwas Water and Wastewater Company
Forecast Debt Schedule
(Rials million)

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Existing commercial debt											
opening balance	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992
disbursements	-	-	-	-	-	-	-	-	-	-	-
repayments	-	-	-	-	-	-	-	-	-	-	-
closing balance	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992	59,992
interest	0%	-	-	-	-	-	-	-	-	-	-
IBRD: Water Supply and Sanitation											
opening balance	368,220	19,535	19,535	94,629	220,588	315,607	368,220	346,560	324,900	303,240	281,580
disbursements	-	75,084	75,084	125,960	85,076	52,613	21,660	21,660	21,660	21,660	21,660
repayments	-	19,535	94,629	220,589	315,607	368,220	346,560	324,900	303,240	281,580	259,920
closing balance	368,220	19,535	19,535	94,629	220,589	315,607	368,220	346,560	324,900	303,240	281,580
interest	5.35%	1,045	5,063	11,802	16,885	18,700	18,541	17,382	16,233	15,077	13,896
commitment fee	0.25%	872	684	369	132	-	54	108	162	217	271
OTHER LOANS: Water Supply and Sanitation											
opening balance	-	-	-	-	-	-	-	-	-	-	-
disbursements	-	-	-	-	-	-	-	-	-	-	-
repayments	-	-	-	-	-	-	-	-	-	-	-
closing balance	-	-	-	-	-	-	-	-	-	-	-
interest	5.35%	-	-	-	-	-	-	-	-	-	-
commitment fee	0.25%	-	-	-	-	-	-	-	-	-	-
Future Borrowings:											
opening balance	-	-	-	-	-	-	-	-	-	-	-
disbursements	-	-	-	-	-	-	-	-	-	-	-
repayments	-	-	-	-	-	-	-	-	-	-	-
closing balance	-	-	-	-	-	-	-	-	-	-	-
interest	-	-	-	-	-	-	-	-	-	-	-
Total loans: opening balance	59,992	59,992	79,527	154,621	280,581	375,599	428,212	406,552	384,892	363,232	341,572
disbursements	-	-	75,084	125,960	96,018	52,613	21,660	21,660	21,660	21,660	21,660
repayments	-	19,535	94,629	220,589	315,607	368,220	346,560	324,900	303,240	281,580	259,920
closing balance	59,992	59,992	79,527	154,621	280,581	375,599	428,212	406,552	384,892	363,232	341,572
check closing	59,992	59,992	79,527	154,621	280,581	375,599	428,212	406,552	384,892	363,232	341,572
interest/commitment fees	-	1,917	5,747	12,171	17,017	19,700	18,595	17,480	16,386	15,281	14,176
Grants											
Total Grants											

ISLAMIC REPUBLIC OF IRAN
 Ahwaz Water and Sewerage Company
 Forecast Disbursement Schedule for Water Supply and Sanitation Project
 (Rials million)

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
includes contingencies						
Water supply components						
Rehabilitation and Upgrading of Water Treatment Plants	54,012	1,251	22,681	30,080	-	-
Expansion of Water Treatment Plant 2	82,109	-	24,674	44,889	12,535	-
Construction of New Reservoirs	186,286	8,494	25,181	44,348	66,968	41,296
Construction of New Pumping Station	25,494	-	2,665	16,844	5,965	-
Rehabilitation of Water Network	204,446	5,440	35,227	57,763	58,079	47,936
Distribution Lines	46,278	2,153	11,540	15,335	14,196	3,053
Supply Lines	48,713	2,267	12,147	16,142	14,943	3,213
Construction Supervision, Detailed Design and DB Preparation	29,729	9,090	5,830	6,762	5,181	2,865
Sub total water supply	677,066	28,895	139,945	232,175	177,867	99,364
US\$ equivalent	80,603,090	3,416,084	16,660,104	27,639,858	21,177,043	11,710,001
Sewerage						
East Trunk Main	406,907	80,671	126,409	67,123	106,919	45,785
West Trunk Main	345,020	26,150	49,255	74,691	139,625	55,300
Laterals	56,153	-	13,898	19,495	16,876	5,884
House connections	48,328	-	9,836	11,182	12,774	14,536
Pumping Stations	137,914	-	63,475	71,163	3,276	-
Construction of East Treatment Plant	265,679	-	-	91,514	107,690	66,475
Rehabilitation of West Treatment Plant	62,171	1,969	31,977	26,224	-	-
Construction Supervision, Detailed Design and DB Preparation	53,511	11,362	15,055	10,705	11,091	5,288
Sub total sewerage	1,375,683	100,153	309,904	374,097	398,251	183,278
US\$ equivalent	163,771,734	11,922,924	36,893,359	44,535,372	47,410,779	23,009,300
Operations and Maintenance Equipments						
Leak detection	9,690	1,488	1,878	1,984	2,108	2,233
Sub total	11,648	1,957	404	426	453	480
US\$ equivalent	1,366,626	200,297	271,628	286,916	304,804	322,980
Total without Soft components						
	2,064,396	130,530	452,131	608,682	578,698	294,355
US\$ equivalent	245,761,450	15,539,305	53,825,091	72,462,146	68,892,626	35,042,281
Environmental Monitoring System						
Studies	24,478	3,758	4,744	5,011	5,324	5,641
Capacity Building	4,689	730	1,513	1,598	828	-
Training	4,893	487	1,009	1,066	1,132	1,200
Technical Support Unit	21,291	744	939	982	1,054	1,117
Sub total	60,277	2,803	3,783	4,301	4,913	5,991
US\$ equivalent	7,175,775	1,014,593	1,427,128	1,543,726	1,577,493	1,612,835
TOTAL						
US\$	2,124,673	139,053	464,119	621,640	591,949	307,903
	252,937,225	16,553,899	55,292,219	74,005,872	70,470,119	36,665,116

ISLAMIC REPUBLIC OF IRAN
Abwaz Water and Wastewater Company
Financial NPV and IRR (Rials million)

Financial Benefits	2007/04	2007/05	2007/06	2007/07	2007/08	2007/09	2007/10	2007/11	2007/12	2008/01	2008/02	2008/03	2008/04	2008/05	2008/06	2008/07	2008/08	2008/09	2008/10	2008/11	2008/12	2009/01	2009/02	2009/03	2009/04	2009/05				
NPV @ 10%	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889			
2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889	2,600,889		
Revenue from water sales	0	57,829	60,599	110,378	146,309	177,248	183,180	185,409	188,242	213,930	223,749	232,292	233,581	237,494	241,668	244,484	246,925	249,032	250,858	252,451	253,852	255,101	256,237	257,281	258,244	259,134	259,967	260,741	261,464	
Revenue from disposal of sewerage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Revenue from water sales without project	0	57,829	60,599	110,378	146,309	177,248	183,180	185,409	188,242	213,930	223,749	232,292	233,581	237,494	241,668	244,484	246,925	249,032	250,858	252,451	253,852	255,101	256,237	257,281	258,244	259,134	259,967	260,741	261,464	
Revenue from sewerage disposal without project	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Revenue from water sales with project	714.37	785.81	864.39	1,045.81	1,150.59	1,285.53	1,392.11	1,464.45	1,508.18	1,622.86	1,684.45	1,718.22	1,738.22	1,754.14	1,767.14	1,777.44	1,785.44	1,791.44	1,796.44	1,800.44	1,803.44	1,805.44	1,807.44	1,809.44	1,811.44	1,813.44	1,815.44	1,817.44	1,819.44	1,821.44
Average water tariff with project	714.37	785.81	864.39	1,045.81	1,150.59	1,285.53	1,392.11	1,464.45	1,508.18	1,622.86	1,684.45	1,718.22	1,738.22	1,754.14	1,767.14	1,777.44	1,785.44	1,791.44	1,796.44	1,800.44	1,803.44	1,805.44	1,807.44	1,809.44	1,811.44	1,813.44	1,815.44	1,817.44	1,821.44	
Revenue from water sales without project	62,128	68,241	75,715	82,893	90,962	100,058	110,064	120,071	131,178	146,085	161,145	172,259	184,484	204,805	225,228	246,758	269,478	293,378	318,444	344,678	372,178	401,044	431,278	462,878	495,778	530,000	565,644	602,700	640,164	
Revenue from water sales with project	62,128	68,241	75,715	82,893	90,962	100,058	110,064	120,071	131,178	146,085	161,145	172,259	184,484	204,805	225,228	246,758	269,478	293,378	318,444	344,678	372,178	401,044	431,278	462,878	495,778	530,000	565,644	602,700	640,164	
Revenue from sewerage disposal without project	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Revenue from sewerage disposal with project	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Revenue from water sales without project	0	57,829	60,599	110,378	146,309	177,248	183,180	185,409	188,242	213,930	223,749	232,292	233,581	237,494	241,668	244,484	246,925	249,032	250,858	252,451	253,852	255,101	256,237	257,281	258,244	259,134	259,967	260,741	261,464	
Revenue from sewerage disposal without project	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Revenue from water sales with project	28,848	33,837	37,200	41,083	45,170	49,687	54,655	60,121	66,133	72,748	80,021	88,023	96,825	106,496	117,159	128,872	141,684	155,644	170,800	187,200	204,888	223,912	244,328	266,188	289,648	314,768	341,608	369,228	398,608	
Average water tariff with project	28,848	33,837	37,200	41,083	45,170	49,687	54,655	60,121	66,133	72,748	80,021	88,023	96,825	106,496	117,159	128,872	141,684	155,644	170,800	187,200	204,888	223,912	244,328	266,188	289,648	314,768	341,608	369,228	398,608	
Revenue from water sales without project	8,573	9,892	11,378	13,044	14,900	16,956	19,212	21,678	24,354	28,140	32,148	36,486	41,174	46,222	51,640	57,348	63,356	69,674	76,302	83,240	90,488	98,046	105,914	114,092	122,590	131,418	140,576	150,064	160,002	
Revenue from sewerage disposal without project	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Revenue from water sales with project	8,573	9,892	11,378	13,044	14,900	16,956	19,212	21,678	24,354	28,140	32,148	36,486	41,174	46,222	51,640	57,348	63,356	69,674	76,302	83,240	90,488	98,046	105,914	114,092	122,590	131,418	140,576	150,002		
Revenue from sewerage disposal with project	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Revenue from water sales without project	0	57,829	60,599	110,378	146,309	177,248	183,180	185,409	188,242	213,930	223,749	232,292	233,581	237,494	241,668	244,484	246,925	249,032	250,858	252,451	253,852	255,101	256,237	257,281	258,244	259,134	259,967	260,741	261,464	
Revenue from sewerage disposal without project	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Revenue from water sales with project	28,848	33,837	37,200	41,083	45,170	49,687	54,655	60,121	66,133	72,748	80,021	88,023	96,825	106,496	117,159	128,872	141,684	155,644	170,800	187,200	204,888	223,912	244,328	266,188	289,648	314,768	341,608	369,228	398,608	
Average water tariff with project	28,848	33,837	37,200	41,083	45,170	49,687	54,655	60,121	66,133	72,748	80,021	88,023	96,825	106,496	117,159	128,872	141,684	155,644	170,800	187,200	204,888	223,912	244,328	266,188	289,648	314,768	341,608	369,228	398,608	
Revenue from water sales without project	8,573	9,892	11,378	13,044	14,900	16,956	19,212	21,678	24,354	28,140	32,148	36,486	41,174	46,222	51,640	57,348	63,356	69,674	76,302	83,240	90,488	98,046	105,914	114,092	122,590	131,418	140,576	150,002		
Revenue from sewerage disposal without project	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Revenue from water sales with project	8,573	9,892	11,378	13,044	14,900	16,956	19,212	21,678	24,354	28,140	32,148	36,486	41,174	46,222	51,640	57,348	63,356	69,674	76,302	83,240	90,488	98,046	105,914	114,092	122,590	131,418	140,576	150,002		
Revenue from sewerage disposal with project	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Revenue from water sales without project	0	57,829	60,599	110,378	146,309	177,248	183,180	185,409	188,242	213,930	223,749	232,292	233,581	237,494	241,668	244,484	246,925	249,032	250,858	252,451	253,852	255,101	256,237	257,281	258,244	259,134	259,967	260,741	261,464	
Revenue from sewerage disposal without project	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Revenue from water sales with project	28,848	33,837	37,200	41,083	45,170	49,687	54,655	60,121	66,133	72,748	80,021	88,023	96,825	106,496	117,159	128,872	141,684	155,644	170,800	187,200	204,888	223,912	244,328	266,188	289,648	314,768	341,608	369,228	398,608	
Average water tariff with project	28,848	33,837	37,200	41,083	45,170	49,687	54,655	60,121	66,133	72,748	80,021	88,023	96,825	106,496	117,159	128,872	141,684	155,644	170,800	187,200	204,888	223,912	244,328	266,188	289,648	314,768	341,608	369,228	398,608	
Revenue from water sales without project	8,573	9,892	11,378	13,044	14,900	16,956	19,212	21,678	24,354	28,140	32,148	36,486	41,174	46,222	51,640	57,348	63,356	69,674	76,302	83,240	90,488	98,046	105,914	114,092	122,590	131,418	140,576	150,002		
Revenue from sewerage disposal without project	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Revenue from water sales with project	8,573	9,892	11,378	13,044	14,900	16,956	19,212	21,678	24,354	28,140	32,148	36,486	41,174	46,222	51,640	57,348	63,356	69,674	76,302	83,240	90,488	98,046	105,914	114,092	122,590	131,418	140,576	150,002		
Revenue from sewerage disposal with project	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Revenue from water sales without project	0	57,829	60,599																											

Shiraz

Base Scenario

Based on agreed upon Performance Indicators

Part of water supply investment is financed by a loan

The rest of water supply and all wastewater investment is financed by connection fees and grants from the Government

ISLAMIC REPUBLIC OF IRAN
Shiraz Water and Wastewater Company
Key Assumptions for Financial Analysis
Financing Scenario: Part of Water Supply Investment on Bank Loan
Tariffs To meet Working Ratio with provision.

	1990/00 Audited	2000/01 Audited	2001/02 Audited	2002/03 Audited	2003/04 Estimate	2004/05 Forecast	2005/06 Forecast	2006/07 Forecast	2007/08 Forecast	2008/09 Forecast	2009/10 Forecast	2010/2011 Forecast	2012/2013 Forecast	2013/2014 Forecast
Number of water connections	253,916	263,358	275,695	288,359	295,517	302,805	310,477	318,230	326,195	334,350	342,709	351,277	360,048	378,286
Annual growth in water connections (%)		4.7%	4.5%	4.6%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Water sales volume (ml)	55,327,189	55,314,460	56,854,191	56,314,740	57,018,674	58,453,050	59,183,713	59,923,510	60,673,554	61,430,961	62,198,848	62,978,333	63,763,537	64,560,582
Domestic	939,07	973,73	1,441,27	1,431,29	2,124,29	2,124,29	2,124,29	2,124,29	2,124,29	2,124,29	2,124,29	2,124,29	2,124,29	2,124,29
Commercial	4,516,222	4,839,647	4,113,126	4,070,160	4,172,550	4,224,707	4,276,516	4,328,324	4,380,132	4,431,940	4,483,748	4,535,556	4,587,364	4,639,172
Industrial demand	38,550	114,965	234,970	234,970	240,881	246,792	252,703	258,614	264,525	270,436	276,347	282,258	288,169	294,080
Government demand	1,097,02	1,196,170	1,295,319	1,394,468	1,493,617	1,592,766	1,691,915	1,791,064	1,890,213	1,989,362	2,088,511	2,187,660	2,286,809	2,385,958
Other	3,714,522	3,744,151	4,538,955	5,616,680	6,880,793	8,231,603	9,623,701	10,985,800	12,347,900	13,710,000	15,072,100	16,434,200	17,796,300	19,158,400
Total water sales volume	68,460,261	68,645,905	69,086,058	70,597,090	71,479,483	72,372,956	73,277,418	74,181,880	75,086,342	75,990,804	76,895,266	77,799,728	78,704,190	79,608,652
Annual growth in total water demand (%)		0.6%	0.3%	2.2%	1.3%	1.2%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.4%	1.4%
Number of sewerage connections	15,869	15,743	21,102	22,752	25,000	35,000	45,000	55,000	65,000	75,000	85,000	95,000	105,000	115,000
Annual growth in sewerage connections (%)		-1.6%	34.0%	7.8%	9.9%	40.0%	28.6%	22.2%	18.2%	15.4%	5.0%	5.0%	5.0%	161.7%
Tariffs (Rials/mln)														
Water	206.82	245.40	286.65	303.94	352.57	600.34	738.92	871.48	1,147.18	1,500.89	1,673.27	1,822.41	2,016.75	2,230.20
Domestic	939.07	973.73	1,441.27	1,431.29	2,124.29	2,124.29	2,124.29	2,124.29	2,124.29	2,124.29	2,124.29	2,124.29	2,124.29	2,124.29
Commercial	4,516.22	4,839.65	4,113.13	4,070.16	4,172.55	4,224.71	4,276.52	4,328.33	4,380.14	4,431.95	4,483.76	4,535.57	4,587.38	4,639.19
Industrial	38.55	114.97	234.97	234.97	240.88	246.79	252.70	258.61	264.52	270.43	276.34	282.25	288.16	294.07
Government	760.50	767.74	1,163.22	1,483.32	1,720.53	2,032.55	2,344.57	2,656.59	2,968.61	3,280.63	3,592.65	3,904.67	4,216.69	4,528.71
Military	1,097.02	1,196.17	1,419.34	1,864.30	2,309.36	2,754.42	3,199.48	3,644.54	4,089.60	4,534.66	4,979.72	5,424.78	5,869.84	6,314.90
Other	1,320.49	943.61	776.01	399.16	1,959.22	2,709.99	3,460.76	4,211.53	4,962.30	5,713.07	6,463.84	7,214.61	7,965.38	8,716.15
Average Water Tariff	374.65	372.40	463.42	380.53	1,068.71	1,068.71	1,068.71	1,068.71	1,068.71	1,068.71	1,068.71	1,068.71	1,068.71	1,068.71
Wastewater charge (as a percentage of water sales)	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%
Domestic	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Commercial	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Industrial	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Government	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Military	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Other	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Sales revenue (Rate million)	11,443	13,574	15,285	17,117	20,103	34,693	43,075	51,579	68,743	91,063	102,790	113,974	127,007	142,206
Domestic	4,241	4,899	4,487	4,416	4,814	4,814	4,814	4,814	4,814	4,814	4,814	4,814	4,814	4,814
Commercial	32	85	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160
Industrial	37	117	234	234	234	234	234	234	234	234	234	234	234	234
Government	1,623	1,623	2,281	2,839	3,397	3,955	4,513	5,071	5,629	6,187	6,745	7,303	7,861	8,419
Military	1,982	2,256	2,814	3,372	3,930	4,488	5,046	5,604	6,162	6,720	7,278	7,836	8,394	8,952
Other	1,863	2,684	3,445	4,266	5,087	5,908	6,729	7,550	8,371	9,192	10,013	10,834	11,655	12,476
Total	21,485	26,538	27,871	38,160	44,819	77,346	96,032	114,888	153,257	203,017	228,163	254,086	283,152	317,038
Sewerage	249	138	258	424	1,190	2,896	4,370	6,240	8,589	16,534	16,534	16,534	16,534	16,534
Domestic	208	128	233	344	1,146	2,710	3,892	5,585	8,289	16,534	16,534	16,534	16,534	16,534
Commercial	16	47	117	117	117	117	117	117	117	117	117	117	117	
Industrial	16	47	117	117	117	117	117	117	117	117	117	117	117	
Government	0	0	0	0	0	0	0	0	0	0	0	0	0	
Military	0	0	0	0	0	0	0	0	0	0	0	0	0	
Other	346	1,022	1,645	2,193	2,480	5,844	6,962	12,911	19,912	28,689	34,248	38,958	44,435	50,960
Total	2,478	1,102	1,845	2,193	2,480	5,844	6,962	12,911	19,912	28,689	34,248	38,958	44,435	50,960
Total sales revenue (Rate million)	23,973	26,740	29,915	40,353	47,309	83,190	105,124	127,859	173,169	232,687	263,461	293,046	337,688	410,384
Water losses (%)	29.00%	32.57%	32.17%	30.03%	30.03%	28.00%	28.00%	27.00%	27.00%	27.00%	27.00%	27.00%	27.00%	27.00%
Demand (m3)	68,446,261	68,645,905	69,086,058	70,597,090	71,479,483	72,372,956	73,277,418	74,181,880	75,086,342	75,990,804	76,895,266	77,799,728	78,704,190	79,608,652
Losses (m3)	20,633,739	22,260,995	22,679,619	23,359,000	24,038,380	24,717,760	25,397,140	26,076,520	26,755,900	27,435,280	28,114,660	28,794,040	29,473,420	30,152,800
Total Demand (m3)	89,080,000	90,906,900	91,765,677	93,956,090	95,517,863	97,090,716	98,674,558	100,258,400	101,844,342	103,429,584	105,014,826	106,600,066	108,185,300	109,770,532
Growth in Water Purchases Required (%)		7%	0%	-1%	1%	-2%	1%	1%	1%	1%	1%	1%	1%	1%
Supply (m3)	19,192,000	18,667,000	20,445,040	19,900,000	20,432,250	20,103,599	20,354,894	20,327,010	20,581,098	20,835,382	21,089,666	21,343,950	21,598,234	21,852,518
Domestic	18,192,000	17,672,000	19,450,040	18,905,000	19,437,250	19,108,599	19,359,894	19,332,010	19,586,098	19,840,382	20,094,666	20,348,950	20,603,234	20,857,518
Wholesale	75,991,000	83,439,000	81,439,000	82,000,000	80,414,395	81,419,575	82,324,392	83,229,209	84,134,026	85,038,843	85,943,660	86,848,477	87,753,294	88,658,111
Springs	95,063,000	102,108,000	101,853,074	100,900,000	102,161,250	100,517,994	101,774,489	101,635,052	102,905,490	104,191,809	105,488,128	106,784,547	108,080,966	109,377,385
Average Cost for Water Purchased (Rate/mln)	185.82	229.45	207.65	245.02	240.02	410.42	493.51	591.01	709.21	831.05	1,021.26	1,225.52	1,470.02	1,764.74
Domestic	171.74	121.83	169.09	183.92	211.51	241.10	265.51	291.16	321.08	351.00	381.00	411.00	441.00	471.00
Wholesale	3,581	4,153	4,856	5,387	6,988	8,251	10,025	12,013	14,556	17,735	21,547	26,180	31,909	38,848
Springs	967	1,071	1,310	1,633	1,791	1,938	2,159	2,371	2,641	2,942	3,276	3,649	4,064	4,528
Total Cost for Water Purchased (Rate/mln)	4,528	5,223	6,166	7,020	8,779	10,169	12,184	14,385	17,237	20,676	24,824	29,829	35,873	43,174
Electricity tariff (mln/AWh)														
Average Tariff Increase (%)	18.50%	20.00%	6.33%	33.99%	16.00%	70.44%	22.63%	18.28%	31.64%	11.68%	6.51%	10.06%	10.56%	11.27%
Domestic Increase	16.00%	16.00%	16.00%	16.00%	16.00%	16.00%	16.00%	16.00%	16.00%	16.00%	16.00%	16.00%	16.00%	16.00%
Wholesale Increase	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
Springs Increase	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
Water Fixed Subscription Fees Annual Increase														

ISLAMIC REPUBLIC OF IRAN
 Shiraz Water and Wastewater Company
 Actual and Forecast Financial Statements For Years Ending March 20 (Rials million)
 Financing Scenario: Part of Water Supply Investment on Bank Loan
 Tariffs To meet Working Ratio with provision

	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
CASH FLOW STATEMENT															
SOURCES															
Internal Sources															
Net Operating Income Before Financial Costs															
Depreciation	10,037	15,383	15,383	15,383	15,383	15,383	15,383	15,383	15,383	15,383	15,383	15,383	15,383	15,383	15,383
Total Internal Sources	992	17,937	17,937	17,937	17,937	17,937	17,937	17,937	17,937	17,937	17,937	17,937	17,937	17,937	17,937
External Sources															
Connection Fees															
World Bank Loan															
Other Loans															
Government Grants															
Total External Sources															
TOTAL SOURCES	18,929	18,929	18,929	18,929	18,929	18,929	18,929	18,929	18,929	18,929	18,929	18,929	18,929	18,929	18,929
APPLICATIONS															
Capital Investment Requirements															
Total Capital Investment Requirements	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Taxes															
Import Duty on Equipment for Investment Projects															
Profit Tax															
Total Tax and Duties	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Debt Service															
Interest	0	1,926	6,003	6,003	6,003	6,003	6,003	6,003	6,003	6,003	6,003	6,003	6,003	6,003	6,003
Principal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Debt Service	0	1,926	6,003	6,003	6,003	6,003	6,003	6,003	6,003	6,003	6,003	6,003	6,003	6,003	6,003
Increase (Decrease) in Working Capital	31,863	31,863	31,863	31,863	31,863	31,863	31,863	31,863	31,863	31,863	31,863	31,863	31,863	31,863	31,863
TOTAL APPLICATIONS	31,863	31,863	31,863	31,863	31,863	31,863	31,863	31,863	31,863	31,863	31,863	31,863	31,863	31,863	31,863
Surplus Funds															
Opening Cash Balance	29,361	29,361	29,361	29,361	29,361	29,361	29,361	29,361	29,361	29,361	29,361	29,361	29,361	29,361	29,361
Closing Cash Balance	16,427	16,427	16,427	16,427	16,427	16,427	16,427	16,427	16,427	16,427	16,427	16,427	16,427	16,427	16,427

ISLAMIC REPUBLIC OF IRAN
Shiraz Water and Wastewater Company
Actual and Forecast Financial Statements For Years Ending March 20 (Rials million)
Financing Scenario: Part of Water Supply Investment on Bank Loan

	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Financial Indicators															
Tariffs to meet Working Ratio with provision	105%	107%	117%	92%	98%	73%	73%	76%	74%	69%	70%	70%	70%	70%	70%
Working Ratio without provision for accounts receivable(%)	105%	107%	117%	92%	98%	73%	73%	76%	74%	69%	70%	70%	70%	70%	70%
Working Ratio (%)	118%	129%	138%	110%	114%	106%	85%	83%	80%	75%	75%	75%	75%	75%	75%
Working Ratio with depreciation(%)	123%	133%	142%	112%	114%	107%	103%	106%	108%	104%	104%	101%	99%	98%	94%
Operating Margin (%)	-5%	-7%	-17%	8%	2%	10%	15%	17%	113%	108%	108%	104%	101%	98%	96%
Net Operating Margin (%)	118%	129%	138%	110%	114%	106%	98%	106%	113%	108%	108%	104%	101%	98%	96%
Net Operating Margin (US\$)	-22%	-31%	-37%	-10%	-14%	-7%	-3%	-12%							
Debt Service Coverage Ratio															
Agreed upon Working ratio															
Average Water Tariffs (Rials/m3)	314	372	403	541	627	1,069	1,311	1,550	2,040	2,669	2,976	3,259	3,587	3,966	3,519
Average Water Tariffs (US\$/m3)	0.04	0.04	0.05	0.06	0.07	0.13	0.16	0.18	0.24	0.32	0.35	0.39	0.43	0.47	0.42
Average Water Tariffs Annual Increase	16.6%	6.3%	6.3%	34.0%	16.0%	70.4%	22.6%	18.3%	31.6%	30.8%	11.5%	9.5%	10.1%	10.6%	-11.3%
Adjusted Net Profit (US\$ million) (US\$ = 6400 rials)	-1.6	-2.3	-2.9	-2.1	-1.1	-0.9	-0.4	-2.0	-3.0	-2.5	-2.6	-1.6	-0.5	0.8	2.3
Number of employees	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258
Staff per 1000 connections (water)	3.4	3.4	3.4	3.3	3.0	3.5	3.6	3.6	3.4	3.3	3.0	3.0	2.9	2.8	2.8
Agreed upon Staff per 1000 connections (water)															
Maintenance as a % of GFA	1.31%	0.66%	0.41%	0.29%	1.00%	1.20%	1.50%	1.80%	2.20%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Accounts Receivables (days)	210	220	180	167	235	140	159	163	138	119	125	129	133	135	136
Accounts Receivables (months)	6.9	7.2	5.9	5.5	7.7	4.6	5.2	5.4	4.5	3.9	4.1	4.2	4.4	4.5	4.5
World Bank Covenant (months)															
Annual collections (over current years billings)	30,648	40,889	40,889	49,032	46,860	101,252	106,835	133,077	163,922	241,660	267,972	298,744	332,366	371,601	417,434
Accounts Payables (days)	83	103	82	135	100	95	90	90	75	60	60	60	60	60	60
Funds needed to meet working ratio target (without provision)				2,243	-18,956	-16,909	-11,404	-14,703	-18,850	-20,859	-23,201	-25,933	-29,126	-33,201	-38,126
Funds needed to meet working ratio target (with provision)				2,243	-18,956	-16,909	-11,404	-14,703	-18,850	-20,859	-23,201	-25,933	-29,126	-33,201	-38,126
Funds needed to break-even (cover depreciation and interest)				-9,045	-7,404	-3,132	-17,087	-25,116	-25,116	-25,116	-25,116	-25,116	-25,116	-25,116	-25,116

ISLAMIC REPUBLIC OF IRAN
Shiraz Water and Wastewater Company
Forecast Investment Schedule

Investment Project/Components	FORECAST												Total
	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2013/14	
Water Supply Project	45,771	111,934	140,181	52,189	26,247	-	-	-	-	-	-	-	385,252
Sewerage Project	45,771	111,934	140,181	421,983	199,325	-	-	-	-	-	-	-	1,346,151
Sanitation Project	9,086	13,858	14,197	14,197	14,550	-	-	-	-	-	-	-	64,501
Other Projects	133,647	562,610	483,329	483,329	240,122	-	-	-	-	-	-	-	1,798,994
Total													

Customs Duty (%)

VAT (%)

Total (including contingencies and VAT)

ISLAMIC REPUBLIC OF IRAN
Shiraz Water and Wastewater Company
Forecast Depreciation Plan
(Rials million)

	FORECAST											
	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2013/14
Plant in service, March 20, 2003	215,060	9,804	9,804	9,804	9,804	9,804	9,804	9,804	9,804	9,804	9,804	9,804
Construction in progress, March 20, 2003	158,043	-	-	-	-	-	-	-	-	-	-	-
Total fixed assets, March 20, 2003	363,103	9,804	9,804	9,804	9,804	9,804	9,804	9,804	9,804	9,804	9,804	9,804
Water Supply	-	233	233	233	233	233	233	233	233	233	233	233
Sanitation	48,721	-	-	-	-	-	-	-	-	-	-	-
Other	149,181	-	-	-	-	-	-	-	-	-	-	-
Additions in 2003/04	111,934	-	-	-	-	-	-	-	-	-	-	-
Additions in 2004/05	52,189	-	-	-	-	-	-	-	-	-	-	-
Additions in 2005/06	26,247	-	-	-	-	-	-	-	-	-	-	-
Additions in 2006/07	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2007/08	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2008/09	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2009/10	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2010/11	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2011/12	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2012/13	-	-	-	-	-	-	-	-	-	-	-	-
Total Water Supply	368,252	233	233	233	233	233	233	233	233	233	233	233
Sanitation	-	-	-	-	-	-	-	-	-	-	-	-
Other	76,860	-	-	-	-	-	-	-	-	-	-	-
Additions in 2003/04	272,185	-	-	-	-	-	-	-	-	-	-	-
Additions in 2004/05	376,818	-	-	-	-	-	-	-	-	-	-	-
Additions in 2005/06	421,983	-	-	-	-	-	-	-	-	-	-	-
Additions in 2006/07	199,325	-	-	-	-	-	-	-	-	-	-	-
Additions in 2008/10	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2010/11	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2011/12	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2012/13	-	-	-	-	-	-	-	-	-	-	-	-
Total Sanitation	1,346,151	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2003/04	9,086	-	-	-	-	-	-	-	-	-	-	-
Additions in 2004/05	12,831	-	-	-	-	-	-	-	-	-	-	-
Additions in 2005/06	14,197	-	-	-	-	-	-	-	-	-	-	-
Additions in 2006/07	14,550	-	-	-	-	-	-	-	-	-	-	-
Additions in 2008/09	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2009/10	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2010/11	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2011/12	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2012/13	-	-	-	-	-	-	-	-	-	-	-	-
Total Other	64,501	-	-	-	-	-	-	-	-	-	-	-
Total Depreciation	10,037	10,037	10,037	15,383	32,751	52,855	72,388	81,993	81,993	81,993	81,993	81,993
Total Depreciation Item by NSC	10,037	10,037	10,037	15,383	32,751	52,855	72,388	81,993	81,993	81,993	81,993	81,993

ISLAMIC REPUBLIC OF IRAN
Shiraz Water and Wastewater Company
Forecast Debt Schedule
(Ruhs)

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Existing commercial debt											
opening balance											
disbursements											
repayments											
closing balance											
interest											
0%											
IBRD: Water Supply and Sanitation											
opening balance		27,420	27,420	107,354	166,670	195,495	211,168	195,746	186,324	173,903	161,481
disbursements			79,934	59,316	28,825	15,672	13,422	12,422	12,422	12,422	12,422
repayments				166,670	195,495	211,168	195,746	186,324	173,903	161,481	149,060
closing balance		27,420	107,354	166,670	195,495	211,168	195,746	186,324	173,903	161,481	149,060
interest		1,467	5,743	8,917	10,459	11,297	10,633	9,968	9,304	8,639	7,975
commitment fee		459	260	111	39	-	31	62	93	124	155
0.25%											
OTHER LOANS: Water Supply and Sanitation											
opening balance											
disbursements											
repayments											
closing balance											
interest											
5.35%											
0.25%											
Future Borrowings:											
opening balance											
disbursements											
repayments											
closing balance											
interest											
Total loans: opening balance			27,420	107,354	166,670	195,495	211,168	195,746	186,324	173,903	161,481
disbursements			79,934	59,316	28,825	15,672	13,422	12,422	12,422	12,422	12,422
repayments				166,670	195,495	211,168	195,746	186,324	173,903	161,481	149,060
closing balance		27,420	107,354	166,670	195,495	211,168	195,746	186,324	173,903	161,481	149,060
check closing		27,420	107,354	166,670	195,495	211,168	195,746	186,324	173,903	161,481	149,060
interest/commitment fees		1,926	6,003	9,029	10,488	11,297	10,664	10,030	9,397	8,763	8,130
Grants											
Total Grants											

ISLAMIC REPUBLIC OF IRAN
 Shiraz Water and Sewerage Company
 Forecast Disbursement Schedule for Water Supply and Sanitation Project
 (Rials million)

	SUB-TOTAL	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
includes contingencies							
Water supply components							
Transmission Lines	152,358	25,644	85,396	41,319	0	0	0
Construction of New Reservoirs	58,528	7,944	25,675	22,147	2,762	2,762	0
Distribution Lines	18,337	1,186	4,746	5,083	4,779	2,543	2,543
Supply Lines	74,072	3,232	11,335	22,016	24,469	13,020	13,020
Rehabilitation of Water Network	42,748	5,939	7,974	10,587	11,911	6,338	6,338
Drilling of Wells	23,950	753	4,765	7,522	6,729	3,581	3,581
Pumping Stations	3,599	0	3,599	0	0	0	0
Construction Supervision and Detailed Design	15,260	4,024	5,692	3,260	1,519	764	764
Sub total water supply	388,252	48,721	149,181	111,934	52,169	26,247	26,247
US\$ equivalent	46,220,452	5,800,149	17,759,595	13,325,534	6,210,576	3,124,598	3,124,598
Sewerage							
Trunk Main Emergency Zone	35,099	6,780	20,032	3,484	3,806	999	999
Trunk Main Long Term	234,348	17,082	63,204	66,579	73,613	13,871	13,871
Laterals	182,191	4,548	41,679	53,000	54,105	28,860	28,860
Interceptors	374,994	10,144	88,390	108,411	109,591	58,457	58,457
House connections	122,121	1,361	14,609	36,738	51,437	17,986	17,986
Treatment Plant	345,299	25,382	30,310	97,920	117,842	73,834	73,834
Construction Supervision, Detailed Design and DBO Preparation	52,099	10,552	13,963	10,696	11,581	5,317	5,317
Sub total sewerage	1,346,151	75,860	272,185	376,818	421,963	199,325	199,325
US\$ equivalent	160,256,045	9,030,925	32,403,017	44,859,248	50,233,717	23,729,140	23,729,140
Operations and Maintenance Equipments	9,690	1,488	1,878	1,984	2,108	2,233	2,233
Leak detection	1,957	195	404	426	453	480	480
Sub total	11,648	1,682	2,282	2,410	2,560	2,713	2,713
US\$ equivalent	1,386,626	200,297	271,628	286,916	304,804	322,980	322,980
Total without Soft components	1,746,050	126,264	423,648	491,162	476,692	228,284	228,284
Environmental Monitoring System	17,055	2,618	3,306	3,492	3,709	3,930	3,930
Studios	4,669	730	1,513	1,598	828	0	0
Capacity Building	4,893	487	1,009	1,066	1,132	1,200	1,200
Training	4,845	744	939	992	1,054	1,117	1,117
Project Management	21,391	2,803	3,783	4,301	4,913	5,591	5,591
Sub total	52,854	7,383	10,549	11,448	11,637	11,837	11,837
US\$ equivalent	6,292,103	878,932	1,255,859	1,362,818	1,385,306	1,409,188	1,409,188
TOTAL	1,798,904	133,647	434,197	502,610	488,329	240,122	240,122
US\$ equivalent	214,155,226	15,910,302	51,890,099	59,834,516	58,134,403	28,585,906	28,585,906

Shiraz

Scenario 2

Based on full cost recovery

Part of water supply investment is financed by a loan

The rest of water supply and all wastewater investment is financed by connection fees and grants from the Government

ISLAMIC REPUBLIC OF IRAN
Shiraz Water and Wastewater Company
Financial and Forecast Financial Statements For Years Ending March 20 (Rials million)
Financial Statements are prepared on the basis of the current exchange rate of the Rial against the US Dollar.
Tariffs To achieve full cost recovery

	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	
	Audited	Audited	Audited	Audited	Estimate	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	
INCOME STATEMENT																
Revenues																
Revenue from Water Sales	21,485	25,638	27,871	38,160	44,819	65,596	99,286	131,708	175,714	222,189	245,285	266,698	287,145	311,145	311,145	270,856
Revenue from Disposal of Wastewater	2,478	1,102	1,645	2,193	2,490	8,457	9,396	14,702	22,046	26,465	37,303	40,878	45,081	50,034	50,034	119,435
Water Fines & Penalties Fees	5,751	6,655	10,315	12,684	14,301	14,658	15,025	15,000	15,785	16,465	16,584	16,989	17,424	17,860	17,860	18,306
Sewerage Fixed Subscription Fees	210	288	527	710	858	1,201	1,544	1,887	2,230	2,573	2,710	2,836	2,976	3,127	3,127	8,184
Miscellaneous Revenue	1,354	1,445	1,414	229	0	0	0	0	0	0	0	0	0	0	0	0
Total Revenue	31,288	35,337	41,771	53,975	62,467	107,822	125,231	163,288	217,678	273,417	305,873	327,411	352,628	382,166	382,166	416,761
Operating Expenses																
Salaries and Related Expenses	14,081	17,148	21,958	23,087	26,792	31,079	38,051	47,819	48,511	56,272	66,278	75,720	87,835	101,889	101,889	118,191
Increased salary expense due to the project	0	0	0	0	0	2,500	0	0	0	0	0	0	0	0	0	0
Raw water & consumable material	4,697	5,348	6,604	7,270	8,779	10,189	12,184	15,866	16,447	20,676	24,824	29,629	35,873	43,174	43,174	16,412
Electricity for consumption	2,093	1,574	2,032	3,010	3,535	4,034	4,738	5,469	6,447	7,405	8,883	10,445	12,268	14,408	14,408	51,988
Increased electricity cost due to the project	0	0	0	0	0	2,372	0	0	0	0	0	0	0	0	0	0
Maintenance	1,713	1,081	881	815	4,375	5,250	8,567	18,066	33,175	48,907	65,910	82,964	11,559	13,407	15,562	15,562
Other	10,269	12,224	17,003	14,933	17,322	18,189	19,098	20,053	21,055	22,108	23,214	24,370	25,510	26,734	28,010	55,910
Administration to NWWWC	100	300	505	640	672	840	1,050	1,313	1,641	2,051	2,153	2,261	2,374	2,494	2,618	28,216
Provision for accounts receivable	0	0	0	0	0	18,429	14,779	10,420	13,140	15,927	15,294	16,371	17,637	18,108	18,108	20,830
Total Operating Expenses	32,953	37,674	48,963	49,764	61,475	90,513	103,845	121,599	154,325	188,731	213,216	235,387	261,238	291,410	291,410	326,658
Net Operating Income Before Depreciation and Financial Costs	-1,665	-2,337	-7,211	4,211	992	17,309	21,386	41,779	63,353	83,686	92,657	92,024	91,390	90,757	90,757	90,123
Depreciation	4,077	7,739	8,611	9,804	10,037	15,383	15,383	32,731	52,855	72,388	81,983	81,983	81,983	81,983	81,983	81,983
Net Operating Income Before Financial Costs	-5,742	-10,076	-15,822	-5,593	-9,045	1,926	6,003	9,028	10,488	11,297	10,664	10,030	9,397	8,763	8,763	8,130
Financial Income	365	832	2,095	800	0	0	0	0	0	0	0	0	0	0	0	0
Financial Expense	1,398	1,654	1,689	950	0	1,926	6,003	6,028	10,498	11,297	10,664	10,030	9,397	8,763	8,763	8,130
Net Financial Income	-1,033	-831	-207	-50	0	-1,926	-6,003	-6,028	-10,498	-11,297	-10,664	-10,030	-9,397	-8,763	-8,763	-8,130
Net Operating Income Before Tax	-6,775	-10,908	-15,815	-5,643	-9,045	0	0	0	0	0	0	0	0	0	0	0
Profit Tax (x%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extraordinary Income (Expense)	-7,079	-8,249	-8,808	-12,114	0	0	0	0	0	0	0	0	0	0	0	0
Adjusted Net Profit (loss)	-13,854	-19,157	-24,623	-17,756	-9,045	0	0	0	0	0	0	0	0	0	0	0

ISLAMIC REPUBLIC OF IRAN
Shiraz Water and Wastewater Company
Actual and Forecast Financial Statements For Years Ending March 20 (Rials million)
Financing Scenario: Part of Water Supply Investment on Bank Loan
Tariffs to achieve full cost recovery

CASH FLOW STATEMENT	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
SOURCES															
Internal Sources															
Net Operating Income Before Financial Costs															
Depreciation															
Total Internal Sources															
External Sources															
Commodity Sales															
World Bank Loan															
Other Loan															
Government Grants															
Total External Sources															
TOTAL SOURCES															
APPLICATIONS															
Capital Investment Requirements															
Total Capital Investment Requirements															
Taxes															
Import Duty on Equipment for Investment Projects															
Profit Tax															
Total Tax and Duties															
Debt Service															
Interest															
Principal															
Total Debt Service															
Increase (Decrease) in Working Capital															
TOTAL APPLICATIONS															
Surplus Funds															
Opening Cash Balance															
Closing Cash Balance															

ISLAMIC REPUBLIC OF IRAN
 Shiraz Water and Wastewater Company
 Actual and Forecast Financial Statements For Years Ending March 20 (Rials million)
 Financing Scenario: Part of Water Supply Investment on Bank Loan
 Tariffs To achieve full cost recovery

	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
BALANCE SHEET															
ASSETS															
Fixed Assets															
Gross Fixed Assets	131,078	168,366	215,438	279,444	437,487	437,487	571,134	1,005,330	1,507,940	1,998,269	2,236,391	2,236,391	2,236,391	2,236,391	2,236,391
Less: Accumulated Depreciation	22,908	29,682	39,668	44,394	54,421	60,804	85,187	117,937	170,193	243,181	325,174	407,167	489,160	571,154	653,147
Net Fixed Assets	108,169	128,684	175,770	235,050	383,066	376,683	485,947	887,393	1,337,747	1,755,088	1,911,217	1,829,224	1,747,231	1,665,237	1,583,244
Work-in-Progress	28,002	48,120	84,006	158,043	0	133,647	434,197	502,610	488,329	240,122	0	0	0	0	0
Total Fixed Assets	136,172	176,804	239,776	393,103	383,066	501,330	920,144	1,390,003	1,825,477	1,995,210	1,911,217	1,829,224	1,747,231	1,665,237	1,583,244
Long-Term Investments and Intangible Assets															
Current Assets	5,309	13,242	12,017	17,583	17,583	17,583	17,583	17,583	17,583	17,583	17,583	17,583	17,583	17,583	17,583
Cash	2,626	1,916	5,210	29,361	16,427	3,724	17,121	-10,189	31,301	104,596	269,033	326,718	373,300	418,352	468,103
Gross Commercial Accounts Receivable (customers)	17,185	20,429	19,888	24,602	40,219	56,392	68,915	77,079	87,963	101,634	116,230	133,288	150,930	170,036	189,877
Less Provision for Doubtful Revenues	17,185	20,429	19,888	24,602	40,219	56,392	68,915	77,079	87,963	101,634	116,230	133,288	150,930	170,036	189,877
Net Commercial Accounts Receivable (customers)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other A/R (connection fees in installment)	17,123	17,471	17,418	900	15,685	39,172	50,484	56,153	62,655	69,476	59,470	58,077	65,969	74,942	85,112
Inventories	547	5,799	2,167	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Other Current Assets	388	706	868	8,800	8,800	8,800	8,800	8,800	8,800	8,800	8,800	8,800	8,800	8,800	8,800
Total Current Assets	37,769	46,321	45,551	64,863	82,341	90,859	97,510	122,623	178,580	269,779	440,137	511,221	582,567	654,224	728,254
TOTAL ASSETS	179,240	236,367	297,345	475,540	482,990	609,772	1,035,236	1,530,209	2,021,640	2,280,572	2,368,937	2,358,028	2,347,380	2,337,045	2,327,081
EQUITIES AND LIABILITIES															
EQUITY															
Connection fees	97,758	139,081	186,019	183,721	201,658	245,305	308,623	385,972	471,989	567,691	653,777	653,777	653,777	653,777	653,777
Donated funds/capital	11,372	72,689	85,966	188,230	188,230	188,230	188,230	188,230	188,230	188,230	188,230	188,230	188,230	188,230	188,230
Government grant for WSS Project	0	0	0	0	0	55,196	335,592	690,089	1,064,558	1,211,849	1,211,849	1,211,849	1,211,849	1,211,849	1,211,849
Shareholder capital	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Share premium	53,361	53,361	53,361	53,361	53,361	53,361	53,361	53,361	53,361	53,361	53,361	53,361	53,361	53,361	53,361
Retained Earnings/Losses	-10,913	-18,886	-13,522	-13,522	-13,522	-13,522	-13,522	-13,522	-13,522	-13,522	-13,522	-13,522	-13,522	-13,522	-13,522
Total Equity	110,913	184,336	232,187	324,681	333,582	432,426	776,139	1,207,986	1,686,381	1,911,464	1,997,550	1,997,550	1,997,550	1,997,550	1,997,550
LIABILITIES															
Long-Term Debt	4,990	6,775	3,754	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750
Government Investment Support	18,375	31,292	50,247	89,192	89,192	89,192	89,192	89,192	89,192	89,192	89,192	89,192	89,192	89,192	89,192
Government Loan for WSS Project (World Bank)	0	0	0	0	0	27,420	107,354	166,670	195,485	211,168	211,168	198,748	186,324	173,903	161,481
Pension Fund	3,123	7,946	10,176	11,163	11,163	11,163	11,163	11,163	11,163	11,163	11,163	11,163	11,163	11,163	11,163
Less Current Portion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Long-Term Debt	26,488	46,012	64,178	114,105	114,105	141,525	221,459	280,775	309,527	325,272	312,851	300,429	286,008	275,566	263,164
Current Liabilities															
Accounts Payables	3,884	5,424	4,332	9,299	9,502	10,021	11,838	15,648	17,659	18,036	20,315	21,827	23,601	25,687	28,145
Other Payables	24,212	25,120	31,262	18,800	18,800	18,800	18,800	18,800	18,800	18,800	18,800	18,800	18,800	18,800	18,800
Downpayments	7,623	11,276	12,910	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000
Current Portion of Long-Term Debt	6,130	7,501	5,838	1,854	0	0	0	0	0	0	12,422	12,422	12,422	12,422	12,422
Other Current Liabilities	41,848	49,320	54,341	36,754	35,302	35,621	37,638	41,448	43,459	43,836	58,537	60,049	61,823	63,909	66,367
TOTAL EQUITIES AND LIABILITIES	179,240	289,727	350,706	475,540	482,990	609,772	1,035,236	1,530,209	2,021,640	2,280,572	2,368,937	2,358,028	2,347,380	2,337,045	2,327,081

ISLAMIC REPUBLIC OF IRAN
Shiraz Water and Wastewater Company
Financial and Forecast Financial Statements For Years Ending March 20 (Rials million)
Financial Statements of Water Supply Investment on Semi Loan
Tariffs To achieve full cost recovery

	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Working Ratio without provision for accounts receivable(%)	105%	107%	117%	92%	98%	67%	71%	68%	65%	64%	65%	67%	69%	71%	73%
Working Ratio (%)	105%	107%	117%	92%	98%	67%	83%	74%	65%	64%	65%	67%	69%	71%	73%
Working Ratio with depreciation(%)	125%	125%	142%	112%	100%	84%	100%	100%	95%	95%	97%	97%	97%	98%	98%
Working Ratio with depreciation and interest (%)	125%	125%	142%	112%	100%	84%	100%	100%	95%	95%	97%	97%	97%	98%	98%
Operating Margin (%)	-5%	-7%	-17%	8%	16%	17%	17%	26%	100%	100%	100%	100%	100%	100%	100%
Operating Ratio (%)	118%	125%	138%	110%	114%	98%	95%	94%	100%	100%	100%	100%	100%	100%	100%
Net Operating Margin (%)	-22%	-31%	-37%	-10%	-14%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Debt Service Coverage Ratio					9	9	4	5	6	7	4	4	4	4	4
Agreed upon Working ratio					95%	90%	85%	83%	80%	75%	75%	75%	75%	75%	75%
Average Water Tariffs (Rials/m3)	314	372	403	541	527	1,151	1,355	1,758	2,352	2,821	3,237	3,420	3,637	3,892	3,347
Average Water Tariffs (US\$/m3)	0.04	0.44	0.35	0.06	0.07	0.14	0.16	0.21	0.28	0.35	0.39	0.41	0.43	0.46	0.40
Average Water Tariffs Annual Increase	18.5%	8.3%	8.3%	34.0%	15.0%	88.4%	14.7%	30.5%	33.0%	24.2%	10.8%	5.7%	6.3%	7.0%	-14.0%
Adjusted Net Profit (loss) in US\$ million (US\$ = 6400 rials)	-1.6	-2.3	-2.9	-2.1	-1.1	1.08	1.278	1.278	1.278	1.278	1.278	1.278	1.278	1.278	1.278
Number of employees		938	938	938	938	938	938	938	938	938	938	938	938	938	938
Staff per 1000 connections (water)		3.4	3.4	3.3	3.0	3.5	3.8	3.6	3.4	3.3	3.1	3.0	2.9	2.9	2.8
Agreed upon Staff per 1000 connections (water)					3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Maintenance as a % of GFA	1.31%	0.68%	0.41%	0.29%	1.00%	1.20%	1.50%	1.80%	2.20%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Accounts Receivables (days)	210	220	160	167	235	129	153	149	163	144	143	143	143	143	143
Accounts Payables (months)	6.9	7.2	3.9	3.5	7.0	6.5	6.0	5.0	4.5	3.4	4.0	4.0	4.5	4.7	4.9
Working Ratio over current years billings		30,648	40,899	49,032	46,850	110,078	109,058	150,764	209,514	262,533	289,947	312,117	336,258	384,535	397,673
Annual collection rate% (over current years billings)		90.4%	101.3%	91.2%	75.0%	85.0%	90.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
Accounts Payables (days)	83	103	62	135	100	95	90	90	75	60	60	60	60	60	60
Funds needed to meet working ratio target (without provision)		2,243	-27,729	-20,447	-29,446	-41,197	-41,677	-41,677	-41,677	-41,677	-41,677	-41,677	-41,677	-41,677	-41,677
Funds needed to meet working ratio target (with provision)		2,243	-7,252	-3,060	-16,891	-24,772	-20,442	-21,595	-21,595	-21,595	-21,595	-21,595	-21,595	-21,595	-21,595
Funds needed to break-even (cover depreciation and interest)		-9,045	0	0	0	0	0	0	0	0	0	0	0	0	0

ISLAMIC REPUBLIC OF IRAN
Shiras Water and Wastewater Company
Forecast Investment Schedule

Investment Projects/Components	FORECAST												Total
	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2013/14	
Water Supply Project	48,721	149,181	111,924	52,850	26,247	-	-	-	-	-	-	-	388,532
Sanitization Project	75,960	272,185	376,818	421,983	199,325	-	-	-	-	-	-	-	1,346,151
Other Projects	9,068	12,831	13,858	14,197	14,550	-	-	-	-	-	-	-	64,501
Total	133,749	434,197	502,610	488,329	240,122	-	-	-	-	-	-	-	1,798,984
Customs Duty (%)													
VAT (%)													
Total (including contingencies and VAT)													

ISLAMIC REPUBLIC OF IRAN
Shiras Water and Wastewater Company
Forecast Depreciation Plan
(Risk million)

Investment Projects/Components	FORECAST												Total
	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2013/14	
Plant in service, March 20, 2003	235,060	-	-	-	-	-	-	-	-	-	-	-	-
Construction in progress, March 20, 2003	158,043	-	-	-	-	-	-	-	-	-	-	-	-
Water Supply	383,103	9,804	9,804	9,804	9,804	9,804	9,804	9,804	9,804	9,804	9,804	9,804	9,804
Additions in 2003/04	-	233	233	233	233	233	233	233	233	233	233	233	233
Additions in 2004/05	48,721	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2005/06	149,181	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2006/07	111,924	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2007/08	52,850	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2008/09	26,247	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2009/10	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2010/11	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2011/12	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2012/13	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Water Supply	383,232	233	233	233	233	233	233	233	233	233	233	233	233
Sanitation	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2003/04	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2004/05	75,860	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2005/06	272,185	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2006/07	376,818	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2007/08	421,983	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2008/09	199,325	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2009/10	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2010/11	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2011/12	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2012/13	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Sanitation	1,346,151	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2003/04	9,068	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2004/05	12,831	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2005/06	13,858	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2006/07	14,197	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2007/08	14,550	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2008/09	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2009/10	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2010/11	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2011/12	-	-	-	-	-	-	-	-	-	-	-	-	-
Additions in 2012/13	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Other	64,501	-	-	-	-	-	-	-	-	-	-	-	-
Total Depreciation	10,037	10,037	15,383	32,751	52,855	72,398	81,983	81,983	81,983	81,983	81,983	81,983	81,983
Total Depreciation born by WSC	10,037	10,037	15,383	32,751	52,855	72,398	81,983	81,983	81,983	81,983	81,983	81,983	81,983

ISLAMIC REPUBLIC OF IRAN
 Shiraz Water and Sewerage Company
 Forecast Disbursement Schedule for Water Supply and Sanitation Project
 (Rials million)

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
SUB-TOTAL						
includes contingencies						
Water supply components						
Transmission Lines	152,358	25,644	85,396	41,319	0	0
Construction of New Reservoirs	58,528	7,944	25,675	22,147	2,762	0
Distribution Lines	18,337	1,186	4,746	5,083	4,779	2,543
Supply Lines	74,072	3,232	11,335	22,016	24,469	13,020
Rehabilitation of Water Network	42,748	5,939	7,974	10,587	11,911	6,338
Drilling of Wells	23,350	753	4,765	7,522	6,729	3,581
Pumping Stations	3,599	0	3,599	0	0	0
Construction Supervision and Detailed Design	15,260	4,024	5,692	3,260	1,519	764
Sub total water supply	388,252	48,721	149,181	111,934	52,169	26,247
US\$ equivalent	46,220,452	5,800,149	17,759,595	13,325,534	6,210,576	3,124,598
Sewerage						
Trunk Main Emergency Zone	35,099	6,780	20,032	3,484	3,806	999
Trunk Main Long Term	234,348	17,082	63,204	66,579	73,613	13,871
Laterals	182,191	4,548	41,679	53,000	54,105	28,860
Interceptors	374,984	10,144	88,390	108,411	109,591	58,457
House connections	125,121	1,361	14,609	36,738	51,427	17,986
Treatment Plant	345,299	25,392	30,310	97,920	117,842	73,834
Construction Supervision, Detailed Design and DBO Preparation	52,099	10,552	13,963	10,686	11,581	5,317
Sub total sewerage	1,346,151	75,860	272,165	376,818	421,963	199,325
US\$ equivalent	160,256,045	9,030,925	32,403,017	44,859,248	50,233,717	23,729,140
Operations and Maintenance Equipments	9,690	1,488	1,878	1,984	2,108	2,233
Leak detection	1,937	195	404	426	453	480
Sub total	11,648	1,682	2,282	2,410	2,560	2,713
US\$ equivalent	1,386,626	200,297	271,628	286,916	304,804	322,980
Total without Soft components	1,746,050	126,264	423,648	491,162	476,692	228,284
Environmental Monitoring System	17,055	2,618	3,306	3,492	3,709	3,930
Studies	4,669	730	1,513	1,598	828	0
Capacity Building	4,893	487	1,009	1,066	1,132	1,200
Training	4,845	744	939	992	1,054	1,117
Project Management	21,391	2,803	3,783	4,301	4,913	5,591
Sub total	52,854	7,383	10,549	11,448	11,637	11,837
US\$ equivalent	6,292,103	878,932	1,255,859	1,362,818	1,385,306	1,409,188
TOTAL	1,798,904	133,647	434,197	502,610	488,329	240,122
US\$ equivalent	214,155,226	15,910,302	51,690,099	59,834,516	58,134,403	28,585,906

Annex 6(a): Procurement Arrangements

ISLAMIC REPUBLIC OF IRAN

AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION

General

1. Procurement in the Islamic Republic of Iran is governed mainly by the “By-laws on Government Transactions”. In principle, this law governs all public sector entities including state owned enterprises. The provisions of these laws allow decentralization in conducting public procurement by the public entity. Although there are no provisions by law for a central procurement organization, the MPO in the Ministry of Economic Affairs and Finance (MEAF) conducts a central role in public procurement. It regularly issues documents on public procurement that are followed by the public entities. These include regulations, circulars, bidding documents, standards for technical specifications and unit prices. These last two are mainly for civil works and consultants. More importantly is the system for qualifying contractors and consultants. The MPO categorizes all contractors and consultants according to their capacity and specialization. Public entities can invite bidders from among the recommended lists of these qualified contractors and consultants. The entities on these lists will be determined according to the size of the contract and the capacity of the contractors and consultants, taking into consideration their on-going commitments. Recruitment of international consultants is always subject to the approval of the MPO. A draft procurement law is in its final stages of being approved. However, the Bank has not reviewed this yet. The major issues that face projects financed by the Bank is the unfamiliarity of the MPO and other government entities of the Bank procurement guidelines and procedures, and consequently not accepting to apply these procedures or allow their precedence in cases of conflict with those of the Bank.

2. The Bank intends to conduct a Country Procurement Assessment Review (CPAR) in FY04. A Public Expenditure Review (PER) mission was conducted in 2003 with participation of procurement and financial management senior staff and consultants. This has resulted in a good preliminary assessment of the public procurement environment in Iran. This assessment has not been considered as a substitute for the CPAR, but it helped identify some critical issues that need to be addressed under Bank financed projects. These issues were further supported by observations from TTLs, PS and PAS involved in projects in Iran. A dialogue has been initiated between the Bank and the Iranian Government, and in particular MEAF with the objective of reaching a framework agreement on fiduciary issues in World Bank projects in Iran. The Bank has conducted a mission to address this subject in mid December 2003. The outcomes of this mission will be a Memorandum of Understanding that will set the steps towards reaching a framework agreement to ensure adequate procurement and implementation arrangements for Bank financed projects in Iran.

3. In the interim, the MEAF will provide, on behalf of the Government, a one-year (renewable) exemption for all procurement to be conducted under the project. This exemption will ensure that all procurement will be carried in according with the loan agreement provisions. The procurement packages that will benefit from this exemption are all those listed in the first year procurement plan.

Use of Bank Guidelines and Standard Bidding Documents

4. Procurement of Goods and Works will be carried in accordance with the Bank’s Guidelines for Procurement under IBRD and IDA Credits (January 1995 and revised in January and August 1996,

September 1997 and January 1999). For ICB of works and goods the standard bidding documents (SBD) of the Bank will be used. These will be: Procurement of Works, Procurement of Smaller Works, Supply and Installation of Equipment (to be used for the construction and installation of wastewater treatment plants with the appropriate modifications) and the SBD for the procurement of Goods. For procurement under National Competitive Bidding (NCB), agreement should be reached on a standard bidding document, in Farsi, that will be acceptable to the Bank to be used for the procurement of works. The agreement on this document will be under the framework that will be reached as indicated under paragraph 2 above. The draft of this document will be prepared by the NWWEC and submitted to the Bank for review by end of May 2004, with a final draft to be ready by end of July 2004. The agreed procedures for NCB should ensure that all bidding opportunity will be advertised with a reasonable time for submission of bids (not less than thirty days), evaluation criteria will be clearly stated in the bidding documents, pricing of bids will be based on unit rates proposed by the bidders and not on offering discounts (or increase) on unit rates, a one envelope system will be used, a public bid opening in which the prices of bidders are read out will be promptly conducted after the deadline for submission of bids and award will be to the technically responsive bidder who has offered the lowest price and had the required qualifications. For all evaluation reports, the Bank standard evaluation report form for the Procurement of Goods or Works will be used, to be simplified in case of NCB procedures.

5. Procurement of Services will be carried out in accordance with the Guidelines: Selection and Employment of Consultants by World Bank Borrowers (January 1997, revised in September 1997, January 1999 and May 2002). The standard Request for Proposal (RFP) for Selection of Consultants and the standard forms of contracts will be used for all contracts above US\$100,000 equivalent. A simplified version of the standard RFP and contracts will be used for contracts below US\$100,000 equivalent. Selection of individual consultants will be carried by comparison of CV's and using simplified contracts, acceptable to the Bank. For the evaluation of firms, the Sample Form of Evaluation Report for Selection of Consultants will be used. One issue that will be discussed and agreed under the framework agreement for procurement arrangements is the applicability of the Consultant Guidelines to all Bank financed assignments under the project and that all eligible consultants can apply to participate in the procurement process without any restriction.

Advertising

6. A General Procurement Notice (GPN) will be published online in the United Nations Development Business (UNDB), *dgMarket* and in at least in two local newspapers of national circulation. The GPN will provide a description of the Project and will list all contracts for the works and goods that will be procured under ICB, and consultants' services estimated at more than US\$100,000. Specific Procurement Notices (SPN) for all pre-qualifications, ICBs and NCBs for goods and works will be published in at least two national newspapers. For the construction and installation of new treatment plants and contracts for works estimated to cost more the \$5 million), the SPN will also be published online in the *dgMarket* and UNDB. For all requests for Expressions of Interest (EOI) estimated to cost more than \$100,000, publication will be online in the *dgMarket*, UNDB and in the national press.

Procurement Capacity

7. The preparation mission has conducted a preliminary assessment of the procurement capacity of the four water and wastewater companies that were the subject of the feasibility studies. The contracting departments in these companies have considerable experience in local procurement, and in particular procurement of works. However, they have no exposure to international procurement, nor knowledge of

Bank procedures in relation to procurement of large works and selection and employment of consultants. Weak knowledge of English language represents also a considerable obstacle.

8. The capacity of the contracting departments in the two companies will be strengthened to enable them to handle the procurement activities under the proposed loan. This will be achieved by recruiting a procurement officer in each of the TSUs that will be established for the each WWCs and a senior procurement officer for the NWWEC. In addition, the WWCs should recruit and/or nominate from the existing staff, candidates to be trained on the Bank procurement guidelines, procedures and use of Standard Bidding Documents (SBDs).

9. The main procurement function of the TSUs in the WWCs will be to conduct national and local competitive bidding for works and the selection of consultants for the related design and supervision service. For the procurement of large contracts under ICBs and recruitment of consultant firms, these TSUs will be supported by the experts recruited within the NWWEC to ensure efficiency, accumulation of experience and avoid duplications of efforts. WWCs/TSUs will use local consultants for engineering design and construction supervision for routine works, but would need international expertise for more complex works such as wastewater treatment works.

10. It is critical that the NWWEC and the WWCs should select and recruit qualified procurement experts July 2004. The pre-appraisal mission has provided sample TORs for the assignments of these officers. These recruits should be trained on Bank procurement procedures prior to the effectiveness of the loan. Such training can be carried by arranging training of these recruits in an institution that delivers training on Bank procurement according to the Bank procedures, or alternatively to arrange for a training workshop to be delivered in Iran. The second alternative may be more cost effective and more acceptable to the Iranian Government.

Procurement Plan

11. The procurement plan for the first year is detailed in Annex 14. This plan contains the programmed activities for water and wastewater networks in the two cities at an estimated value of US\$81 million, and for technical assistance packages at an estimated value of US\$22.43 million. The packaging for the remaining water and wastewater networks will be re-programmed during the first year of the project after the consultants for the design of these networks are recruited.. Each company will update the plan for all the procurement activities under its sub-components. The Senior Procurement Officer in the NWWEC will be responsible for consolidating these plans. Procurement of all works, goods and services will be undertaken in accordance with this plan as approved by the Bank. This plan has to be updated quarterly.

Procurement Implementation Arrangements

12. The procurement for each company will be handled by the TSU of each company with support from the TSU in the NWWEC for all ICBs for works and consultancy assignments estimated to cost more than US\$100,000.

13. The procurement arrangements for works are as follows:

- (i) Works for the water network: estimated at US\$121 million of the overall project cost to include rehabilitation and expansion of water treatment plants, construction of new transmission lines, construction of reservoirs, building and equipping pumping stations, drilling and equipping

wells in addition to the rehabilitation and expansion of the secondary distribution network. Due to the nature of the works and the gradual building up of the network, a sizable portion of these sub-components will be bid under NCB procedures. For any contract requiring tunneling with a value more than \$10 million, a pre-qualification process of contractors will be carried. All contracts over \$5 million will be procured under ICB procedures. Rehabilitation and expansion of the existing network (laterals) will be done in small packages under NCB procedures that will be distributed over the five years of the project. The main procurement packages will be launched during the first two years of the project.

- (ii) Works for the wastewater network: estimated at US\$246 million of the overall project. This cost includes construction of outfalls for the WWTPs, construction of main trunks, laterals and interceptors, building and equipping pumping stations, in addition to the installations of house connections. The majority of contracts for the trunks and pumping stations will be carried under ICB procedures. For any contract requiring tunneling with a value more than \$10 million, a pre-qualification process will be carried. All contracts over \$5 million will be procured under ICB procedures. Addition of house connections will be done in small packages under NCB procedures distributed over the five years of the project.
- (iii) Construction and Installation of New Wastewater Treatment Plants: the estimates cost is US\$66 million for the two new WWTPs in the two cities and the rehabilitation of Ahwaz western WWTP. The construction of the new WWTPs will be conducted under ICB procedures while conducting pre-qualification to determine the qualified contractors that will be invited for the two bids. The bidding documents will be based on the SBD for the "Supply and Installation of Equipment" modified to fit the specific requirements under the project. Due to the considerable time for design and construction, the schedule for this sub-component is on the critical path and should be launched prior to loan effectiveness. The rehabilitation of the Ahwaz western WWTP will be done using NCB procedures.

14. **Consulting Services, Technical Assistance and Training.** The main packages under this component are as follows:

- (i) Supervision services for water and wastewater works: the estimated value of the assignments for the supervision for water and wastewater works is US\$15.30 million. These will be packaged to the extent possible and the selection will be mainly using the Least Cost Selection (LCS) method for assignments estimated to cost less than \$200,000 while the Quality and Cost based Selection Method (QCBS) will be used for the other assignments. Preparation of TORs and long listing process for the supervision of works to be executed in the first year for the two cities should commence prior to the loan effectiveness.
- (ii) Design and Supervision of WWTP: these can be two or possibly one contract to recruit a consultant to design and supervise the construction, installation and operation of the two new WWTPs. The long listing process should be launched at the earliest time possible as this component is on a critical path. It is important to launch the requests for expression of Interest promptly. The method of selection to be used is QCBS. The estimated value for this sub-component is 2.59 US\$ million.
- (iii) Environmental Monitoring System, Studies in the sector and technical assistance on leak detection measures will be programmed during the first year of the project. The methods of procurement to be used will be QCBS for values above \$100,000 and selection based on

Consultants Qualifications (CQ) for values less than \$100,000. The estimated value for this sub-component is US\$ 6.5 million.

- (iv) **Strengthening the WWCs and Training:** this sub-component includes several specialized training activities and targeted technical assistance for the water companies. The methods of selection to be used will be LCS for training estimated to cost less than \$200,000 and CQ for the technical assistance for values below \$100,000 and QCBS for the remaining assignments. The estimated budget for these activities is US\$ 2.3 million.
- (v) **Project Management:** this component is estimated at US\$ 5.0 million and targeted to recruit individual consultants and firms to assist in the management of the project at the water companies. The methods of selection will be CQ for values of assignments estimated at less than \$100,000 in the case of firms and comparison of CVs for individual consultants.

15. **Equipment for Leak Detection:** this component is relatively small (US\$ 2.16 million) and aims at acquiring equipment that will assist the companies in the detection of leaks and the maintenance of the distribution and collection systems. Procurement will be done according to ICB, NCB using a bidding document and procedures acceptable to the Bank and shopping methods in accordance with the provisions of paragraphs 3.5 & 3.6 of the Guidelines.

16. **Goods and Works.** Procurement of goods and works will be carried out using the following methods:

- (i) International Competitive Bidding will be used for contracts of works estimated at US\$5,000,000 and above, and for contracts of goods estimated at US\$500,000 and above.
- (ii) National Competitive Bidding, including national advertisements, bidding documents that are acceptable to the Bank, and public bid openings will be used for contracts of works estimated to cost less than US\$5,000,000 equivalent per contract, and for contracts of goods estimated to cost less than US\$500,000 equivalent per contract. The aggregate value of contracts that will be awarded under this procedure will not exceed US\$300,000,000 equivalent for works, and US\$2,000,000 equivalent for goods.
- (iii) Shopping may be used for goods estimated to cost less than US\$100,000 equivalent per contract. The request for quotations shall be in writing and addressed to at least three suppliers. The request for quotations will contain the following: technical specifications, delivery time, payment conditions and any other information that may assist the suppliers in preparing competitive offers. The aggregate value of contracts that will be awarded under this procedure shall not exceed US\$ 500,000 equivalent.
- (iv) Direct Contracting will be used for the specialized procurement of goods when NCB and Shopping methods would not be efficient and economical, and for works of an emergency nature. Direct Contracting would follow the requirements in paragraph 3.7 of the Guidelines for Procurement under IBRD Loans and IDA Credits.

17. **Consultant Services:** The following procurement methods for selection of consultants will be used: (i) QCBS will be used for selection of consultant services with value of contracts estimated at more than US\$200,000 equivalent for the assignments for supervision services for tunnels and main trunks, design and supervision of WWTP, environmental monitoring system, Studies in the sector technical assistance on leak detection measures and strengthening the WWCs; (ii) LCS will be used for supervision services and training estimated to cost less than \$200,000 (iii) Selection Based on Consultant's

Qualifications will be used for assignments estimated at less than US\$100,000 equivalent per contract for the technical assistance on leak detection measures, strengthening the WWCs and project management; and (iv) Selection of Individual Consultants will be used in accordance with paragraphs 5.1 to 5.3 of the Guidelines. In exceptional cases, and wherever justified in the context of the overall interests of the Project, single-source selection of consultants for services estimated to cost less than \$50,000 equivalent per contract may, with the Bank's prior agreement, be procured in accordance with the provisions of paragraphs 3.8 through 3.11 of the Consultant Guidelines

18. For assignments for consultant firms estimated at less than US\$100,000 equivalent, the short list may be comprised entirely of national firms, provided at least three qualified local firms are available and competition including foreign consultants is not justified. However, international firms will not be excluded from consideration, if they have expressed interest.

19. The thresholds for procurement methods and prior review are indicated in Table B. The total value of contracts subject to prior review is estimated at US\$234 million. All other contracts will be subject to post-review and procurement audit on a random basis by the Bank. Procurement files will be maintained for review by the Bank's supervision missions.

Overall Procurement Risk Assessment

20. Based on the existing information on the overall environment for procurement and in particular the approach to procurement under Bank financed projects and the procurement capacity assessment of the companies, the overall procurement risk assessment is judged to be high. The measures for mitigating these risks will be through the framework agreement that will be reached between the Bank and the Government on the fiduciary arrangements for Bank financed projects, reaching an agreement on standard bidding document that will be used for procurement of works under NCB, providing training to the procurement officers in the companies and preparing first year bidding packages.

21. The NWWEC has recruited two consulting firms for the preparation of the first year design and bidding documents for the water supply and wastewater networks to be funded from the Companies' budgets. The deliverables of these two firms will be the design and bidding documents for the works under the first year procurement plan.

Frequency of Procurement Supervision

22. Bank supervision missions will be carried out every four months for the first year and every six months thereafter. Two ex-post review audits will be done during the first year and from thereon at least once a year. The ex-post review missions will be supported by a national consultant.

Table A: Project Costs by Procurement Arrangements for the Project

(US\$ million equivalent)

Expenditure Category	Procurement Methods				Total Cost (including contingencies)
	ICB	NCB	Other	N.B.F.	
1. Works					
Water Supply Networks	21.52 (10.76)	96.43 (48.21)	0.00 (0.00)	0.00 (0.00)	117.98 (58.97)
Pumps for Water Supply Network	0.00 (0.00)	3.46 (2.77)	0.00 (0.00)	0.00 (0.00)	3.46 (2.77)
Wastewater Networks	67.82 (34.97)	161.39 (83.84)	0.00 (0.00)	0.00 (0.00)	229.21 (118.81)
Pumps for Wastewater Network	16.42 (13.13)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	16.42 (13.13)
Treatment Plants	64.34 (50.36)	1.48 (1.09)	0.00 (0.00)	0.00 (0.00)	65.82 (51.45)
Sub-Total Works	170.10 (109.22)	262.76 (135.91)	0.00 (0.00)	0.00 (0.00)	432.87 (245.14)
2. Goods					
Leak Detection Equipment	1.15 (0.92)	1.15 (0.92)	0.00 (0.00)	0.00 (0.00)	2.31 (1.85)
3. Services					
Services/Training	0.00 (0.00)	0.00 (0.00)	31.86 (29.31)	0.00 (0.00)	31.96 (29.31)
Total	171.26 (110.15)	263.92 (136.84)	31.86 (29.31)	0.00 (0.00)	467.03 (276.21)
Front-end fee (FEF)					2.79
Total with FEF	171.26 (110.15)	263.92 (136.84)	31.86 (29.31)	0.00 (0.00)	469.82 (279.00)

Note:

ICB: International Competitive Bidding, NCB: National Competitive Bidding, Other: International Shopping, National Shopping, Direct Contracting, NBF: Not Bank Financed.

Figures in parenthesis are the amounts to be financed by Bank Loan.

Table A1: Consultant Selection Arrangements for the Project
(US\$ million equivalent)

Consultants' Services Expenditure Category	Selection Method							Total Cost (including contingencies)
	QCBS	QBS	SFB	LCS	CQ	Other (IC)	NBF	
Design and Supervision of Water Works	3.53			1.82				5.36
Design and Supervision of Wastewater Works	6.31			3.68				9.99
Design and Supervision of Wastewater Treatment Plants	2.59							2.59
Environmental Monitoring System	4.94							4.94
Studies in the Sector	1.11							1.11
Leak Detection	0.47							0.47
Strengthening WSC					0.58	0.58		1.17
Training				0.58	0.58			1.15
Project Management						5.09		5.09
Total	18.95	0.00	0.00	6.08	1.16	5.68	0.00	31.86

Note: QCBS: Quality and Cost Based Selection; QBS: Quality Based Selection; SFB: Selection under a Fixed Budget; LCS: Least Cost Selection, CQ: Selection Based on Consultant's Qualifications; Other: Selection of individual consultants; N.B.F: Not Bank Financed

**Table B: Thresholds for Procurement Methods and Prior Review
(all values in US\$)**

Expenditure Category	Contract Value Threshold	Procurement Method	Contracts Subject to Prior Review
1. Works	>5,000,000	ICB	All Contracts
	<5,000,000	NCB	All Contracts prior to Loan effectiveness. First two contracts to be awarded per each company regardless of value.
		Direct Award	All Direct Award Contracts.
Value of contracts subject to prior review are estimated at a cost of US\$170 million			
2. Goods	> 500,000	ICB	All Contracts
	< 500,000	NCB	All contracts prior to Loan effectiveness. First contract to be awarded per each company regardless of value
		Shopping	First contract to be awarded per each company regardless of value
		Direct Award	All Direct Award Contracts.
Value of contracts subject to prior review are estimated at a cost of US\$1 million.			
3. Services, Consultant Services, Training			
Firms	> 100,000	QCBS, LCS,	All TORs, short lists, RFPs and contracts.
	<100,000	QCBS, LCS & CQ	All TORs. All contracts prior to Loan effectiveness. First contract for each method of selection per company
Individual Consultants		Individual consultants selection	All TORs. Short List, selection report & contract for all selected prior to Loan effectiveness. Short List, selection report & contract for all consultants exceeding US\$50,000 equiv. First contract to be awarded per each company regardless of value
		Direct Award	All Direct Award Contracts.
Value of contracts subject to prior review are estimated at a cost US\$28 million			

Annex 6(b): Financial Management and Disbursement Arrangements

ISLAMIC REPUBLIC OF IRAN

AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT

Disbursement Arrangements.

The Loan will be disbursed during Project implementation over a period of five years. Managing the project funds and all related financial transactions, including preparation and submission of disbursement applications with summary sheets, and/or statements of expenditure and supporting documentation will be the responsibility of respective WWCs and the NWWEC. However payments made for expenditures prior to the Loan signature date but after May 1, 2004 in an aggregate amount not to exceed the equivalent of US \$10,000,000 will be reimbursed to the WWCs and NWWEC upon presentation of a withdrawal application. The allocation of Loan proceeds by expenditure category are summarized in the table below:

Table C: Allocation of Loan Proceeds

Category	Amount of the Loan Allocated (US\$)	% of Expenditures to be Financed
(1) Treatment Works		
a) Ahwaz Water	6,550,000	100% of foreign expenditures and 50% of local expenditures
b) Ahwaz Wastewater	23,300,000	
c) Shiraz Wastewater	23,510,000	
(2) Civil Works,		
a) Ahwaz Water	22,830,000	100% of foreign expenditures and 80% of local expenditures
b) Ahwaz Wastewater	50,250,000	
c) Shiraz Water	17,700,000	
d) Shiraz Wastewater	44,970,000	
(3) Goods and Equipments		
i) Ahwaz	980,000	100% of foreign expenditures, 100% of local expenditures (ex-factory cost) and 80% of local expenditures for items procured locally
ii) Shiraz	980,000	
(4) Consultants' services and training		
a) Ahwaz	7,600,000	88% of local expenditures for services of consulting firms and individuals domiciled within the territory of the borrower and 95% for foreign expenditures.
b) Ahwaz EMP	2,320,000	
c) Shiraz	6,120,000	
d) Shiraz EMP	1,620,000	
e) NEWWC	2,760,000	
(5) Project Management Cost*		
a) Ahwaz	1,660,000	90% of all expenditures up to December 31, 2005 and 75% of all expenditures thereafter
b) Shiraz	1,660,000	
(6) Front End fee	2,790,000	Amount due under Section 2.04 of the Loan Agreement
(9) Unallocated	61,400,000	
Total	279,000,000	

* The term "project management cost" means expenditures under the Project incurred by the WWCs in relation to office support, office supplies, communications, but excluding salaries of officials of the Borrower. The NWWEC TSU cost will be shared equally between the two WWCs.

Documents for Withdrawals

The borrower has indicated officially that the transaction based disbursement method will be used for this project.

Use of Statements of Expenditures (SOEs) (same as procurement thresholds)

During implementation, SOE will be used for all expenditures for: (i) Treatment works under contracts costing less than US\$5,000,000 (ii) works under contracts costing less than US\$5,000,000 equivalent each; (ii) goods under contracts costing less than US\$500,000; (iii) services under consultant firms contracts costing less than US\$100,000 equivalent each and under individual consultant contracts costing less than US\$50,000 equivalent each; and (iv) the project management costs, under such terms and conditions as the Bank shall specify by notice to the Borrower. The supporting documentation would be maintained by the WWC and made available for review by Bank supervision missions upon request, documentation relating to SOEs would be retained for up to one year from the date the Bank receives the audit report for the fiscal year in which the last withdrawal from the loan account was made.

Special Account (SA)

As the different portions of the loan, depending on the channeling modality, will be subject to different regulations and controls, and to facilitate project implementation and make timely payments of the Bank's share of eligible expenditures to contractors, suppliers, consultants and others, each WWC will open two US Dollars SAs, after receiving the Central Bank (CB) approval, at a commercial bank. The SAs that will deposit the funds channeled as budget transfers to the WWC will have an authorized allocation of US\$4 million and an initial deposit of US\$2 million, while the SAs that will deposit the funds channeled in the form of liability being will have an authorized allocation of US\$2 million and an initial deposit of US\$1 million. The full allocation may be claimed when disbursements and special commitments, financed from the budget transfer funds, reach US\$15 million while the full allocation may be claimed when disbursements and special commitments, financed from the liability funds, reach US\$7 million. The fifth SA managed by the NWWEC will have an authorized allocation of 0.5 million and an initial deposit of US\$ 5250,000. The full allocation may be claimed when disbursements and special commitments reach US\$1.5 million. The Replenishment of the SA would follow Bank's procedures, and a Bank's statement of SA transactions would support all replenishment applications. The minimum amount for applications regarding direct payments and special commitments would be 20% of the respective authorized allocations to the SAs. Requests for replenishment each of the SA will be submitted on a monthly basis. Also local accounts will be opened for the project counterpart funds and will be replenishment as per local procedures. The SA statements will be part of the project financial statements, which will be audited annually by independent external auditors acceptable to the Bank.

Financial Management

Executive Summary and Conclusion

The Ahwaz (A), Shiraz (S) Water and Waste Water Companies (WWC) and the National Water and Waste Water Engineering Company (NWWEC) (E), supported by Technical Support Units (TSU) will be responsible for managing the project funds and all related financial transactions. The WWC operates as private sector entities and the systems in place are based on the principles and procedures of the trading law of The Islamic Republic of Iran. Part of the loan proceeds will be channeled to the WWCs in the form of budget transfers, while the balance will be transferred in the form of liability where the repayment of the capital and all cost associated with the interest and commitment fees would be the responsibility of the

WWC. The part of the project made available to the water companies on budget transfer basis will be implemented through the regulations governing the national budget processes. All payments, under this part of the project, will be subject to the government laws, regulations and controls. While the flow of the funds channeled on lending basis to the companies will be subject to the policies, procedures and controls in place at the water companies. The technical assistant component of the project will be implemented by the NWWEC which operates as a private sector entity and collects fees from the WWC across the country.

In the absence of a Country Financial Accountability Assessment and being the first project to be implemented by these two WWCs and the NWWEC, the financial risk is rated high. Certain activities are required prior to declaring the project effective so to reduce this risk and allow easy flow of project funds and the generation of reliable project reports on timely basis. The two WWCs and the NWWEC financial management arrangements were reviewed and the findings can be summarized as follows:

	Rating	Comments
1. Implementing Entity	A: Satisfactory S: Satisfactory E: Satisfactory	These two WWCs have never implemented Bank-financed projects and are not familiar with Bank requirements, procedures and guidelines. However, they operate as private sector entities and have in place systems designed to follow on their operations and to generate year-end financial statements that are audited by independent external auditors. Training about bank rules, regulations and guidelines will be delivered to the companies and the TSUs.
2. Funds Flow	A: WC-Satisfactory GF-Satisfactory S: WC-Satisfactory GF-Satisfactory E: EC-Satisfactory	Part of the project funds will be channeled as budget transfers (GF) through the central government budget. In order for the grant budget transfers to disburse, two budget accounts must be opened by the MPO and a framework agreement should be signed to allocate the project funds. While the funds channeled in form of liability (WC) to the WWCs will follow the applicable rules and regulations at the WWCs.
3. Staffing	A: Satisfactory with limitations S: Satisfactory with limitations E: Satisfactory with limitations	The two WWCs have in place fully staffed financial departments that follow on the day-to-day financial transactions. In addition a financial officer (FO) within the TSU will be hired to follow only on the project accounts including the Special Accounts management and prepare the project reports. The limitation of the staffing is not being able to communicate in the English language. To overcome the communication limitations the FO to be recruited for the TSUs should have the language skills.
4. Accounting Policies and Procedures	A: Satisfactory with limitations S: Satisfactory with limitations E: Satisfactory with limitations	The Procedures in place are based on the laws applicable to the IRJ private and public sector. However a Financial Operations Manual should be prepared to introduce and define the project financial activities detailing the information and documents flow related to the project, define the relation between the TSU FO, the FC and the WWC financial department and to identify the monthly reports required
5. Controls	A: Satisfactory S: Satisfactory E: Satisfactory	Two signatures are required for the GF and for the WC funds. The expenditures are authorized by different departments within the WWC and are subject to the financial Controller verification. Clear segregation of duties and responsibilities.
6. Flow of information between the different WWC departments and with the NWWEC	A: Satisfactory S: Satisfactory	The flow of information is defined in the WWC procedures. Also the financial information is provided to the NWWEC on semi annual basis. However the project financial information will be made available on quarterly basis thus allowing the NWWEC to consolidate the figure and issue the project overall FMR.
7. Internal Audit	A: Satisfactory with	

	<p>limitations</p> <p>S: Satisfactory with limitations</p> <p>E: Satisfactory with Limitations</p>	The Internal auditors at the WWC reports to the water company manager who receive their reports. They act on the manager request to investigate certain activities. The internal audit is limited in scope and does not follow written procedures.
8. External Audit	<p>A: Satisfactory</p> <p>S: Satisfactory</p> <p>E: Satisfactory</p>	The WWCs applicable laws state that the accounts and financial statements should be audited yearly by an external independent auditor. In addition to the entity audit, the project accounts will be audited by external auditors acceptable to the Bank, and a separate audit opinion will be issued.
9. Reporting and Monitoring	<p>A: Satisfactory with limitations</p> <p>S: Satisfactory with limitations</p> <p>E: Satisfactory with Limitations</p>	The two WWCs are equipped with accounting systems that are capable of generating year-end financial statements. However, it was observed that the accounting systems require enhancement to become capable of generating timely project reports. To overcome this limitation in the project reporting the National Engineering Company, who overview and monitor the operations of the WWCs in the country, has proposed to open a cost center within the present accounting system. This cost center will be configured to report on transactions relating to the project including the source and use of funds and the activities financed through these sources.
10. Information Systems	<p>A: Satisfactory with limitations</p> <p>S: Satisfactory with limitations</p> <p>E: Satisfactory with Limitations</p>	The configuration of the accounting system will allow generation of timely project reports.
11. Risk Management	Unsatisfactory	The present FM system in place at the WWCs does not reply fully to the project needs. A system configuration is required for project report generation, a financial officer has to be engaged and a project Financial Operations Manual has to be prepared. Applying the previous actions would reduce the project financial risk.
Overall Financial Management rating	Satisfactory	

This assessment showed that despite being owned by the government the WWCs and the NWWEC operate as private sector entities and follow the principles and procedures as defined by the trading law of The Islamic Republic of Iran. The companies issue year-end financial statements that are audited by external independent auditors. The control environment was found to be adequate however the financial system requires enhancement to become capable of generating timely project reports including the Financial Monitoring Reports (FMRs).

WWCs & NWWEC Current Financial Management Practices and IT System

The two WWCs, being Ahwaz and Shiraz, and the NWWEC were visited and the financial systems were reviewed by examining the respective accounting systems, accounting policies and procedures, budgeting systems, assets management procedures, reporting systems capabilities, staffing, internal controls policies and procedures, internal auditing and external auditing arrangements. The systems in place are capable of following on the project funds to be channeled through Special Accounts (SA) which would be opened by each WWC and the NWWEC. However the accounting standards followed by the WWCs and the auditing standards applied by the WWCs external auditor's, specially the presentation of the auditor opinions, are not in conformity with International Accounting Standards (IAS) and International Standards of Auditing respectively. In order to adhere to the IAS, staff will be required to attend training.

Training programs will be designed and delivered within the scope of the project. To allow proper project reporting, the accounting systems will be enhanced to become capable of generating quarterly project reports as required by the Bank in the form of Financial Monitoring Reports (FMRs).

The WWCs & NWWEC Enhanced Arrangements

The WWCs and the NWWEC systems are characterized with acceptable controls, however, to avoid the risk of not being able to generate timely reports for project management and monitoring purposes, the accounting systems will be enhanced through the creation of a new cost center that will record the project transactions and accounts. This configuration will be finalized and tested prior to the end of June 2004. Also, financial officers will be hired, within the TSUs at each WWC and at the NWWEC, to follow on the project accounts and generate the project individual financial reports and the quarterly FMRs. The current laws requires that two accounts be opened within the government budget and a framework agreement signed, in order to reduce the risk of the project not being able to disburse the funds channeled on budget transfer basis and as counterpart funds to the WWCs.

As the enhanced procedures that will follow on the project accounts are not reflected in WWCs regulations and in order to ensure the accuracy and completeness of the project accounts and to define the relation between all departments involved with the project implementation thus facilitate the flow of information related to the project, the financial officers, assisted by an external financial consultant, will prepare the project Financial Operations Manual, integrating the applicable laws and outlining the project arrangements by detailing:

- The Financial Officer's responsibilities within the WWCs financial departments and his relationship with the MEAF financial controller;
- The insertion of the Project in the Development Budget and the framework agreement to be signed between MPO and the WWCs.
- The project accounting system
- The project chart of accounts and accounting principles, practices and methods the project will follow. This chart of account should reflect the classification of WWCs classifications, if applicable, for easy reconciliation;
- The budgeting process;
- The reconciliation procedures, timing and output between the two systems;
- The request for funds from the MEAF and the replenishment of the project SAs
- The document flow;
- The frequency and forms of the financial reports;
- Banking arrangements,
- others

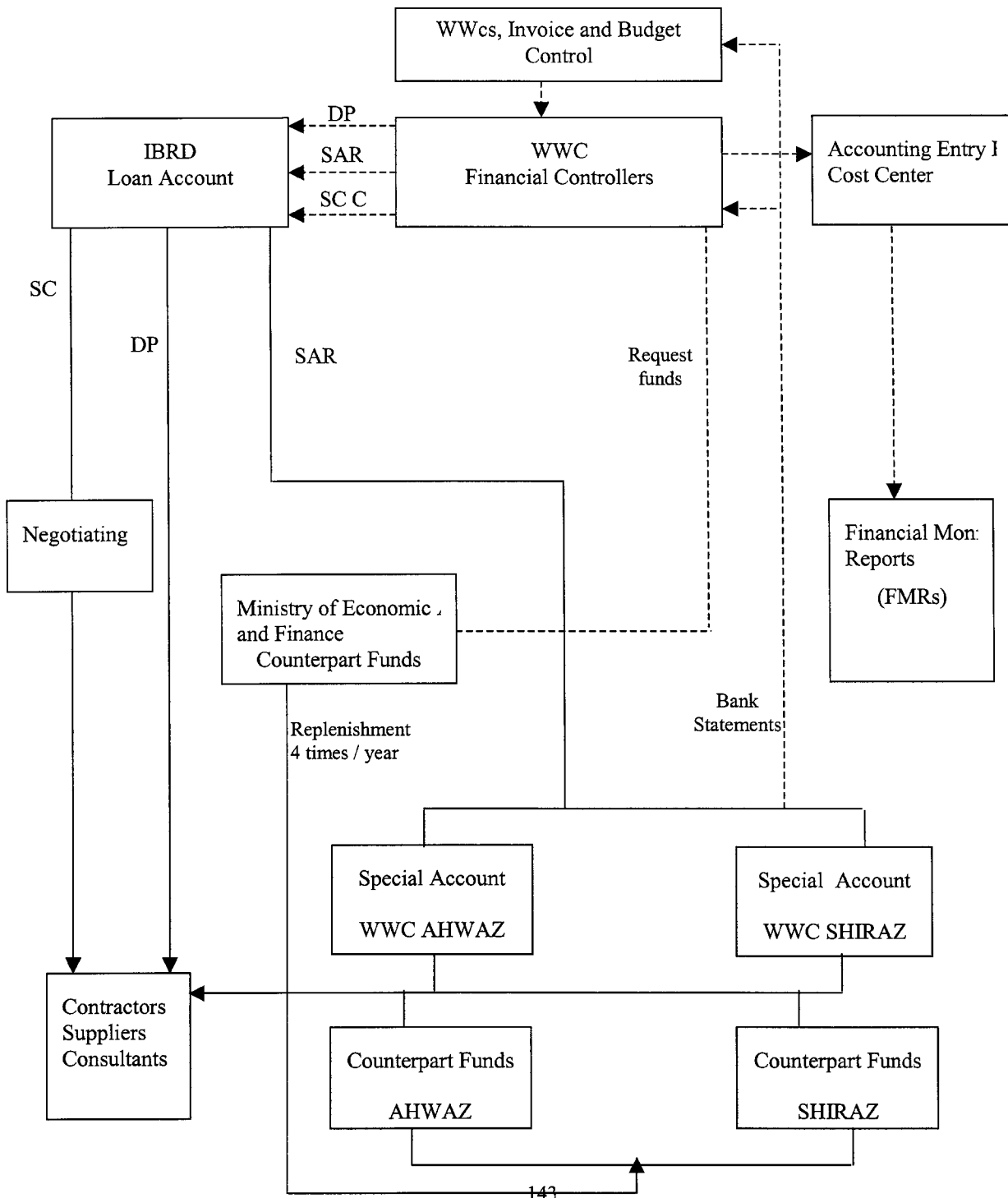
Flow of Funds and Controls

As the different portions of the loan, depending on the channeling modality, will be subject to different regulations and controls, and to ensure that funds are available for project implementation, five US \$ Special Accounts will be opened in addition to the accounts for the counter part financing. Each water company will prepare and follow on the project withdrawal applications and direct payment requests relating to its activities, while the NWWEC will manage the fifth SA which will be used to finance the

TA activities with scope to cover the two WWCs. The flow of the project funds will depend on the channeling modality. All invoices, either for advance payments or for incurred expenses will be subject to applicable controls and procedures. These invoices will be approved by the appropriate implementing department and will be honored through payments signed by the MEAF controller if financed from the budget transfer funds. In turn, the MEAF will transfer the counterpart funds to WWCs after the MPO opens the required budget lines. Deposits into and payments out of the \$ SAs, to pay contractors/suppliers/consultants, will be made in accordance with the provision of the Loan Agreement. The following charts describe the project flow of funds.

A: FUNDS CHanneled ON A BUDGET TRANSFERS BASIS

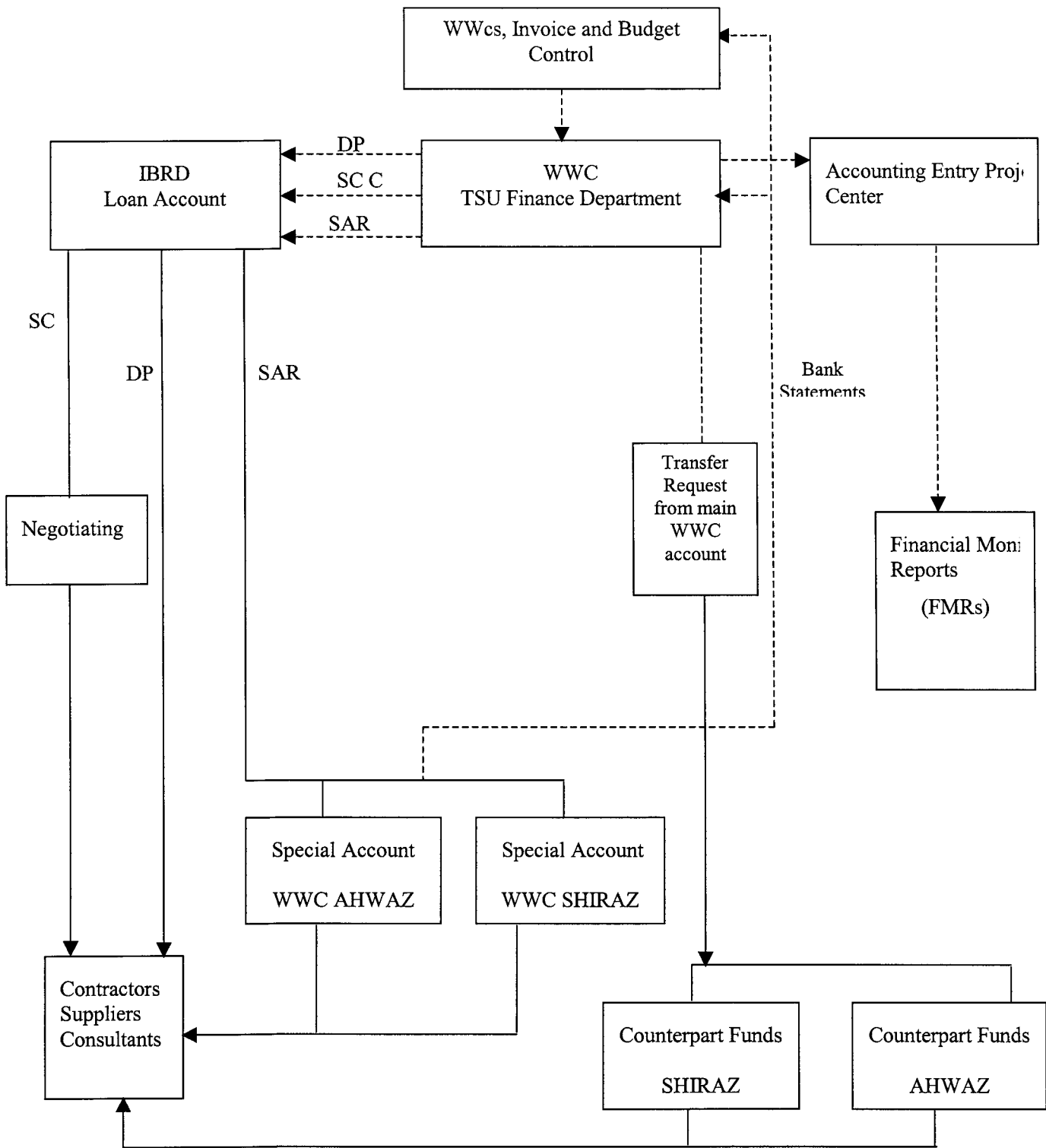
CASH & DOCUMENTS FLOW CHART



DP: Direct Payment
 SAR: Special Account Replenishment
 SC C: Special Commitment Confirmation
 : Document Flow

B: FUNDS CHanneled AS LIABILITIES

CASH & DOCUMENTS FLOW CHART



DP: Direct Payment
 SC C: Special Commitment Confirmation
 SAR: Special Account Replenishment
 - - - - : Document Flow
 ——— : Cash Flow

Project reports

Quarterly: Each WWC and the NWWEC will generate the Financial Monitoring Reports relating to its part of the project and submit them to the Bank as part of the project progress report, or separately. These reports are made up of:

- **Financial Reports:** to include a cash flow statement, beginning and ending project cash balances and an expenditure report comparing actual and planned expenditures in addition to the SAs reconciliation statements. Also, a narrative report explaining all variances that exceed 15% when compared to plan and the proposed corrective actions should be included as an annex to the financial reports.
- **Physical Progress Reports:** to include narrative information and output indicators linking financial information with physical progress.
- **Procurement Reports:** providing information on the procurement of the, goods, works, services, training and selection of consultants showing procurement performance against plan, including information on all authorized contract variations.

These reports should be remitted to the Bank within 45 days from the end of the period. The proposed reports format and presentation have been discussed and agreed upon with the Borrower.

Annual:

- 1) Audited Project Financial Statements (PFS) will be submitted to the Bank. PFS, will include:
 - (i) Statement of sources and utilization of funds, indicating funds received from various sources, and project expenditures.
 - (ii) Appropriate schedules classifying project expenditures by component and activity, showing yearly and cumulative balances.
 - (iii) Special Accounts Reconciliation Statements and Statement of Expenditures paid using SOEs procedures.
- 2) Audited Entity Financial Statements (EFS) will be submitted to the Bank too. EFS will include the respective:
 - (i) Income Statement
 - (ii) Balance Sheet
 - (iii) Cash Flow Statement
 - (iv) The attached notes

Auditing Arrangements

Each of the two companies and the NWWEC will issue a separate audit report as they are independent entities with no financial relation whatsoever between them. Accordingly, each of the WWCs and the NWWEC will remit to the Bank not later than six months after the end of each year, the project audit report covering the part implemented by the respective company. The external audit reports shall encompass all project related activities and shall be in accordance with internationally accepted auditing standards e.g., International Standards on Auditing (ISA). The annual audit report of the project accounts

shall include an opinion on the project financial statements. Also, the audit report shall include a separate opinion on the different SAs transactions reconciling opening and year-end balances. In addition to the audit reports, the auditor will prepare a "management letter" identifying any observations, comments and deficiencies, in the system and controls, that the auditor considers pertinent, and shall provide recommendations for their improvements. The external independent auditor should be acceptable to the Bank and his TOR will be prepared and submitted for the Bank's no objection, at least nine months prior to the end of the project fiscal year.

Also, each of the WWCs will remit to the Bank not later than six months after the end of each year, the WWC entity audit.

Disbursement Arrangements

To ensure that funds are readily available for project implementation at the two companies, four SAs in US Dollars will be opened at a commercial bank as per the Central Bank instructions and will be operated by the respective WWCs. A fifth SA will be opened and managed by the NWWEC. Initially, an advance for the equivalent of about six months expenditures will be transferred to each of the SAs upon effectiveness of the Loan and receipt of signed withdrawal applications. The SAs that will deposit the funds channeled as budget transfers to the WWC, will have an authorized allocation of US\$4 million and an initial deposit of US\$2 million, while the SAs that will deposit the funds channeled in the form of liability will have an authorized allocation of US \$2 million and an initial deposit of 1 million. The full allocation may be claimed when disbursements and special commitments, financed from the budget transfer funds, reach US\$15 million while the full allocation may be claimed when disbursements and special commitments, financed from the liability funds, reach US\$7 million. While the fifth SA managed by the NWWEC will have an authorized allocation of 0.5 million and an initial deposit of \$250,000. The full allocation may be claimed when disbursements and special commitments reach US\$1.5 million. Replenishment applications will be prepared and submitted to the Bank by the appropriate company. Authorized signatories, names and corresponding specimens of their signatures will also be submitted to the Bank.

Risk Analysis

The following summarizes the risk assessment findings for the project:

	Risk	Comments
Inherent Risk		
1.Country Financial Management Risk	H	The CFAA report for The Islamic Republic of Iran is in the process of being prepared.
2.Project Financial Management Issues	M	The WWCs have not implemented Bank financed projects in the past and the systems in place, after enhancement will be capable to follow on the project activities and funds.
3.Counterpart Funds	H	It is a must that the MPO commits to opening two accounts for the project within the central budget to facilitate flow of budget transfers funds. Also the WWCs have to generate from its resources the counterpart funds to use for the liability financing.
Overall Inherent Risk	H	
Control Risk		
1.Implementing entity	M to H	The WWCs have not implementing Bank-financed projects in the past.
2.Funds Flow	H	The flow of funds requires the opening of the two accounts within the central government budget and the signature of a framework agreement with each of the WWCs

3. Staffing	M	An experienced staff should be hired to follow on the project accounting while Financial Controller will sign all project payments.
4. Accounting Policies and procedures	M	Upon finalizing the project's Financial Operations Manual, well-defined financial policies and procedures will be in place. However the control policies applicable to the WWCs will be used to follow on the project accounts.
5. Internal Audit	H	
6. External audit	M	External audit will be carried-out by an independent auditor acceptable to the Bank. There was no capacity assessment for the audit profession to determine capability to perform audits as per ISA
7. Reporting and Monitoring	H	With the enhancement of the accounting system, the project will be able to report on the basis of the FMRs.
8. Information systems	M	The two WWCs are equipped with networks and accounting systems to follow on the day to day activities and generate year-end financial statements.
Overall Control Risk	M to H	

The strengths that provide basis of reliance on the project financial management system include:

- (a)- The centralization of all payments by the WWCs and the enhancement of the accounting system for the generation of the FMRs.
- (b)- The laws, controls and regulations applicable to the public sector and to the WWCS that will be applied for the project activities and funds.

Bank Supervision

The requirements for Bank supervision will intensify initially in order to ensure that the financial arrangements are implemented. The first supervision mission after effectiveness will take the form of a launch workshop where a seminar on Bank rules, regulations and guidelines will be presented. The project will be supervised every four months for the first eighteen months, then every six months thereafter. Bank supervision missions will consist of visits to the two WWCs, the NWWEC and MPO to review financial management practices, procurement methods, payment procedures and documentation, in addition to field visits to the project sites and other agencies concerned.

Action Plan

Engage the central TSU financial officer	Condition of effectiveness
Configure the accounting software	Prior to June 2004
Open the project budget accounts	Immediately

Financial Monitoring Reports (FMR)

Quarterly Reports

Financial Report

1-A Project Sources and Uses of Funds

1-B Uses of Funds by Project Activity

1-C Special Account Reconciliation Statement

Progress Reports

2-A Output Monitoring Report (Unit of Output by Project Activity)

Procurement Reports

3-A Procurement of goods (Not subject to prior review)

3-B Procurement of Works (Not subject to prior review)

3-C Selection of Consultants (Not subject to prior review)

Annex 7: Project Processing Schedule

ISLAMIC REPUBLIC OF IRAN

AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT

Project Schedule	Planned	Actual
Time taken to prepare the project (months)		
First Bank mission (identification)	July 26, 2002	July 26, 2002
Appraisal mission departure	February 6, 2004	February 13, 2004
Negotiations	March 29, 2004	April 12, 2004
Planned Date of Effectiveness	September 30, 2004	

Prepared by:

Preparation assistance:

Bank staff who worked on the project included:

Name	Specialty
Mohammed Benouahi	Task Team Leader
Anna Bjerde	Sr. Financial Analyst
Imad Saleh	Sr. Procurement Specialist
Robert Bou Jaoude	Sr. Financial Management Specialist
Hiba Tahboub	Sr. Procurement Specialist
John-Keith Rennie	Sr. Social Scientist
Jan Janssens	Program Manager
Peter Kolsky	Sr. Water and Sanitation Specialist
Mohammed Dalil Essakali	Professional Associate, Engineer
Randa Nemer	Environmental Specialist
Mohamad Lahouel	Economist (Consultant)
Parviz Piran	Social Scientist (Consultant)
Hassan Ahmadi	Sanitary Engineer (Consultant)
Mouna Couzi	Program Assistant
Zakia Chummun	Program Assistant
Dr. Kolahi	Physician and Health Specialist (Consultant)

Annex 8: Documents in the Project File*
ISLAMIC REPUBLIC OF IRAN
AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT

Project Implementation Plan

PIP details are in the Project Files.

B. Bank Staff Assessments

C. Other

Detailed financial analysis of scenarios 2, 3 and 4.
Procurement Implementation Schedule.

*Including electronic files

Annex 9: Statement of Loans and Credits
ISLAMIC REPUBLIC OF IRAN
AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT

Closed Projects 40

IBRD/IDA *

Total Disbursed (Active)	42.19
of which has been repaid	0.00
Total Disbursed (Closed)	1,807.99
of which has been repaid	1,724.26
Total Disbursed (Active + Closed)	1,850,171,681.86
of which has been repaid	1,724,255,787.17
Total Undisbursed (Active)	388.87
Total Undisbursed (Closed)	0.00
Total Undisbursed (Active + Closed)	388,868,574.96

<u>Active Projects</u>	<u>Last PSR Supervision Rating</u>	<u>Original Amount in US\$ Millions</u>				<u>Difference Between Expected and Actual Disbursements^{1/}</u>				
Project ID	Development Objectives	Implementation Progress	Fiscal Year	IBRD	IDA	GRANT	Cancel.	Undisb.	Orig.	Frm Rev'd
P069943	IR-2nd Primary Health Care & Nutrition	U	U	2000	87			83.97569	41.642356	
P080802	IR-EARTHQUAKE EMERGENCY RESPONSE	S	S	2003	180			180	6.6666667	
P074499	IR-Environmental Management Supp. Prog.	S	S	2003	20			19.3	-0.2	
P069946	IR-Tehran Sewerage	S	S	2000	145			105.5929	42.459552	
Overall Result					432			388.8686	90.568575	

**ISLAMIC REPUBLIC OF IRAN
STATEMENT OF IFC's
Held and Disbursed Portfolio**

(In US Dollars Millions)

		Held		Disbursed	
FY Approval	Company	Loan	Equity	Quasi	Partic

Approvals Pending Commitment

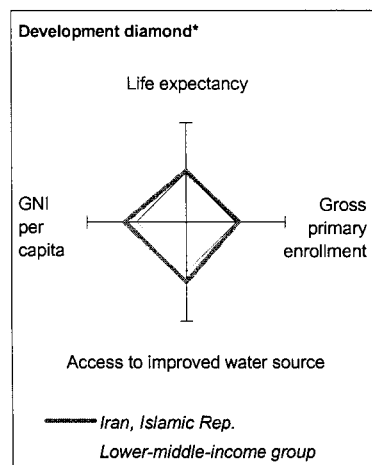
		Loan Equity Quasi Partic			
	2003KLC	3	2	0	0
Total Pending Commitment:		3	2	0	0

Annex 10: Country at a Glance

ISLAMIC REPUBLIC OF IRAN

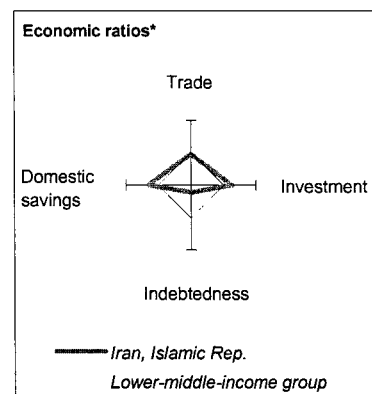
AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT

POVERTY and SOCIAL	Iran	M. East & North Africa	Lower- middle- income
	2002		
Population, mid-year (millions)	65.5	306	2,411
GNI per capita (Atlas method, US\$)	1,720	2,070	1,390
GNI (Atlas method, US\$ billions)	112.4	670	3,352
Average annual growth, 1996-02			
Population (%)	1.5	1.9	1.0
Labor force (%)	4.8	2.9	1.2
Most recent estimate (latest year available, 1996-02)			
Poverty (% of population below national poverty line)	21	..	..
Urban population (% of total population)	65	58	49
Life expectancy at birth (years)	71	69	69
Infant mortality (per 1,000 live births)	30	37	30
Child malnutrition (% of children under 5)	11	..	11
Access to an improved water source (% of population)	98	88	81
Illiteracy (% of population age 15+)	15	35	13
Gross primary enrollment (% of school-age population)	117	95	111
Male	120	98	111
Female	113	90	110



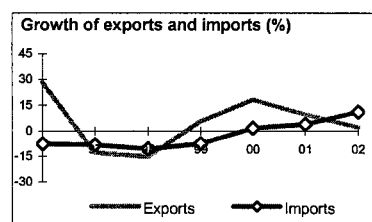
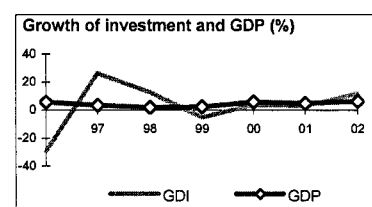
KEY ECONOMIC RATIOS and LONG-TERM TRENDS

	1982	1992	2001	2002
GDP (US\$ billions)	124.8	93.1	114.1	107.5
Gross domestic investment/GDP	15.9	35.4	29.3	31.1
Exports of goods and services/GDP	16.4	15.2	28.1	26.8
Gross domestic savings/GDP	20.4	30.0	35.8	34.5
Gross national savings/GDP	19.5	31.4	35.2	35.5
Current account balance/GDP	4.6	-7.8	4.4	3.7
Interest payments/GDP	0.1	0.1	0.2	0.2
Total debt/GDP	6.6	17.3	6.3	6.8
Total debt service/exports	5.4	4.9	8.1	7.4
Present value of debt/GDP	..	..	5.9	..
Present value of debt/exports	..	..	25.1	..
	1982-92	1992-02	2001	2002
(average annual growth)				
GDP	1.8	3.5	4.8	6.3
GDP per capita	-1.2	2.0	3.4	4.7



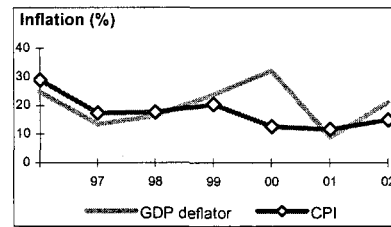
STRUCTURE of the ECONOMY

	1982	1992	2001	2002
(% of GDP)				
Agriculture	20.2	23.9	18.6	15.2
Industry	37.1	29.2	37.7	38.9
Manufacturing	9.6	14.3	16.3	13.9
Services	42.7	46.9	43.6	45.8
Private consumption	61.5	59.6	51.0	51.4
General government consumption	18.1	10.4	13.2	14.1
Imports of goods and services	11.9	20.7	21.5	23.3
	1982-92	1992-02	2001	2002
(average annual growth)				
Agriculture	4.3	3.8	4.7	6.1
Industry	3.0	-2.2	7.5	10.5
Manufacturing	6.5	5.6	10.0	11.0
Services	-0.5	7.8	4.8	5.1
Private consumption	1.9	3.4	5.1	6.3
General government consumption	-3.7	3.3	1.1	5.0
Gross domestic investment	1.2	4.7	3.0	12.0
Imports of goods and services	-0.7	-8.9	4.1	11.2



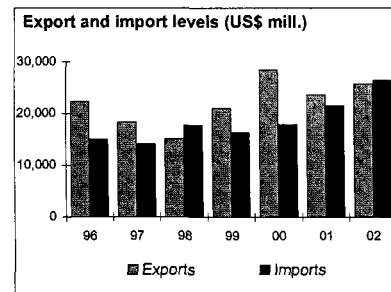
PRICES and GOVERNMENT FINANCE

	1982	1992	2001	2002
Domestic prices				
(% change)				
Consumer prices	18.2	25.8	11.7	15.0
Implicit GDP deflator	14.6	25.0	8.8	21.1
Government finance				
(% of GDP, includes current grants)				
Current revenue	..	7.1	26.5	27.6
Current budget balance	..	-6.2	9.0	4.8
Overall surplus/deficit	-5.7	-12.5	1.0	-2.5



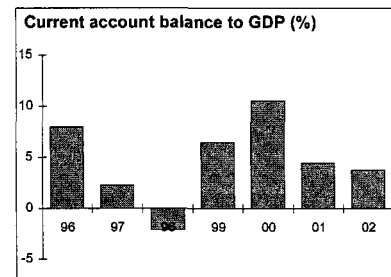
TRADE

	1982	1992	2001	2002
(US\$ millions)				
Total exports (fob)	20,452	19,868	23,716	25,761
Oil and gas	20,168	16,880	19,339	20,755
Textiles	..	..	..	662
Manufactures	..	..	..	1,227
Total imports (cif)	12,552	23,274	21,600	26,450
Food	..	..	..	1,932
Fuel and energy	1,000	400	625	643
Capital goods	..	..	..	15,829
Export price index (1995=100)	112	75	70	71
Import price index (1995=100)	49	62	58	59
Terms of trade (1995=100)	230	121	120	120



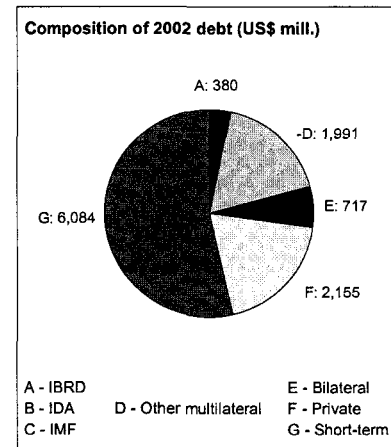
BALANCE of PAYMENTS

	1982	1992	2001	2002
(US\$ millions)				
Exports of goods and services	20,961	20,427	26,020	28,439
Imports of goods and services	15,613	29,057	21,586	25,954
Resource balance	5,348	-8,630	4,434	2,485
Net income	385	130	225	294
Net current transfers	0	1,192	376	1,250
Current account balance	5,733	-7,308	5,035	4,029
Financing items (net)	-846	7,132	-9,976	-8,345
Changes in net reserves	-4,887	176	4,941	4,316
Memo:				
Reserves including gold (US\$ millions)	..	2,860	17,468	20,968
Conversion rate (DEC, local/US\$)	84.5	713.8	5,819.0	7,950.0



EXTERNAL DEBT and RESOURCE FLOWS

	1982	1992	2001	2002
(US\$ millions)				
Total debt outstanding and disbursed	8,236	16,084	7,214	7,345
IBRD	467	133	380	380
IDA	0	0	0	0
Total debt service	1,172	1,071	2,168	2,168
IBRD	86	32	101	101
IDA	0	0	0	0
Composition of net resource flows				
Official grants	6	55	..	..
Official creditors	-70	49	..	..
Private creditors	-200	1,170	..	..
Foreign direct investment	..	..	500	750
Portfolio equity	0	0	0	0
World Bank program				
Commitments	0	432	0	0
Disbursements	0	114	31	31
Principal repayments	50	26	65	65
Net flows	-50	88	-34	-34
Interest payments	36	6	36	36
Net transfers	-86	82	-70	-70



Additional Annex 11: Environmental Assessment

ISLAMIC REPUBLIC OF IRAN

AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT

A. OVERVIEW

The proposed project covers the rehabilitation and expansion of the water supply and wastewater system in Ahwaz and Shiraz cities in order to cope with growing demands.

Ahwaz, the capital of Khuzestan province is located at approximately 875 km from Tehran. The present population is about 950,000 and is projected to reach 2.2 million by the year 2027. Ahwaz is one of the most important economical centers of the Islamic Republic of Iran as it is located in an oil-rich region and hosts a number of large industries. The Karoon River, the largest river in Iran, flows along Ahwaz and divides the city into two separate drainage zones.

At present, 99% and 63% of the population are connected to public water supply and sanitary sewerage, respectively. Areas without wastewater either use seepage pits or discharge their wastewater in open channels, rivers or in open grounds creating wastewater pools, polluting the soil and water resources, and creating health hazards. To improve the wastewater situation, the existing wastewater treatment plant that was constructed in 1977 has been recently rehabilitated and put into operation. This treatment plant, which is based on tertiary activated sludge with nitrification, denitrification and chlorination, serves the western drainage zone but can only treat the wastewater generated by 140,000 persons.

The pollution of the Karoon River is a major problem and a priority issue not only for Ahwaz but also for the whole province. The discharge of untreated municipal and industrial effluents, the drainage from agricultural lands, and the uncontrolled discharge of solid wastes directly into the River and its tributaries have considerably degraded the water quality of Karoon. Available treatment facilities have proved to be insufficient to produce adequate drinking water quality. At present, water from well fields is being transferred around 70 km and blended with the river water in order to reduce the concentration of contaminants and make it treatable. However, the maximum water that can be obtained represents less than 10% of Ahwaz water demand and as such cannot improve the degraded water quality to acceptable levels. Consumers are switching to new sources of drinking water (15-20 liter deposit-refund containers) or taking measures to reduce the contamination of the drinking water (filtering and boiling tap water).

The poor water quality is largely contributing to high diarrhea prevalence that reaches 50% during peak months. Out of the total gastro-enteritis cases in Iran during the year 2000, 10% were reported in Ahwaz, which accounts for only 1.5% of the total population of the Islamic Republic of Iran but where there is acute pollution of both ground water and surface water. Furthermore, estimates of water production and consumption rates indicates a very high percentage of unaccounted for water (around 40%) as a result of the poor conditions of the existing distribution network.

Shiraz is the capital of Fars province and is located at approximately 925 km to the south of Tehran. The present population is about 1,200,000 and is projected to reach 1,950,000 by the year 2027. Shiraz has a rich historical heritage and is close to Persepolis, the most important archeological site of the country.

It is estimated that about 99% of the inhabitants of Shiraz are currently connected to the city's water supply network. Water quality monitoring indicates that the water supply is of acceptable quality and in compliance with national and WHO standards. Chemical, physical and bacteriological analyses are

conducted on a daily basis at various points including water sources, storage reservoirs and distribution network. The major problems raised by the Water and Wastewater Company is the high percentage of unaccounted for water (around 30%) and the need to rehabilitate a considerable portion of the network. Rehabilitation of the network has been initiated but is proceeding at a very slow rate due to limited financial resources. Other problems identified by the Water and Wastewater Company are the relatively low water quality of Alluvial ground water sources that have high levels of hardness and nitrates, and the insufficient water pressure in some zones of the distribution network.

Similar to other cities, wastewater collection, treatment and disposal are the main environmental concern in Shiraz. At present only 8% of the population is connected to the wastewater collection system. Due to the high water table and low soil permeability, the use of existing seepage pits has been unsatisfactory causing groundwater contamination. A great part of the wastewater is discharged in the seasonal rivers of the city or in open drainage channels that run along the roads adjacent to the residential areas. During the dry periods, the channels become open wastewater collectors emitting noxious odors, attracting mosquitoes and affecting the health of the residents. The wastewater collected by the existing sewers is conveyed along Khoshk River that divides the city in two parts and ultimately discharges in Maharloo Lake.

The impact of wastewater on public health is considered to be less than that experienced in other cities yet water related diseases such as cholera and gastro enteritis are being reported by the health centers of the city and have been attributed mainly to the irrigation of raw eaten vegetables with untreated wastewater. It was also reported that around 21 wells have been decommissioned due to contamination, mainly in areas where groundwater is relatively high. In order to improve public health conditions and to reduce the contamination of the water resources, the Water and Wastewater Company has started implementing a wastewater system for the whole city.

B. Project Objectives and Components

The objectives of the proposed Water and Sanitation Project are:

- (a) enhance the quality of life in the proposed cities, Ahwaz and Shiraz, particularly in poor areas by: (i) improving access to satisfactory water supply and significantly increasing coverage of sanitation services; and (ii) improving environmental, hygiene and health conditions as well as promoting reuse of treated effluents;
- (b) strengthen and develop the capacity of Ahwaz and Shiraz Water and Wastewater Companies (WWCs) and assist the latter in improving their efficiency, sustainability and financial autonomy; and
- (c) initiate sector reforms, particularly with respect to institutional arrangements, the regulatory framework, demand management, as well as prepare a sanitation strategy.

The Project of a total cost of US\$469.82 of which Bank financing is US\$279.00 million will consist of:

- Rehabilitation, improvement and expansion of the water systems and facilities (Bank financing US\$61.74 million)
- Rehabilitation, improvement and expansion of the waste water systems and facilities (Bank financing US\$183.39 million)
- Provision of Operation and Maintenance equipment (Bank financing US\$1.85 million)

- Technical assistance and consultant services (which include the implementation of EMPs (Bank financing US\$29.31 million).

C. Project Description

The required works for water and wastewater will be completed over four phases, with phase one from 2003 to 2007, phase two from 2008 to 2012, phase three from 2012 to 2017 and phase four from 2018 to 2027. The proposed Water and Sanitation Project will cover works to be included in the first phase (2003 to 2007).

Ahwaz:

Water supply: At present 99% of the City's population is served by the water supply network. The total water demand of the city is 4.53 m³/s and is expected to reach 6.4 m³/s by the year 2027. Karoon River is the main source of water for the City of Ahwaz. Over the past 30 years, average and minimum flows in the river were 700 and 170 m³/s respectively, which by far exceeds the total water demands of the year 2027. The deterioration of water quality in the river is a major concern. Existing conventional water treatments plants have proved to be inadequate in providing a treated water quality that would meet drinking water standards. Water quality analyses over the past 20 years clearly show that the river water does not meet potable water standards and requires additional treatment mainly for eliminating odor and taste, and reducing dissolved solids prior to its use, hence additional treatment processes are proposed. In addition and to meet the water demand of the year 2027, an increase in the capacity of existing facilities (treatment plants, storage reservoirs and distribution network) is needed. As part of the proposed project, the following water works will be executed:

- Rehabilitation of the three existing water treatment plants by the construction of pre-sedimentation units and the addition of dual media layers, ozonation and activated carbon in Treatment Plants 1 and 2. In addition to the renovation and replacement of various mechanical and civil processing units and installation of flow meters and data loggers at the inlets and outlets of the Treatment Plants 1&2. Moreover, extension of Treatment Plant 2 will be implemented to increase its capacity from 4.05 m³/s to 5.2 m³/s and extend the intake 20 m inside the river to ensure withdrawing acceptable water quality;
- Laying of 10 km steel transmission pipelines from the water treatment plants 1 and 2 to the storage reservoirs, diameter ranges from 700- 2000 mm;
- Rehabilitation and extension of the water network with diameters ranging from 200-600 mm with a total length of 266 km;
- Construction of five concrete square reservoirs of 50,000 m³ capacity each in Hasir Abad area as well as construction of required pumping stations.

Wastewater: Present wastewater volume generated in the city of Ahwaz is 99,400 m³ /d (29,300 m³ /d in the western zone and 70,100 m³ /d in the eastern zone) and is expected to reach 504,400 m³ /d (203,900 m³ /d in the western zone and 300,500 m³ /d in the eastern zone) by the year 2027. Ahwaz wastewater plan proposes that sewage generated in the western zone will be conveyed to the existing Choneibah wastewater treatment plant, while sewage generated in the eastern zone will be conveyed to a new wastewater treatment plant. The Choneibah wastewater treatment plant will be rehabilitated and its capacity will be increased to reach 204,000 m³ /d by the year 2027. The proposed new wastewater treatment plant in the eastern zone is based on activated sludge process plus nitrification, denitrification and chlorination. The plant will be constructed in 3 phases to reach a capacity of 300,500 m³ /d by the year 2027. As part of the proposed project, the following wastewater works will be executed:

- Construction of 60 km of concrete trunk mains in east and west of Ahwaz, out of which 2.6 km of Western trunk main with size 1200 mm and 3.5 km of the eastern trunk main with size 1600 mm will be constructed as tunnels. The eastern trunk main will collect wastewater from the eastern basin and transfer it to the proposed new treatment plant, while the western trunk main will collect the wastewater from the western basin and transfer it to the existing Choneibeh treatment plant;
- Construction of 162 km of PE laterals and interceptors and 16 lift and pump stations. Works under this sub-component will cover an area of 1465 ha
- Rehabilitation and expansion of the existing treatment plant at the west of Ahwaz, Choneibeh, to meet its design capacity of 200 P.E. This will be done by replacing various mechanical parts, repairing of concrete parts, adding a new unit that will enable treating a flow of 54,575 m³/d as well as providing sludge lagoons and storage facilities.
- Construction of first two modules of the treatment plant with a capacity of 522 P.E, treating a flow of 102,000 m³/d. The proposed treatment process is activated sludge with nitrification and de-nitrification. As this treatment plant is proposed to be constructed as a DBO, its design will be finalized after tendering.

Shiraz:

At present 99% of the City's population is served by the water supply network. The total water demand of the city is 288,600 m³/day and is expected to reach 474,400 m³/day by the year 2027. The current water demands are supplied from surface and ground water resources. Surface water is provided from the Douroudzam dam located 100 km north-west of Shiraz. The quantity of water that is currently transferred from the Dam is about 71,700 m³/day, representing 25% of the present water demand of the city, and is being increased by the Fars Regional Water Board to reach 155,500 m³/day by the year 2005. The existing water treatment plant utilizes a conventional water treatment scheme which includes: flocculation, sedimentation, filtration and chlorination. The remaining supply of the city's water is provided from 69 ground water wells, which supply 261,800 m³/day. Out of the total number of operating wells, there are 16 wells that are located in the Alluvium aquifer inside the city while the others are located in the Karstic aquifer. Wells located in the alluvium aquifer supply only 40,600 m³/day of extremely hard water and will be soon put out of service. As part of the proposed project, the following water works will be executed:

- Drilling and equipping of 17 new wells tapping Karstic water resources. Total water abstracted by these wells amounts to 82,000 m³/d;
- Laying of 34 km GRP transmission pipelines feeding distribution system and transmitting water from wells to reservoirs. Diameters range between 500-1200 mm;
- Rehabilitation and extension of the water network including installation of pressure reducing valves. Diameters range between 200-400 mm with a total length of 235 km of PE pipes;
- Construction of four concrete reservoirs Sonboleh (7500m³), Abeverdi (300 m³), R8 (20,000m³), and R20 as well as construction of two pumping stations.

Wastewater: Shiraz is divided into two major drainage zones, referred to as Emergency Drainage Zone and Long Term Zone with drainage areas of 6,760 and 15,315 hectares, respectively. The Present generated wastewater volume is around 206,600 m³ /d (64,500 m³ /d in the emergency zone and 139,100 m³ /d in the long-term zone) and is expected to reach 363,850 m³ /d (115,750 m³ /d in the emergency zone and 248,100 m³ /d in the long-term zone) by the year 2027.

The wastewater management system has been designed for the year 2027 and includes around 3000 km of collection mains and trunk lines and two secondary treatment plants referred to as the Emergency plant and the Long Term plant. The necessity for two treatment plants is not related to the urgency of implementing treatment works, but rather to the fact that the city is divided into two drainage zones. Both treatment plants are based on the use of activated sludge with effluent disinfection by chlorination. The Emergency treatment plant has an ultimate capacity of 123,500 m³ /d , whereas the Long Term plant has an ultimate capacity of 266,000 m³ /d. Treated effluent of both plants will be reused for irrigation, whereas the generated sludge of the plants will be re-used as a fertilizer.

At present trunk lines are being laid in the two drainage zones especially where wastewater is flowing in open streams. The land for the Emergency treatment plant (75 ha in area) has been acquired and the construction of the first phase works has commenced. A full EA was not performed prior to the construction of the Emergency wastewater treatment plant. Consequently and as part of the EA study of the proposed Shiraz Water and Sanitation Project, a post review was undertaken with respect to the sitting, engineering design, technical and environmental performance as well as any potential risks related to the operation of the WWTP. Under the proposed project, the following wastewater works will be executed:

- Construction of 95 km of concrete trunk mains in the emergency and long-term areas. Diameters range between 500- 1200;
- Construction of 740 km of PE laterals and interceptors. Works under this sub-component will cover an area of 5496 ha;
- Construction of 50,000 additional house connections;
- Construction of two modules with a total capacity of 100,000 m³/d in the long-term zone. To optimize the efficiency of the treatment plant, each module is designed to be capable of operation in four independent streams. However, as this treatment plant is proposed to be built under DBO contract. Its design will be finalized during the tendering process;
- Construction of 20 km outfalls to discharge treated effluent for emergency plant and long-term treatment plants as well as sludge storage site.

D. Project Environment Assessment

The proposed project has been reviewed, environmentally screened and classified as Category A consistent with the provision of Operational Policy OP 4.01 “Environmental Assessment”. Preparation of the project was comprehensive, encompassing an assessment of issues concerning environment, cultural heritage and land acquisition. For each city, an environmental assessment (EA) including a detailed archeological assessment, a resettlement action plan and a social assessment were prepared by local consulting firms with the assistance of International firms.

The environmental assessment reports including environmental management plans (EMP) were prepared for the two cities in compliance with the requirements of the Government of the Islamic Republic of Iran as well as the Procedures of the World Bank, including Operational Policy OP 4.01 “Environmental Assessment” and Operational Policy Note OPN 11.03 “Cultural Property”. The reports covered three major areas:

- Project description, legal and regulatory framework, and baseline conditions;
- Analysis of impacts and design alternatives; and

- Environmental Management Plan.

The EA reports have been reviewed and commented on by the Bank at various stages of preparation. Prior to appraisal, the reports will be made available at the Info Shop and a number of locations in Iran including: Department of Environment, Ministry of Energy, and WWCs. The Executive Summary has been prepared in both English and Farsi and will be distributed to the Executive Directors of the Bank.

The preparation process for the Environmental Assessment included public consultations, which were carried out at various stages. The consultations involved line ministries, city authorities, provincial Departments of Environment, operating water and wastewater companies, local communities, NGOs and the public. This process was complemented by additional consultations undertaken in preparation of the RAP and SA. The EA executive summaries in English and Farsi, were distributed to all concerned stakeholders. Public hearings were held in Ahwaz and Shiraz on October 28th, 2003 and January 4th, 2004, respectively and were attended by a large number of people including representatives of most ministries, Ahwaz Governor, Ahwaz MP, local communities, NGOs, contractors, consultants, university professors and medias. The public did not have any restriction on the implementation of the project; on the contrary all presents welcomed the project, requested its initiation the soonest possible and asked for additional activities to solve pollution problems.

E. Summary of Main Environment Issues

The EA assessment indicated that the execution of the project will have positive environmental impacts in terms of reducing pollution of natural resources, will generate significant economical, social and public health benefits, and will enable the government to enforce existing environmental regulations and standards.

The project will extend and rehabilitate water networks to ensure 100% water supply coverage, to provide good quality water on a continuous basis, to cater for population growth and to reduce unaccounted for water. Thus the project will provide controlled water supply to the households and will reduce overdraft of the aquifer. It will improve health conditions of the population by providing them with adequate water quantity and quality from sustainable sources.

The provision of wastewater collection and treatment facilities will have a strong positive effect on the overall environment and the public health conditions in both cities. There will be improvement of the water quality in the streams and rivers that flow throughout the cities. A major benefit of the project is the protection of groundwater resources from contamination by untreated sewage. As a result, economic benefits will occur in terms of increased water volume of good quality, increased tourism activities especially in Shiraz, and lower medical costs associated with treating water-borne diseases. There will be considerable benefits to the farmers who are presently using polluted water or raw wastewater

The wastewater treatment facilities will also provide an opportunity to better control industrial discharges through pretreatment and connection to the collection system as stipulated in the Iranian law. Finally it is worth noting that the design of the treatment plants has taken into consideration the use of their by-products (treated effluent and generated sludge) with the aim of protecting the environment and the scarce water resources. This will generate significant economic, social and health benefits and will enable the Government to enforce the law that prohibits the use of raw wastewater for irrigation.

A summary of major potential environmental issues is given in the following sections.

Supply of Adequate Water Quantity and Quality:

Water quantity and quality should meet water demand as well as allowable drinking water standards set by the Iranian Government and WHO. Among the parameters of concern are the bacteriological contamination of the water, the concentration level of nitrate, the presence of nitrite and the concentration of heavy metals.

Ahwaz: Projected water demand for the year 2027 is 6.4 m³/s, which represents only 3% of the minimum Karoon flow reported over the last 30 years and 0.9% of the mean annual flow of the river. Furthermore, and in order to ensure adequate water supply, treatment plants have been designed to meet maximum daily demand and storage reservoirs have been provided to supply 50% of the peak daily consumption. In addition, the rehabilitation of the water distribution network and the routine operation and maintenance of the system including the control of illegal connections will reduce the unaccounted for water to acceptable limits.

The proposed advanced water treatment process can ensure good quality water that would meet national standards and WHO drinking water standards. This process will ensure the elimination of bacteriological contamination, as well as the removal of taste, odor, turbidity, and solids. Based on the quality of raw water (Ref. Table 1) and the proposed treatment processes, treated water will meet drinking water standards. During project implementation, a continuous monitoring program would be implemented to ensure that drinking water is in compliance with the required standards. The monitoring program will cover biological and physical parameters as well as heavy metals and pesticides residues.

Shiraz: Geological and hydro geological studies, geophysical logging, test pumping and water quality analyses were undertaken to assess the water quantity and quality of the underground water. Based on these studies, the safe yield of the ground water was found to be about 1,556,000 cum/d, which is by far above the projected maximum water demand (664,363 cum/d) for the year 2027.

The water balance for the study area during the first phase was prepared on the basis of the population figures (1,240,592 for the year 2003 and 1,360,895 for the year 2007), the maximum water demand (403,644 cum/d and 452,858 cum/d for the years 2003 and 2007 respectively) and the yield of wells and the treatment plant capacity at Douroudzam dam (Table 2). The water balance indicates that the total water resources will by far exceed the water demand of the project area during the first phase.

Water quality analyses of surface and ground water are summarized in Table 3. The analyses indicate that the water quality is chemically acceptable. The concentrations of all chemical parameters are below the maximum allowable standards set by the Iranian Government, WHO and CEE. Bacteriological analyses of well water could not be obtained, however available analysis of water quality in existing storage reservoirs indicates the absence of bacteriological contamination and confirm the efficiency of the chlorination system. The provision of a wastewater network for collecting and diverting the generated wastewater to a treatment plant will certainly eliminate potential bacteriological contamination of ground water. In addition, the proposed project will finance the regular monitoring of water quality.

Quality of Treated Effluent

The treated effluent should be of acceptable quality so that it can be safely discharged into water bodies or re-used for irrigation. This means that the effluent quality should meet the standards for discharge into water bodies and the WHO guidelines for agriculture re-use. One of the major parameter of concern is the level of nematodes eggs, which should be less than 1 egg per liter for water used in irrigation. The other major concern is the concentration level of nutrients such as ammonia, nitrate and phosphate which could result in algal growth in the receiving water bodies. The level of heavy metals is also of concern

and could have adverse impacts on agriculture and water bodies. Regular monitoring of these variables will be required to ensure strict adherence to the prevailing standards.

Existing and proposed treatment plants, in both cities, are based on the activated sludge process plus chlorination. In addition, the existing and proposed wastewater treatments in Ahwaz are provided with a nitrification-denitrification process. Activated sludge can ensure a treated effluent of acceptable quality for discharge in receiving water bodies and/or re-use in agriculture. This process will result in the removal of nematodes to less than one percent of the concentration in the raw wastewater entering the treatment plant. Therefore the presence of nematodes in the treated effluent will be directly related to their concentration in the raw wastewater. Analyses conducted on raw wastewater (ref. Table-4) indicated the presence of nematodes but at very low levels. As soon as the wastewater treatment plants start operating, monitoring of nematodes in the influent and effluent will be conducted. An allocation for the installation of filters for the removal of nematodes has been made in case the treated effluent does not meet the required standards with respect to nematodes.

Ahwaz: The discharge of treated effluent from Chouneibeh wastewater treatment plant into Karoon River occurs mostly in winter. During that period, the treated effluent will not be chlorinated in order to avoid the formation of halogenated compounds (trihalomethanes) in the river. Moreover, the existing outfall from the treatment plant, discharges treated effluent at the bank of the river. An extension of the outfall to the inside of the river, in order to ensure proper mixing, will be implemented as part of the project. By the year 2027, the treatment plant capacity will be 2.36 m³/s, which represents 1.18 % and 0.34% of the minimum and mean annual flow of Karoon, respectively. Analyses of water quality before and after discharge of treated effluent indicated that water quality in Karoon would not be affected by the discharge of treated effluent. On the contrary, several parameters in the treated effluent are at lower concentrations than those of the river. The only parameter that could slightly affect the water quality of Karoon is the electrical conductivity of the treated effluent, which is relatively high and is related to the high value present in the raw sewage as a result of ground water infiltration into the sewage. The implementation of the collection network will certainly limit ground water infiltration and is expected to result in decreasing electrical conductivity in both raw wastewater and treated effluent. During the operation phase, continuous monitoring of raw wastewater, treated effluent as well as water quality of Karoon River before and after the discharge point will be undertaken. Under emergency conditions and in case the treated effluent does not meet the standards for discharge, the effluent will be re-routed and discharged in the sludge lagoons that will be constructed at 6.5 km from the treatment plant site. An emergency pipeline connection has been provided from the discharge outlet to the station that pumps the sludge to the lagoons.

Treated effluent from the proposed eastern treatment plant will be discharged in a concrete channel that runs for a distance of 5 km after which it will flow in Maleh Stream that discharges in Shadegan wetland which is located at a distance of 80 km. The channel runs along agricultural areas and has adequate capacity to accommodate the generated effluent by the year 2027. At present, the channel receives most raw wastewater but once the project is operational, the channel will only receive the treated wastewater which can be re-used for agricultural purposes. The implementation of the project will have no negative impact neither on the quantity of water discharged to the wetland nor on the water quality of the wetland. Indeed water discharged from Maleh (run-off plus treated wastewater) represents only 5% of the total water discharged to the wetland. Under no project, raw wastewater is discharged to Maleh and is used for irrigation during the summer while under the proposed project, treated wastewater is discharged and/or is used for irrigation. In terms of quantity, almost the same quantity will be used for irrigation and will not reach the wetland in summer. However when water is not used for irrigation, less pollution loads will be discharged to the wetland.

Shiraz: treated effluent from both treatment plants will be discharged into concrete channels that run along agricultural areas and ultimately discharge into Maharloo Lake which covers an area of around 200 hectares with an average water depth of 40 cm. The lake water is brackish with high levels of salts (average NaCl 188 g/l) and metals including iron, cadmium and lead. Hence, the lake water will not be affected by the discharge of treated effluent. The discharge of the final treated effluent to Maharloo Lake will occur mostly in the winter season, since in the summer the effluent will be used for irrigation. In view of the treated effluent quality, which will be in compliance with the prevailing standards for discharge to water bodies, and the dilution effects of the rainy season, no adverse impacts are envisaged on the lake. In fact, the environmental state of the lake is expected to improve in comparison to the base condition due to improved water quality of the discharging rivers. Moreover, the implementation of the project will not cause any changes in the salt balance of the lake since the wastewater flows represent a very small fraction (around 1%) of the total flows that enter the lake through rainfall and drainage.

Sludge Quality

Generated sludge from wastewater treatment plants, in Ahwaz and Shiraz, will be used by farmers as soil conditioner or fertilizer. In such case, the sludge quality will have to comply with the FAO, EU and WHO guidelines for the use of sludge in agriculture including the limit of less than one intestinal nematode egg per 100 gm of dry solids and the limits on the concentration of heavy metals. The adopted treatment processes, the one year storage period, and the control of industrial discharges to the sewage system would ensure that the WHO nematode standard and EU and FAO guidelines on the level of toxic substances would not be exceeded. The use of sludge will be restricted to cereals and in case of non-compliance with the required standards; the sludge will be disposed in the existing landfills.

Moreover, national guidelines for sludge re-use would be developed in coordination with line ministries (Ministry of Energy, Department of Environment, Ministry of Agriculture Jihad, Ministry of health and Medical Education, etc.) and concerned stakeholders. These guidelines would set out good standards of practice and monitoring and define roles and responsibilities. Training workshops on re-use of treated sludge will be also provided to all concerned stakeholders.

Solid Wastes

Generated solid wastes from water and wastewater treatment plants, screenings and grit from the inlet works as well as dried sludge from water treatment plants will be collected and disposed by the WWCs in the existing landfill sites which are located outside the cities. Considering, the quality of raw surface water and the water treatment processes, the level of toxic substances in the sludge generated from water treatment plants can not exceed the EU limits with respect to the concentration of heavy metals. Nevertheless and as an extra precaution, WWCs will ensure that dried sludge will not be mixed with other types of waste but will be located in a specific cell and signs will be posted notifying of the special waste contaminations.

Discharge of Industrial Effluents

In Ahwaz, around 57 industrial facilities are located within the project area of which 11 are of significance with respect to their impacts on wastewater quality and quantity. Similarly, a number of medium and small industries are located within Shiraz project area, however only 5 industries are of significance. Although some facilities have already installed pretreatment units, several industries discharge their effluent without any treatment. The discharge of untreated industrial effluents can affect the performance of the wastewater treatment plants, resulting in a lower quality treated effluent.

The project will only provide connections to industries that do not discharge toxics, which may affect the performance of the wastewater treatment plants. The discharge of industrial effluents will be subject to

the approval of both the Director of the treatment plant and the director of the DOE. The project will ensure that the industrial effluent discharges are pretreated to levels which comply with the World Bank Environmental Guidelines mentioned in the "Pollution Prevention and Abatement Handbook", taking into consideration the achievable reductions at the treatment plants for all important parameters of concern.

The DOE has promulgated standards for industrial discharges to surface water. Moreover under the World Bank funded sewage project for Tehran, standards for industrial effluent discharge into sewage systems are being developed in close coordination with DOE and other concerned line ministries. The standards include the following industrial sectors: food, textiles, tanneries, pulp and paper, metal, pharmaceutical and electronic industries as well as general standards for the remaining industrial sector. The project will ensure compliance with these standards, when applicable and the promulgation of a national law for the discharge of industrial effluents to sewage networks. For those industries for which their industrial water will not be pre-treated, and/or will not be connected to the network, DOE regional branch will require that each polluting industrial establishments will prepare a compliance action plan (CAP) which will address the major pollutants, the type of pre-treatment required and the investments, and monitoring costs for the pre-treatment facility. Operational permits for those industries will be subject to the implementation of the CAP as yearly monitored by the WWCs and enforced by the DOE. The project EMP will include the preparation of CAPs for the 11 most important industrial facilities in Ahwaz and the 5 significant industries in Shiraz.

Archeological and Historical Sites

Shiraz has many recorded archeological and historical sites. The implementation of the water and sanitation project will not require the demolition of any known historical sites, nor will it directly affect any known archeological sites. On the contrary, the project will have a positive environmental impact, as it will eliminate the uncontrolled flows and discharges of wastewater adjacent to historical sites.

The sitting of all the project works was selected in close coordination with the Cultural Heritage Organization following several site visits so as to ensure that these facilities are remotely located from the archeological and historical sites as well as from areas where there is potential of finding archeological remains. During final designs, further site inspections will be conducted by surveyors and archeologist to check the construction drawings in the field. Construction activities that are close to existing archeological or historical sites will be identified, and special protection and construction procedures will be developed to mitigate any potential impact on these sites. Moreover, chance find procedures were developed and will be used by the WWC, Cultural Heritage Organization, contractors and supervision engineers in case unanticipated archeological materials are encountered during the course of the construction activities.

During construction, there are potential indirect impacts on existing archeological sites due to vibration from drilling and compacting equipment; loss of amenity due to dust, noise and visual intrusion. Good construction practices, including special procedures to be adopted in areas in close proximity to archeological sites would mitigate most impacts to acceptable levels.

The long-term permanent impact of the project on the existing archeological sites will therefore be positive due to proper collection of wastewater, reduced incidence of flooding, improved amenity and aesthetic quality of the city, which would outweigh any temporary adverse impacts.

Other Issues

The general disruption during construction will be mitigated by coordinated planning of construction activities. This will include coordination with all concerned authorities prior to the start of the construction activities. Other adverse construction activities will be mitigated through the adoption of

Good Practice Environmental Procedures. Odors from the wastewater treatment plants will be minimized by careful planning and implementation of the plant operation and maintenance. Regular odor emission monitoring from the wastewater treatment plants will be implemented to mitigate any non-compliance by taking appropriate operating measures.

Impacts arising from the potential occurrence of earthquake will be mitigated through (i) following Iranian and International seismic design requirements as well as (ii) developing and implementing emergency preparedness plans which would cover activities to be implemented before, during and after earthquake occurrence.

F. Environmental Management Plan (EMP)

Mitigation Measures

Mitigation measures have been identified to ensure that the defined objectives of the project are achieved whilst preventing and reducing any adverse environmental impacts. The mitigation measures are to be executed by the construction contractor (construction phase) and the operators of the facilities (operation phase) with supervision by the WWCs. In addition, the following measures will be implemented:

The final design process will detail and finalize construction drawings and tender documents of the project components. This process has incorporated final review of the designs by environmental specialists to ensure that all required environmental issues are properly addressed and tender documents include specific provisions concerning environment, health, safety as well as the use of archeological chance find procedures in the event that unknown archeological and/or historical sites are encountered during the course of construction. Moreover, the Bank will review all construction contracts to ensure that the required mitigation measures have been incorporated in the bidding documents.

Pre-tender conferences will be held to brief pre-qualified contractors on the effective implementation of mitigation measures. All pre-qualified contractors will be called to a pre-tender conference at which environmental, health and safety issues will be outlined. Cultural heritage issues in Shiraz will be also addressed. The contractors will be briefed on: (i) chance find procedures, (ii) special procedures to be adopted in the vicinity of sites defined as requiring protection, (iii) penalties for non-compliance, and (iv) coordination with concerned authorities.

Liaison arrangements will be established between the public, contractors, and the Project Management Unit. A procedure will be established to allow the general public to lodge complaints at the Project Management Unit about excessive disturbance.

Monitoring Plan

Monitoring of construction activities will have to ensure that mitigation measures of construction impacts are being implemented properly, while monitoring of operation is to ensure that no unforeseen negative impacts are arising. Proposed monitoring requirements during the construction and operational phases have been identified and included parameters to be monitored, location, frequency as well as responsible agency.

During construction, the monitoring program will include dust and noise. Monitoring of the water supply will include biological, physical and chemical parameters as well as heavy metals and pesticides residues. During the operation of the wastewater system, monitoring will include data on BOD, COD, suspended solids, phosphates, nitrates, salinity, heavy metals, fecal coliform and nematodes eggs. The treated sludge will be monitored for nematodes, Coliforms and toxic metals. Soil and agricultural products will be monitored for significant pollutants including heavy metals, Coliforms and nematodes.

The WWCs will develop and supervise the implementation of monitoring programs for raw water, treated water, surface water, raw wastewater, treated effluent and sludge and industrial discharges to the sewage. WWCs will also provide advisory services to industries.

The regional DOEs will establish formal programs for monitoring and controlling discharges to the environment from wastewater treatment plants and industries, treated sludge, surface water, and soil including actions to be taken in case of non-compliance. DOE will also develop a system for the enforcement of standards related to industrial discharges. Activities to be implemented by DOE will be conducted in close coordination with the World Bank funded Environmental Management Support Project.

The Ministry of Health and Medical Education will establish a program for monitoring drinking water quality and the occurrence of water-borne diseases. A public hygiene education campaign will be also conducted by the Ministry including videotapes, TV programs and distribution of leaflets.

The Ministry of Agriculture Jihad will establish and implement formal programs for monitoring the quality of soil and agricultural products on a pilot area including actions to be taken in case of deterioration in quality. The Ministry will develop education programs and awareness campaigns on best agricultural and irrigation practices.

If significant adverse impacts are identified by the concerned organizations, appropriate mitigation measures will be taken and arrangements for amendments of the EMP will be made. The Ministry of Energy will have the overall responsibility to ensure that adverse impacts are maintained to acceptable levels and corrective actions are taken when required.

A project monitoring report will be prepared on the effectiveness of the EMP once every 6 months and will be sent to the World Bank after review and approval of DOE.

Institutional Strengthening

The institutional arrangement and capacities of the organizations in-charge with the implementation and management of the proposed project were reviewed with the intention of providing technical assistance and proposing their reinforcement.

Training programs will be designed and implemented with the assistance of local and international experts and will include:

- *WWCs, Treatment Plant Operators, Municipalities as well as Fars and Khozestan DOE:* At the initiation of the project, a training workshop will be provided to the staff of the WWCs, Ministry of Energy, Municipalities and the two regional DOE to raise environmental awareness and to clarify the specific environmental requirements related to the project. A two-day workshop will then be provided and will cover the following topics:
 - Effective implementation of mitigation measures
 - Project supervision
 - Sampling and analysis
 - Monitoring and evaluation
- *WWCs, Municipalities, Khozestan and Fars DOE and Line Ministries:* A two day workshop will be provided to the staff of WWCs, Municipalities, and representatives of

line ministries to strengthen capacities in the application of treated effluent and sludge re-use.

- **Laboratory Staff:** A one-week training workshop will be provided to strengthen capacities in sampling and analysis methods, environmental monitoring, quality assurance and quality control as well as safety procedures.
- **Staff at Water and Wastewater Treatment Plants:** A one day training workshop on occupational health safety and earthquake emergency preparedness procedures will be provided.

Workshops and awareness campaigns will be also implemented to raise awareness of farmers, NGOs and local communities; these would include:

- **Local NGOs, communities and farmers:** Training would be provided through 1 or 2 days workshop for local NGOs, communities and farmers, focusing on public awareness and on re-use of treated wastewater and sludge for agricultural purposes.
- **Awareness campaign and pamphlets:** two awareness campaigns will be conducted; pamphlets in Farsi will be distributed to all farmers highlighting the adverse health and public safety impacts resulting from the use of untreated effluent; and measures to be taken when using treated effluent and sludge. A public hygiene education campaign will be also conducted by the Ministry of Education.

An assessment of analytical capacities of the laboratories at the two existing water treatment plants in Ahwaz, at Chouneibah existing western wastewater treatment plant and at Emergency wastewater treatment plant which is under construction has been conducted; additional required equipments were also identified and will be supplied as part of the proposed project. For the proposed Eastern Wastewater Treatment Plant and Long-Term Zone wastewater treatment plant, fully equipped laboratories will be provided as part of the construction contracts.

Technical assistance will be provided to the DOE to set up baseline data on existing environmental conditions and to develop a quality assurance and a quality monitoring program as well as an enforcement program for industrial discharges. These activities will be implemented in close coordination with the on-going World Bank Environmental Management Support Project. Similarly, technical assistance will be provided to the Ministry of Health and Medical Education to set up baseline data on the occurrence of water born diseases and to develop a monitoring program for their occurrence.

Cost Estimate

The cost of the Environmental Management Plan during construction (mitigation measures including additional treatment and monitoring) will be borne mostly by the contractor (construction phase) and the Supervision Engineer who will make the necessary provision as part of their contracts. During the operation phase, mitigation measures and monitoring activities will be implemented by the operator of each facility. A total amount of 4.9 million dollars will be allocated for the implementation of the environmental management plan as detailed in Table 5 and will be included in the project cost. It should be noted that the total cost does not include:

- Cost of additional treatment incorporated in the design of the project;
- Cost of mitigating negative construction impacts (included in the construction contract cost);

- Cost of mitigation measures and environmental monitoring of the eastern wastewater treatment in Ahwaz and the long-term wastewater treatment plant in Shiraz (included in the construction and operation and maintenance contract cost);
- Cost of setting up a new laboratory at Ahwaz eastern wastewater treatment plant and Shiraz long-term wastewater treatment plant (included in construction cost); Cost of Environment and Safety Officer at each TSU (included in TSUs cost).

Table 1: Average Raw Water at Ahwaz Existing Intakes over One Year Period

Parameter	Unit	Intakes to WTP1 and WTP2
Turbidity	NTU	247 – 290
pH		8 – 7.9
EC	μ/cm	1690 – 1700
TS	mg/l	2114 - 2165
TDS	mg/l	1050 – 1067
TSS	mg/l	364 -380
Hardness	mg/l	393 – 395
SO ₄	mg/l	249 – 273
Cl	mg/l	253 – 265
NO ₂	mg/l	0.074 – 0.1
NO ₃	mg/l	3.3 – 4.45
NH ₄	mg/l	0.3 – 0.4
PO ₄	mg/l	0.047 – 0.048
Fe	mg/l	0.024 – 0.026
COD	mg/l	11 – 12
Mg	mg/l	33 – 35
Ca	mg/l	98 – 99
K	mg/l	1.8 – 1.9
Zn	mg/l	0.039
Cd	mg/l	0.002
Pb	mg/l	0.007
Hg	mg/l	0.001

Table 2: Shiraz Water Balance during the First Planning Period

Pressure Zones and sub-zones	Population		Maximum Water Demands (m3/day)		Water Quantity 2003			Water Quantity 2007			Water Balance	
	2003	2007	2003	2007	Alluvial wells	Karstic wells	Surface Water	Alluvial wells	Karstic wells	Surface Water	2003	2007
	1	2742	2712	804	902	---	18662 m3/day	---	---	18662 m3/day (existing wells) & 5011 m3/day (new well)	---	-1902	+602
	3474	4107	1218	1367								
	6069	6548	1942	2179								
	8028	8806	2612	2930								
	15880	17420	5167	5797								
	8491	9314	2763	3099								
	18620	20426	6058	6797								
TOTAL	63204	69333	20564	23071								
2	39709	43559	12920	14495								
	52092	57144	16949	19015								
	21625	23722	7036	7894								
	15332	16819	4988	5597								
	21052	23093	6849	7685								
	117586	128989	38258	42923	40522 m3/day	187228 m3/day	72000 m3/day	---	187228 m3/day (existing wells) & 77415 m3/day (new wells)	72000 m3/day from water TP & 84000 m3/day from increase in TP capacity	-57176	+5575
	20357	22331	6623	7431								
	0	0	0	0								
	154671	169669	50324	56460								
	42748	46894	13909	15605								
	386746	424250	125833	141175								
	218380	239557	71053	79716								
TOTAL	1090298	1196027	354744	397996								
4	2474	2714	805	903	2182 m3/day from zone 2	---	---	---	3088 m3/day from zone 2	---	-570	0
	5984	6565	1947	2184								
TOTAL	8458	9278	2752	3088								
5	3771	4136	1227	1376								
	38171	41872	12419	13934								
	9626	10559	3132	3514								
TOTAL	51567	56568	16778	18824								
3	27065	29690	8806	9880	---	103688 m3/day	---	---	103688 m3/day	---	+1562	+488
GRAND TOTAL	1240592	1360895	403644	452858	40522	221098	72000	---	303524	156000	-70025	+6665

Table 3: Water Quality Analyses for Surface and Groundwater Resources in Shiraz

Analysis	Raw Surface Water	Treated Surface Water	Karstic Wells	Standards
pH	7.8	7.8	7.50	CEE 6.5 - 8.5
Turbidity (NTU)	4	2	0.5	Iranian ST 5-25
Calcium (mg/l)	50	49	92	WHO 100
Magnesium (mg/l)	17	25	45	CEE 30
Sodium (mg/l)	50	31	41	WHO 200
Potassium (mg/l)	2	1.39	2.2	CEE 12
Chlorides (mg/l)	58	41	70	WHO 250
Sulfates (mg/l)	32	30	161	WHO 250
Nitrites (mg/l)	0	0	0	WHO 0
Nitrates (mg/l)	4.7	7.79	17	WHO 50
Ammonium (mg/l)	0.08	-	0.06	Iranian ST.055-0.5
Hardness (mg/l)	215	90	410	Iranian ST 500-
Alkalinity (mg/l)	185	172	228	-
TDS (mg/l)	327	360	575	WHO 1000
Electrical Conductivity(μ mho/cm)	486	460	900	-
Total Coliforms (MPN/100 ml)	8	0	-	WHO 0

Table 4: Influent and Effluent Data for Wastewater Treatment Plants

Parameter	Unit	Raw Wastewater	Treated Wastewater
<i>West Treatment Plant:</i>			
BOD	mg/l	225	<25
SS	mg/l	275	< 40
Coliforms	MPN/100 ml	5×10^5	< 1000
Nematodes	1 egg/liter	<10	<1
<i>East Treatment Plant:</i>			
BOD	mg/l	240	<25
SS	mg/l	290	< 40
Coliforms	MPN/100 ml	5×10^5	< 1000
Nematodes	1 egg/liter	<10	<1
<i>Emergency Zone Treatment Plant:</i>			
BOD	mg/l	250	<25
SS	mg/l	315	< 40
Coliforms	MPN/100 ml	5×10^5	< 1000
Nematodes	1 egg/liter	<10	<1
<i>Long Term Zone Treatment Plant:</i>			
BOD	mg/l	250	<25
SS	mg/l	300	< 40
Coliforms	MPN/100 ml	5×10^5	< 1000
Nematodes	1 egg/liter	<10	<1

Table 5: Cost Estimate of Environmental Management Plan

Component	Quantity	Unit Rate US\$	Total Cost in Thousands US\$
<u>AWWC</u>			
International environmental consultant to provide technical assistance to AWWC and TSU	14 months	12000/month	168
Environmental Monitoring Program for WTP 1		55 000/year	275
Environmental Monitoring Program for WTP 2		60 000/year	300
Environmental Monitoring Program for western WWTP		75 000/year	375
<u>Subtotal</u>			1118
<u>SWWC</u>			
International environmental consultant to provide technical assistance to SWWC and TSU	14 months	12000/month	168
Short term Archeological consultant for monitoring archeological surveys and construction works	12 months	1 500/month	18
Environmental Monitoring Program for Water Supply System		60 000/year	300
Environmental Monitoring Program for Emergency Zone WWTP		75 000/year	300
<u>Subtotal</u>			786
<u>Studies, Training and Awareness</u>			
Development of baseline data on water related diseases and a monitoring program for the occurrence of these diseases			100
Development and implementation of a QA/QC monitoring program for the proposed project to be implemented by Khozestan and Fars DOE			120
Development of earthquake emergency preparedness plan	1 per city	12000/city	24
Development of Compliance Action Plan (CAP) for industries in Ahwaz	11 CAPs	15000/CAP	165
Development of Compliance Action Plan (CAP) for industries in Shiraz	5 CAPs	6000/CAP	30
Two days workshop to WWCs, Treatment Plant Operators, Municipalities and DOE on environmental management, monitoring, analysis and evaluation	2 workshops/city	7000/workshop	28
Two days workshops for WWCs, Municipalities, DOE and Line Ministries on treated effluent and sludge re-use	2 workshops/city	7000/workshop	28
One week training workshop to laboratory Staff of Water and Wastewater Treatment Plants on laboratory sampling, analysis, environment monitoring and QA/QC	4 workshops/city	4000/workshop	32
One day training workshop on occupational health, safety and earthquake emergency preparedness procedures to staff at Water and Wastewater Treatment Plants	4 workshops/city	1000/workshop	8
One day workshop for local NGOs, communities and farmers, focusing on public awareness and on re-use of treated wastewater and sludge.	4 workshops/city	1000/workshop	8
Awareness campaigns and pamphlets			100
<u>Subtotal</u>			643
<u>Laboratory Equipments for Ahwaz</u>			
WTP1 and WTP2			600
Western WWTP			400
<u>Subtotal</u>			1000
<u>Laboratory Equipments for Shiraz</u>			
Laboratory at SWWC			300
Emergency zone WWTP			400
<u>Subtotal</u>			700
Monitoring and evaluation at the project level	4 MM	12000	48
TOTAL			4295

Additional Annex 12a: Resettlement Policy Framework¹

ISLAMIC REPUBLIC OF IRAN

AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT

A. Introduction

Since Iran geographically lies in a semi-dry region, water shortage always has been a major problem. Rapid population growth at least until 1996 coupled with massive urban population growth and expansion have exaggerated the problem. An irrational pattern of water consumption complicates the situation thus projects to promote water conservation and reuse are important. Most Iranian cities lack a sewerage system. Untreated wastewater usually ends up in agricultural land outside cities, causing health risks and environmental hazard to natural habitats, such as Anzali lagoons. Water and Wastewater program, which began in Tehran, is expected to cover six cities (Shiraz, Ahwaz, Sari, Babol, Rasht and Anzali), of which the first project covers Ahwaz and Shiraz.

B. Project Description

The present report concerns the land acquisition and compensation required for WW projects of six cities mentioned above. The proposed WW projects for six cities intend to enhance environmental and health conditions in the above mentioned cities. Moreover the project development objectives also include: 1) To improve the quality of life and alleviate poverty in the proposed six cities in Iran, 2) Increasing coverage of sanitation services, 3) Implementing a pilot program of hygiene and sanitation practices to improve health conditions of targeted population, 4) Promoting reuse of treated effluent.

The first two cities will be financed by the Bank (Shiraz & Ahwaz) as a stand-alone project. The remainder will be financed as one or more “repeater projects”. Since all cities share common sub-project characteristics, this policy framework will apply to all six cities. However individual city land acquisition plans will be presented to the Bank as individual “Resettlement Action Plans” under the present policy framework.

Principles and Objectives Governing Resettlement

Rationale for expropriation of land

Land acquisition is necessary in this project in order to provide for 1) water treatment plants, 2) pumping stations and 3) channels and pipes to carry the outfall to its destination. These requirements are determined by the engineering designs in each particular case, and result from a) the size of the

¹ The Iran AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT is the first in a program of repeater projects that will involve land expropriation for works (treatment plants, pumping stations and sewerage lines). Because the exact expropriation requirements for future sites are not known, but follow the same general pattern, a Resettlement Policy Framework has been prepared, together with Resettlement Action Plans for the two sites. However most pre-feasibility work has been done, and it is possible to be fairly certain that the land acquisition would entail no impact on residences or economic activities and only the asset value of undeveloped land is concerned. Therefore, the resettlement instruments prepared by the client have been entitled respectively **Land Acquisition and Compensation Policy Framework** and **Abbreviated Land Acquisition and Compensation Plan** for each city concerned. This makes the purpose of the instruments clear to the client. However, the instruments respond fully to the Bank’s policy requirements in the context of this project

population to be served and the volume of water to be treated; and b) the topography of the land, which normally requires wastewater treatment plants to be situated in the lowest lying convenient area in order for maximum use of gravity. None of the public Water and Wastewater Companies (WWCs) owns sufficient land appropriately located that would allow the project to be undertaken without expropriation.

Minimization of expropriation of land

The expropriation of private land is minimized in accordance with Iranian law², which requires public utility projects of any nature to make maximum use of public land, and only to resort to expropriation when there is no alternative. Minimal expropriation of private land also serves the interest of the public water and waste water companies which are obliged to pay compensation awarded by independent assessment as explained below. Preference is always given to transfer of government or public land from other agencies where this is available, but even in this case compensation is payable.

Engineers in public WWW projects take great care to avoid disturbing existing structures, especially residences, urban facilities, areas of cultural, religious or cultural heritage value, parks or other areas of public value.

Legal process is obligatory

All expropriations must be carried out according to the provisions of Iranian law³. The law of expropriation defines the procedures to be followed and protects the rights of all parties involved. Wrongs committed during expropriation may be redressed by the courts with provision for payment of damages and punishment of offenders. The law under which WWCs are established gives the WWC the power to expropriate land (Article 14). The company must also obtain from the Article 5 Commission⁴ agreement to any necessary changes in land use in accordance with the city master plan.

Compensation and eligibility principles

Whenever expropriation of private land is unavoidable, Iranian law clearly indicates that land should be expropriated through full compensation at market value, independently determined, with advance public notice, negotiation and right of appeal. Rights to compensation extend to owners, tenants, workers, or any person who can demonstrate any interest lost as a result of expropriation.

D. Description of Procedure for Preparing and Approving Land Acquisition Plans (Resettlement Action Plans per OP 4.12)

The expropriating authority is the relevant WWC serving the city concerned. The following steps apply in this project whereby a WWC prepares a Land Acquisition Plan.

1. The Third Development Plan established the principle that cities of a certain size should have WWW treatment facilities in the public interest. The WWC is responsible for establishing the public necessity of constructing the facilities, and drawing up terms of reference for the consultant engineers.
2. Consulting engineers prepare a number of design scenarios for decision by the WWCs. One of the criteria for the best scenario is least expropriation impact on private land and

² The law is entitled The Law Governing the Expropriation of Land for Public Projects, Military Usage & Infrastructure Improvements, dated Feb. 6 1980.

³ An English translation of this law has been transmitted to the Bank.

⁴ . See Appendix 1 for membership of the Article 5 Commission, which regulates urban land use.

least disturbance of any nature. At this stage land expropriation requirements are known in broad outline.

3. Under Article 14 of the expropriation law, the WWC applies to Minister of Energy for permission to expropriate. The company justifies the specific need for land acquisition and its urgency. They annex to the letter the full rationale together with sketch maps. No further actions may be taken without the express consent of the Minister.
4. On review of the evidence, and on finding the application justified, the Minister gives permission to the company to expropriate **with the consent of the owner** and to pay agreed compensation.
5. The details of planned expropriation, together with details of any expropriations for the project that have already been undertaken, are consolidated in a Land Acquisition Plan. The WWC ensures that the LAP conforms to the requirements of Bank policy. The document is transmitted to the Bank, which determines whether the plan conforms to Bank requirements for financing.

E. Estimated Population Displacement

In the present project, no physical displacement of persons, residences, or economic enterprises is expected and any such instances will be fully detailed.⁵ There are no informal settlements of any kind nor illegal occupants. Typically only a few persons (normally less than 20) are affected by the acquisition of land.⁶

F. Eligibility Criteria for Defining Categories of Displaced Persons

1. Private land in Iran is classified as:

- a. Barren land
- b. Land with defined specific land use as defined by Ministry of Housing and Urban Development for urban land; and by the Ministry of Jihad of Agriculture for agricultural land including pasture, forest, farmland etc.

2. Entitlements to compensation vary according to the type of land classification.

3. In barren land only the owner is compensated.

In land with defined use, the law explicitly recognizes for the purposes of entitlement to compensation all holders of any rights. The following main categories of rights are entitled for to compensation where loss established.

- (i) Owners
- (ii) Tenants with and without occupancy rights
- (iii) Usufructiers
- (iv) Owners of trees or other permanent improvements
- (v) People who use the land for commercial purposes

⁵. The case of 3 temporary shelters in one site in northern cities of Iran is under investigation and will be addressed in the context of the LAP for that city.

⁶. All such cases are explained in cities RAP which follows this framework.

- (vi) People who have made or maintained improvements of any nature, including caretakers, guardians, etc.

Legal framework showing fit between borrower laws and regulations and bank Policy requirements

Bank policy	Borrower laws and regulations	Conciliation required
Minimization of expropriation	Explicit provision	None
Expropriation only by legal procedures	Explicit provision	None

All right holders compensated	Explicit provision	None
Full replacement value of land and assets	Full market value	None
Public notification	Public notification required	Public hearings under Environment Management Plan
Right of appeal on awards	Explicit provision	None
Owners have option of equivalent land or monetary compensation	Monetary compensation only to protect livelihoods	Not an issue in this project

H. Methods of Evaluating Assets

Notification of intent to expropriate and identification of owners. The WWC identifies the owners of the parcels affected from the Land Registry. If the registry has no information on the owner, the company conducts a field survey to identify the owner from local knowledge. Notification is made through the local or national press. Thus anyone other than the owner/s can present their claims.

Evaluation, negotiations and acceptance of offer. Through repeated visits to the plots, the WWC identifies the owners and all right holders. They obtain an expert evaluation of the plot and all the rights, including the price of the land, and they make an offer to every person concerned. If the offer is accepted they sign a preliminary agreement contract and fix a date to go to the land registry for legal transfer of title. Some WWCs have decided to create an expropriation committee. The main reason is to avoid individual decision-making. The committee is not a judicial body and its creation is not mandatory.

Independent assessment. If the offer is not accepted, an independent evaluation is made by three assessors. Assessors are trained, certified and registered with the Ministry of Justice. But they do not have any judicial status and their assessments may be rejected by the owners. One is appointed by WWC, one by the owner, and the third by consensus between both parties. Each assessor independently visits the plot concerned and makes a professional evaluation based on local market price at that time. Each assessor prepares a written evaluation. These evaluations are opened in the presence of the owner. These three assessments form the basis of negotiation for a final price agreed by the owner.

If the independent evaluations are widely different, or if the owner is not willing to accept the offer, the WWC legal office or land expropriations committee prepares a report to the managing director explaining the situation and reporting the owner's demand. The company may settle with the owner for the owner's proposed price or may confirm the original offer in which case the owner has right of appeal (see below).

If the owner cannot be found, or if the owner fails to appear, all other parties sign an affidavit, which states that, the owner was duly notified and invited to appear and failed to do so. This document is filed as evidence of due process. The local Prosecutor (district attorney) is informed and obtains from the local court an order for the owner to appear, which is served by the police. The police report the outcome and if the owner still fails to appear the court acts on the owner's behalf.

I. Organizational Procedures for Delivery of Entitlements

When agreement is reached between WWC and the owner, a letter of agreement is signed. This letter sets a date to appear in the Land Registry for transfer of title. The Company writes to the Land Registry authorizing its official to sign on the company's behalf. Land registry transfers the title on certification by the owner that he has received full compensation.

Compensation of other right holders. Other affected persons may be compensated directly by the WWC. In this case they sign a letter to the WWC stating that they have been paid full compensation for their rights, which the WWC provides to the Land Registry prior to transfer of title.

Alternatively, the owner may agree during negotiations to compensate all right holders, in which case the owner provides the same evidence to the WWC as a condition of payment of compensation which includes reimbursement of the owner's payments to right-holders.

Procedure when owner **cannot** be traced. If the owner has not appeared, the court opens and administers an account in the owner's name and administers the transfer of title.

J. Implementation Process

As above, section I.

K. Grievance Redress

Agreement is reached in the great majority of cases without recourse to appeals for redress of grievance. Grievances and appeals may arise in the following cases:

Owner not willing to part with land. Since the public interest has been determined, the court acts in place of the owner.

All other cases. Any affected person may appeal to the court for redress. The court has the power to hear submissions, review the process, and make such provisions as it deems fit. These include ordering compensation to be paid, halting works, fining the owners.

In most cases, the owner benefits from such appeals. However, in the case of any delay, owners lose since no provision is made for inflation.

L. Arrangements for Funding Compensation

Compensation is always paid by the WWC. There are two ways that this is funded.

- (a) Through budgetary provision in the recurrent budget, where the WWC earns revenue. This is not normally the case in this project.
- (b) Where the need for expropriation has been foreseen in the five-year development plan. This is the case with most expropriations in this project. Expropriation takes place under

Article IX of the law of expropriation of Land in the public interest. A translation of this article already has been submitted to the WB.

M. Mechanisms for Consultations with and Participation of Affected Persons in Planning, Implementation and Monitoring

As explained above, (sections H and K), owners and right holders are actively involved in the negotiation process.

N. Monitoring of Implementation

In each case, when any type of land acquisition and compensation is involved the following timetable is prepared. This timetable serves as a monitoring device showing all actions involved, the responsible agency, expected completion date, the reason(s) for any delay and new expected completion date:

Timetable 3

Action (full description)	Agency(s) involved	Expected completion date	Reason(s) for delay and new expected completion date
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**Additional Annex 12b: Abbreviated Land Acquisition and Compensation Plan for Ahwaz
ISLAMIC REPUBLIC OF IRAN**

AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT

Location. Ahwaz, capital of Khozestan province, is located in the south-west. The province is well known as the site of most of the currently operational oil wells. Its estimated population of 1.1 million has been affected by major displacements during the Iraq-Iran war, and by a significant drop in socio-economic development from 1980 – 1986, since when it has improved slightly. The Karoon River, the most important in Iran, divides Ahwaz city into east and west. Unfortunately almost all industrial, institutional, urban and rural waste water ends up in the Karoon, creating huge environmental and health problems. Additionally, high seasonal rainfall and poor drainage cause many problems including access to educational and other facilities. The Ahwaz Wastewater project thus has a high priority.

2.2. Extent of Expropriation

Purpose	Location	Area	Ownership	Observations	Status
East Wastewater Treatment Plant	East Ahwaz	67.5 ha	Private: 13 local farmers	Agricultural land, uncultivated and low productivity; no residences, no current or recent economic activity	Ministerial authorization to expropriate issued; preliminary agreement reached with 13 owners; valuation completed; negotiations in progress; title will be transferred on agreement, WWC has requested MOJA approval to change land use.
West WWTP	West Ahwaz	42 ha	Public: Khozestan Water & Electricity Company	Barren land, no private rights involved	Valuation done, settlement price agreed; proceedings for title transfer in progress.
Reservoir	East and West	5 ha	Public: Government agency	Barren land, no private rights involved	Agreement reached on expropriation; assessors are currently valuating the land for compensation and title transfer
Pumping stations, 18 plots	10 plots east of Karoon, 8 plots west of Karoon	2 ha	Public/Private: 16 government owned, 2 private [Check: this is what I take from 90% public]	Undeveloped urban land, compensation for surface area only, no other rights apply	Agreement reached with owners to proceed with expropriation; await evaluation, negotiation, and transfer of title.
Pipelines	Linear in municipal right of way	N/a	All in municipal road right of way		Negotiation with Ahwaz municipality completed; agreement reached; permission expected shortly. No cultural Heritage issues.

There are no holders of other rights, no relocation or loss of shelter, income, or livelihoods. No site has cultural heritage value.

Disclosure.

Annex 12c: Abbreviated Land Acquisition and Compensation Plan for Shiraz
ISLAMIC REPUBLIC OF IRAN
AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT

Location. Shiraz, the capital of Fars province, is located in south-center of the country, 895 km from Tehran. With an estimated population of 1.5 million, it is the sixth largest city of Iran. It is an old, important and internationally famous city. Persepolis, the most important historic site of ancient Iran, lies about 35 km to the south, and there are a number of other historic sites. Therefore the city is an important tourist destination. However despite the fact that population growth rate has decreased nationally, population growth in Shiraz is more than twice of the national average rate, owing to high rate of in-migration.

Shiraz is constructing or plans two Waste Water Treatment Plants (WWTPs) The emergency WWTP near completion is located in south-west of the city. The site selected for the Long-Term Zone WWTP, for which work has not begun, is located in the south of Shiraz. Wastewater will be transferred by gravity, so no pumping stations is required. Land required for all pipelines in all cases belongs to Shiraz Municipality. The outfall will use existing channels. Therefore the only land expropriation required is for the two treatment plants. The expropriating authority is the Shiraz Water and Wastewater Company (Shiraz WWC).

Expropriation: Emergency Waste Water Treatment Plant. This site covers 75 ha. The land has long been in the public sector. Expropriation was a matter of transferring title from one public organization into the name of another the Shiraz WWC. Expropriation has taken place, and the value of the land assessed (5000 Rials/m² (about US \$0.60). However, compensation has not been finalized and title has not yet been transferred owing to a dispute over which of three public sector organizations has title to how much and therefore how compensation is to be apportioned. Such disputes are not uncommon given the history of land redistribution in Iran. Field visits have confirmed these facts. The land in question is uninhabited agricultural land of low productivity.

- (a) In the first phase 25 ha was expropriated from a public sector organization, the **Fars Province Natural Resources Organization (Fars NRO)** and the construction of emergency WWTP was started. A surrounding wall was constructed and construction of emergency WWTP for the first module (covering 300.000 population), is completed. However, when the remaining 50 ha was expropriated from the same organization, two other claimants, both in the public sector, emerged.
- (b) **Shiraz University** claimed that the 50 ha portion, disputing the title with Fars NRO. Overall agreement has been reached, the value of the land is assessed, and only payment of compensation and transfer of title remain.
- (c) At the same time another organization (Endowment or Vaghf organization) has claimed that a portion of the land belongs to them and has presented reliable documentation. Negotiation with the endowment organization also has taken place, and again. Agreement has been reached on the value of the land and the price; transfer of title and full compensation is expected shortly.

Expropriation: Long-Term Zone Waste Water Treatment Plant. The site selected for main WWTP south of Shiraz comprises 80 ha. The land belongs to a semi-public organization called Imam Khomeini Emdad charity. Negotiation with this charity is completed; with the land value agreed at 6000 Rials/m²

and paid in full by the company. Shiraz WWC and Emdad have signed a preliminary transfer agreement and have selected representatives to appear in Land Registry Office shortly for official transfer of title.

Compensation for cultivation. The land for the main plant is now saline and uncultivable, although it had been used in the past for cultivation. An old dispute exists between those farmers and the Emdad charity concerning cultivation rights. The agreement to transfer land commits the Emdad charity to fully compensate all agricultural rights (called “root rights” in Iran) at prevailing market rates. Apart from the above-mentioned agreement, those claims have not proven reliable so far. There is no resettlement, relocation or loss of shelter, loss of assets or access to assets, loss of income sources or means of livelihood.

Cultural Heritage and pipelines. An agreement between WW Co. and Shiraz Municipality has been reached on the construction of pipelines and the permission letter is received from the Municipality. Since Shiraz is a historic city of great value, the final design of the project concerning the pipelines was sent to Cultural Heritage Organization. Following careful review and recommendations, some minor changes were incorporated in the design, and CHO has now issued a permit for construction of pipelines.

Documentation and verification. All letters of agreements and required permits are on file and have been reviewed by a local social scientist. A field visit to check the information on site was made by a local social scientist and by a Bank social scientist.

Additional Annex 13: Agreed Upon Strategy and Implementation Program for World Bank Assistance

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AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT

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Country Water and Sanitation Assistance Strategy
World Bank Mission
September 26-October 1, 2003
Aide-Memoire

1. A World Bank mission (the mission) comprising Messrs. Mohammad Benouahi (Team Leader), Jans Janssens (Lead Specialist), Klas Ringskog (Institutional Specialist) and Mohamed Lahouel (Economist) visited the Islamic Republic of Iran September 26-October 1, 2003, to finalize the Urban Water and Sanitation Sector Note and link its follow up with the proposed Water and sanitation Supply and Wastewater Project. The mission received guidance from a World Bank country department delegation, led by Mr. Joseph Saba (Country Director).
2. The mission met with Messrs. Reza Amrollahi, Senior Vice Minister, and Abbas Shafeiee, Vice Minister for Water and Wastewater Affairs in the Ministry of Energy (MOE), and their staff. Prior to the mission the World Bank had received the MOE's written comments on the draft Urban Water and sanitation Sector Note. The MOE's letter and comments are attached (attachment no. 1). The MOE made a presentation to the mission on its strategy for the Water and sanitation sector, as contained in the

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forthcoming Fourth Five-Year Development Plan (FFYDP) and its envisaged investment program. The mission wishes to express its appreciation to the Senior Vice Minister and Vice Minister and their staff for their assistance and hospitality.

3. MOE agrees with the substance of the Urban Water and Sanitation Sector Note and feels that the recommendations made in the note are generally in line with the MOE's strategy. As a consequence the MOE is of the opinion that the note could be utilized for the forthcoming implementation of its own strategy and as a policy dialogue to guide the selection of investment projects proposed for World Bank financing.
4. A matrix defining the strategy and proposed implementation program for World Bank Assistance to be considered in the forthcoming Country Assistance Strategy (CAS) was discussed and agreed, and is attached to this Aide-Memoire attachment no. 2). The matrix contains the prerequisites for the proposed Water Supply and Sanitation Project, its phasing and a tentative schedule for loan processing. Among other things the matrix proposes two World Bank Institute (WBI) workshops on institutional and regulatory issues of the water and wastewater sector, and on water and sanitation pricing policies and methods, to be held in December 2003. In order to meet the agreed timing MOE intends to request WBI's assistance at its earliest convenience. A working group including representatives of World Bank and National Water and Wastewater engineering Company (NWWEC) shall be formed in order to coordinate the planning of the workshops.

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5. MOE requested the World Bank's assistance in implementing its strategy in the water and sanitation sector and in financing a share of investments planned for the period 2004 to 2009. MOE's level of investment proposed during these six years estimated at USD 10.88 billion equivalent, of which the envisaged foreign financing is USD 1.6 billion.
6. In responding to MOE's request, and based on continued progress in implementing the agreed sector strategy, Mr. Joseph Saba, Country Director, confirmed the World Bank's interest in supporting the water and sanitation sector in policy dialogue and in financing a share of the investment program in line with the sector's absorptive capacity. The MOE has requested that the Bank finance about 10% of the total envisaged investment for the Sector (\$10.88 billion over the period 2004-2009). The Bank considers and commits as a major priority the Water and Sanitation Sector and the MOE request in the same framework of the existing project under preparation and the Country Assistance Strategy currently under discussion. In this context, a major investment in the Sector for each CAS years will be given priority.

Tehran, September 29, 2003



Joseph Saba
Country
Director



Abbas Shafiee
Vice Minister
Water and Wastewater Affairs
Ministry of Energy

September 30,
2003

Agreed Upon Strategy and Implementation Program for World Bank Assistance

Recommended reforms (WSS Strategy Note & QER)	Phase 1		Phase 2	Phase 3
	Prerequisites of Negotiation	Component of the AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT Short Term Systemic Issues	Prerequisites of Negotiation	Longer Term Systemic Issues (to be dealt with in next operation or APL)
Sector institutional arrangements autonomy, decentralization, institutional efficiency, regulatory framework				
Minimum criteria for WWCs participation pertaining to satisfactory: governance financial management commercial management technical and cost effective management Environmental health impact	Agreement reached on minimum performance criteria and target values (Annex 1)	Capacity building to WWCs		
Initiate demand management program at WWC level	Decision to initiate such program, TOR approved	TA for demand management	Demand management program started	
Initiate customer education program to materialize improved health impact of WWS investments at WWC level	Decision to initiate such program, TOR approved	TA for user education, including workshop for implementers	User education started	
Conduct an institutional study addressing following main objects: Review of WSS sector structure Clarify institutional responsibilities and accountabilities to derive full benefits from existing legal framework How to provide greater financial and investment autonomy to WWCs Define ways and means to give WWCs incentives to manage	Decision to initiate study, TOR approved. WBI sponsored scoping workshop held.	Component of the AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT	Study started	Implementation of recommendations of study

efficiently Identify options for PPPs				
Conduct study to identify appropriate regulatory framework Economic Water quality (upstream [pollution control] and downstream [drinking water quality & waste water discharge])	Decision to initiate study, TOR approved. WBI sponsored scoping workshop held.	Component of the AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT	Study started	Implementation of recommendations of study
Develop and upgrade regulatory capacity of NWWEC	Decision taken	Capacity building of unit within NWWEC		

Finance, tariffs and cost recovery				
Assurance that funds (government subsidies + revenue through consumer tariff) in both water supply and sanitation will be sufficient to cover Operation and Maintenance, and Replacement (OMR)	<i>Decision by Govt. to secure sustainable flow of subsidies</i>	Conduct financial analysis to quantify (i) subsidy flow in water sector, and, (ii) annual tariff increases to achieve cash flow equilibrium at given time horizon. Start public awareness program		Based on outcomes of analysis, apply tariff adjustment program
	<i>Commitment by Govt. on the principles of full cost recovery in water supply and partial cost recovery in sanitation and decision to apply tariff increase in real terms based on individual WWC financial situation (cf. indicators in Annex 1)</i>			
Review and restructure WSS tariff	<i>WBI sponsored workshop on WSS pricing policies held, and, recommendations of the Workshop reflected in the new tariff structure.</i>	WSS tariff restructuring decision by Govt. satisfactory to World Bank	<i>Implementation of new water tariff strategy</i>	

Technology and investment priorities				
Review sector investment program in light of 3 priorities: (i) rehabilitation of WS systems, (ii) sewerage systems, (iii) ww treatment in view of reuse	Investment program finalized at Project Appraisal			
Increase capacity in economic analysis of investments		<i>Capacity building component</i>		
Prepare a country sanitation strategy, including (i) what mix of technologies in particular the appropriate mix of on-site and collective sanitation, with sewerage treatment, (ii) parts of sanitation infrastructure of greatest priority, (iii) health impact and hygiene promotion	<i>Decision to commence study, TOR approved</i>	<i>Component of the AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT</i>	Study started	Implementation of sanitation strategy
Water resource management				
Initiate integrated water conservation (in coordination with and as part of water CAS in preparation)	<i>Decision to undertake study, TOR approved; in coordination with World Bank supported activities in water resource management</i>		Study started	Implementation of water resource strategy

Legend APL=Adjustable Program Loan; CAS=Country Assistance Strategy of World Bank; WBI=World Bank Institute; NWWEC=National Water and Wastewater Engineering Company; OMR=Operations, Maintenance and Replacement (of Assets); PPP=Public Private Partnership; QER=Quality Enhance Review (of World Bank); TA=Technical Assistance; TOR=Terms-of-Reference; WSS=Water Supply and Sanitation; WWC=City or Provincial Water and Wastewater Company;

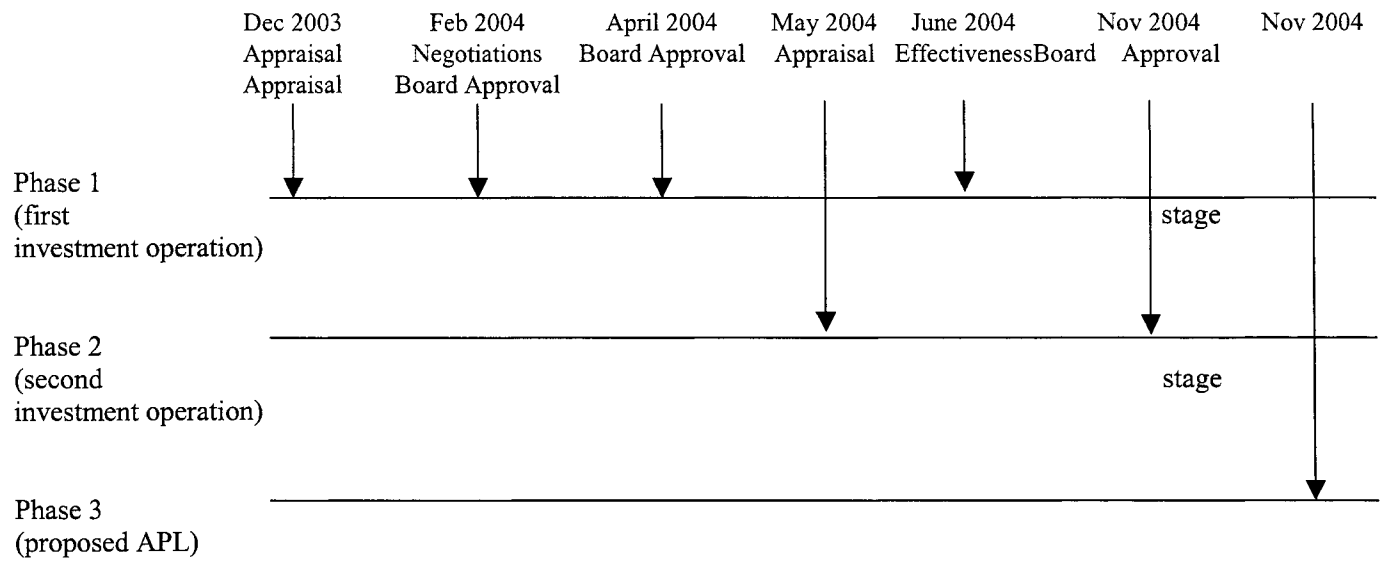
Key performance indicators

Selection criteria for WWCs participation in World Bank Investment Operation	Key indicator (for water supply operations)	Minimum prerequisite	Objective target value (at end of APL Project)
Governance	Does the WWC have to meet specified performance targets set by or agreed upon with the authorities (in terms of service access and quality, efficiency and sustainability) ?	yes	yes
	Is an annual report produced which is audited by an external accountant?		
	Does the utility engage in bench-marking exercises? If yes, with what frequency, and, in what areas (water quality, service, environment, finance and efficiency, other)	yes	yes
Financial management	Working Ratio (WR)	<0.95	<0.75
	Bill Collection Period (Accounts Receivable) (months)	6	4
	Does the WWC participate in the performance rating scheme?	yes	yes
Commercial management	Is the WWC allowed to terminate service delivery to defaulters?	yes	yes
	Average response time to complaints (hours)	<24	<12
	Continuity of distribution service (hours per day)	>18	24
Technical and cost effective management	Unaccounted for Water (UFW) (%)	<40	<27
	Labor Productivity (#staff per 1000 connections)	<6	<3
Environmental health impact	Substantial deterioration of surface and groundwater quality	yes	NA
	Evidence of waterborne diseases, e.g. typhoid fever, cholera	yes	NA

Main Key Performance Indicators

	2003/04	2005	2006	2007	2008	2009
Ahwaz						
WR	85	35	33	30	29	27
UFW	35.5	90	85	83	80	75
Bill Collection (months)	410	212	142	106	75	46
Shiraz						
WR	98	90	85	83	80	75
UFW	301.	28	28	27	27	27
Bill Collection (months)	235	140	159	163	130	119

Proposed Implementation Schedule



NB: Phase 1 and Phase 2 include the cities of Ahwaz, Shiraz, Rasht, Anzali, Sari and Babol

Additional Annex 13a: Terms of Reference: Demand Management Program

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AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT

Background

1. Costs to provide water supply and wastewater services for Iran's population have escalated in recent years. The cheapest water sources such as nearby rivers and aquifers are fully used and more distant sources are now often necessary to consider. At the same time the costs of collecting, treating and disposing of wastewater have risen. The combination of tapping ever more distant or deeper water sources and meeting the country's demand for environmental protection has resulted in growing pressure to raise tariffs to consumers and to require higher subsidies from local and central government budgets. In order to reduce such pressure for higher tariffs and subsidies it is necessary to make certain that water and wastewater companies plan, invest and operate in the most economical fashion possible. The experience from the well managed water and wastewater companies in Iran and abroad shows that the cheapest way of balancing supply and demand is through demand management programs. Such programs comprise a series of policy reforms, investments, operational improvements, and incentives to encourage consumers to adapt their level of demand so that each consumed cubic meter is wisely used and is not wasted. In so doing investment and operating costs for wastewater are also reduced since the volume of wastewater is also kept to the minimum necessary.

Objectives

2. The objectives of the demand management program in water and wastewater companies (WWC) are to identify and implement the policies and investments that will encourage consumers to reduce losses and wastage so that their benefits from consuming each cubic meter are at least equal to the costs, including those to properly manage the resulting wastewater.

Decisions related to Sector Policy

3. The single most important reform to encourage consumers to consume economically is to show them what each cubic meter of consumed water costs and to allow them to decide how much water they wish to consume at that cost. In order to enable them to do so it becomes necessary to make a series of decisions, both relating to the tariff and subsidy policies in the sector, and relating to how the water and wastewater companies will manage demand. The first four decisions require a political support from the highest level in Iran since they concern tariffs and subsidies, and how WWCs should be managed. These fundamental decisions are:

- To decide that consumers should pay the full costs of their consumed water.
- To decide on a system of government subsidies to help those classified as poor to pay the full costs of their water consumption.
- To provide consumers with a signal how much water they are consuming which means that reliable metering becomes necessary.
- To improve the capability of WWC and to give WWC incentives to accurately meter consumption of each consumer and bill and collect user charges that reflect the volume of consumed water.

Decision One: “Each Consumer Should Pay the Full Costs of Water Consumed”

4. In order to make the payment of tariffs acceptable there must be agreement on how the costs of water will be calculated in each system each year in an open and transparent fashion. It is proposed that the cost of water should be calculated using the following method:

- The necessary levels of water consumption and production should be projected over the next 15 years into the future;
- All the costs necessary to meet demand should be estimated for each year. The costs should be expressed in constant prices of the year for which the calculation is made and include both water supply and wastewater;
- The costs should be expressed as an average cost per cubic meter of water of consumption. This average cost will be the result of dividing the sum of discounted operations and maintenance costs and investment costs over the 15 years by the sum of the discounted quantities of water consumed each year. The discounting is necessary to make costs that occur in different years comparable to each other. It is recommended to use a discount rate of 10% per year.
- The costs of water and wastewater that each consumer should pay must be adjusted each year by multiplying with $(1 + \text{inflation rate})$ in order to maintain the user charges in constant prices.

Decision Two: “The Poor Should Receive Government Subsidies to Help Pay”

Decision One may result in user charges that will be high in relation to the income of the poor. A system of government subsidies will become necessary to help them pay for the full costs of water supply and wastewater. Such subsidies should be financed by the central government budget and not by other consumers in order to give incentives to WWCs to serve wealthy and poor consumers equally well. (Experience shows that if utilities are forced to cross-subsidize poor consumers with what they can make wealthy pay over and above cost they tend to provide better service to the wealthy and poorer service to the poor.) It is recommended that a decision be adopted what percentage of consumers that will be eligible to receive government subsidies. It is also recommended that a central government decision be adopted how eligible consumers will be identified. (One simple way of identifying eligible consumers is to include only those households that consume below a minimum monthly volume of water, necessary to meet the most important needs.) Finally, it is recommended that those households that have been declared as eligible to receive subsidies should receive subsidy vouchers that are good for paying for water and wastewater services.

Decision Three: “Each Water Connection Should be Metered”

The principle should be that the water consumption should be metered at the level of an individual connection (“abonné”). This is necessary because consumers without meters have no incentive to save water.

Decision Four: “WWC Should Have Incentives and Ability to Collect Revenue”

7. In order to give WWCs the incentive to collect revenue, based on accurate meter readings, they should be authorized to bill and collect revenue on the basis of metered consumption only. Further, they

should be allowed to keep and use the collected revenue freely to pay for the costs of operations and maintenance and of investment. This principle of financial autonomy should be “freedom with responsibility” and will force WWCs to provide good service (or else consumers will refuse to pay for tariffs) and efficient service (or else consumers will also refuse to pay because costs become too high).

Decisions related to the Demand Management at the WWC Level

8. Once sector policy has been decided that will give them the incentives and tools to manage demand the WWCs have a number of decisions to how to actually make use of their authority to manage demand. There are at least six decisions and actions that WWC can make to manage demand starting with metering:

Decision Five: “Meter Production and Consumption”

9. In order to get the correct signals where demand is the WWCs must meter production accurately and meter each consumer. No substitute exists for good metering data, starting with each production point, continuing with strategically placed district meters in the distribution system and ending with metering the consumption of each abonné. Precise meter readings will indicate which are the consumers and the scope for consumption and the cumulative share of the number of abonnés will be as indicated in the table below (with the number of subscribers sorted by descending consumption):

Table: Cumulative Shares of Subscribers versus Cumulative Share of Total Consumption

Cumulative Share of Total Number of Subscribers	Cumulative Share of Total Consumption	Comment
0%	33%	The single largest abonné is unaccounted water
30%	80%	The 30% largest abonnés usually consume two thirds of total consumption
100%	100%	The smallest abonnés consume one third of total consumption

10. The table shows that unaccounted water (the difference between total production and the sum of all individual consumption meter readings) is the single largest “subscriber” (although unwelcome). Unaccounted water is explained by many factors, such as leakage, illegal and unregistered subscribers, imprecise meters, and mistakes or collusion by WWC personnel working with metering, billings and collections. Common to all these factors is the fact that consumption is wasteful and this is why efforts to identify and reduce the different sources of unaccounted water is the highest priority in demand management. The priority order of reducing wastage and marginal consumption is then first to attack unaccounted water, then concentrate on the 30% largest subscribers, and finally proceed with medium-size and smaller consumers.

Decision Six: “Control the Consumption of Government Subscribers

11. Government subscribers constitute a common source of wastage since such clients are often lax in paying for their water consumption. Failure to pay in turn creates the common misunderstanding that such clients are not obliged to control wastage. However, wastage can be reduced if government abonnés are given an incentive to consume economically. The easiest way to provide such an incentive is to provide a non-fungible item in their government budget earmarked for payment of water supply and to allow the

government client to receive part of the cost savings in case their consumption turns out lower than historical levels.

Decision Seven: "Reduce Both Commercial Losses and Technical Losses"

12. Unaccounted water comprises both the "commercial" losses that result from missing connections, misrepresented consumption levels and errors in the WWC commercial system and "technical" losses such as leakage in the distribution system, overflowing storage reservoirs, and meter inaccuracies. It is difficult to say whether "commercial" or "technical" losses are more significant. What is certain, however, is that experienced operators typically try to first reduce commercial losses before attacking technical losses. The reason is that less investment is necessary to reduce commercial losses although more management know-how and better information systems are necessary.

Decision Eight: "Educate and Help Subscribers to Reduce On-site Wastage"

13. It is common to find that consumers who have become used to heavily subsidized or free water have adopted wasteful habits in their homes, such as keeping taps open or tolerating leaking appliances and the like. Such wastage occurs after the meter and will not appear as "unaccounted" water. However, it offers an opportunity to save water. The strongest incentive for consumers to reduce such wastage is their obligation to pay higher tariffs for their water consumption. However, public acceptance of higher tariffs and demand management is better if the WWC offers its subscribers free or subsidized help in locating and fixing leakage in their homes. Simple and cheap repairs can reduce consumption substantially and earn the collaboration and good will of consumers. In the end, the best form of demand management is what well-educated consumers themselves undertake to consume at economical levels.

Decision Nine: "Make the Tariff Structure Simple and Understandable"

14. Tariff structures in Iran are quite complex and not easily understandable for consumers. The original intent for introducing different consumer categories and progressive tariffs where the average tariff increases with higher consumption level may have been to shift the tariff burden to those categories who are intuitively most able to pay such as industry, commerce or large domestic consumers. Experience proves however that the original intent is often distorted to the extent that the burden of paying tariffs is shifted to increasingly fewer abonnés while increasingly more are subsidized through cross-subsidies. Such unequal sharing of total costs can easily encourage those abonnés who are subsidizing the others to collude with the personnel of WWC to report and pay less than actual consumption levels. Too high tariffs can also encourage cross-subsidizers to drill their own wells and stop being clients of the WWC. Either way, inefficiency results and the scope for demand management are reduced. It is better then to make the tariff structure simple and easily understandable, either by having a simple unit rate per cubic meter consumed, equal for all consumers or possibly a lifeline tariff. The latter comprises two parts: one fixed monthly charge for a minimum, life-line amount of water (in the order of 5 m³ monthly) and then a constant unit charge for all consumption above the life-line amount. Such simple tariff structures provides the strongest incentives for WWC to meter and collect and for consumers not to waste water or use water that does not produce benefits for them.

Decision Ten: "Educate Politicians, WWC Managers and Staff, and Consumers"

15. The final decision in a demand management program for the water supply and wastewater sector in Iran will have to be a wide program of education to explain the necessity of demand management and to show which reforms and investments that can be expected to produce efficient and equitable patterns of consumption. Such education must be continuous and be conducted in different settings in order to reach the intended beneficiaries with precise messages.

Additional Annex 13b: Terms of Reference: Optimization of Water Sector Institutions

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AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT

Background

1. Institutional arrangements in Iran's water and wastewater sector are driven by the government's desire to increase decentralization. At the central level policy and control over the sector's investment budget are vested with the Ministry of Energy through its Vice-Ministry of Urban Water and Wastewater Affairs, the Management & Planning Organization and the Economic Council. The Vice-Ministry is assisted in carrying out its normative duties through the National Water and Wastewater Engineering Company (NWWEC).

2. At the **regional** level there are Regional Water Boards (RWBs) responsible for capturing and transmitting raw water that is then treated and distributed by Provincial or City Water and Wastewater Companies (WWCs). In the case of Shiraz the water is also treated by the Regional Water Board and sold to the Shiraz WWC as bulk supply. In the case of the capital of Tehran, a separate company, the Tehran Sewerage Company, was established in 1992 to manage and implement the sewerage investment programs and operate the sewerage system. It is unlikely that this separation of water supply and wastewater services will be replicated in any other cities or regions in view of the advantages of planning, implementing and operating the two services together.

3. The state-owned WWCs are able to manage their day-to-day operations with a measure of autonomy where Managing Directors can make most decisions on operations and staffing within the limits of the centrally authorized staffing levels and with some flexibility to provide extra compensation to well performing employees. However, the WWCs do not control their own investment programs and, therefore, have limited scope to improve investment and operating efficiency and the level and quality of service. Moreover the WWCs have to follow an organizational model developed by the NWWEC and cannot select a model that would be more appropriate for their particular situation.

4. The de jure institutional arrangements are reasonable given the size and diversity of the country. However, there is a need for formalizing and sharpening the de facto responsibilities of the Central Government, the Regional Water Boards and the WWCs. Due to the lack of financial autonomy of the WWCs and of the RWBs investment efficiency and standards of operations and maintenance have suffered. What is required is to match accountability for providing water supply and wastewater services with the necessary autonomy, incentives and tools to comply with the duties. Greater clarity in the rights to use water resources is also necessary to allow the WWCs to plan ahead, including contracting with private operators and to attract private investment financing.

Objectives of Study

5. A two-part study is proposed to clarify institutional responsibilities and accountabilities in order to derive the full benefits from the existing legal framework. The first part of the study should map the complex arrangements, authority and responsibilities of the stakeholders in the water sector, including but not limited to:

- The Economic Council
- The Management & Planning Organization

- The Ministry of Energy
- The Ministry of Health and Medical Education
- The Department of Environment
- The National Water and Wastewater Engineering Company
- Regional Water Boards
- Provincial Water and Wastewater Companies
- City Water and Wastewater Companies
- Municipalities

6. The second part of this study should describe in detail the institutional arrangements, tasks and responsibilities of all the main components of the organization of WWCs in selected cities and/or provinces. A clear and transparent organization with effective autonomy for the institutions will form the basis for efficient operations and will be the main driver for further development and balanced decisions for preparation and implementation of new programs.

Suggested Scope of Study

The first part of the study should strike a proper balance between description and analysis of the existing legal framework. The de jure authority under the legislation should be described and analyzed in terms of de facto decision-making and quality of the decisions. One aspect that could explain the quality of the decisions is the amount and quality of data and information on which decisions are made. A second aspect that helps explain where the de facto decision-making authority is the funding and recuperation of operations and maintenance costs, and of investment costs, respectively. The two key aspects of information and funding could help explain how water and wastewater projects are identified and selected among several competing projects; how and by whom projects are prepared; how they are implemented; and how they are finally operated and maintained.

In this context, the congruence between existing legislation and policies and adopted decisions should be examined in order to identify the need for possible amendments to either the existing legislation and/or the strengthening of the sector regulation. The transparency of decisions and the use of public hearings to build political support should be documented, where applicable, and the contents and form of contracts (such as between Regional Water Boards and WWCs related to the quantities and quality of raw water supplies) between the different sector agencies should be exemplified and assessed. In this respect, it is important to describe how the use of scarce water resources is optimized, either within a river basin, or within a confined groundwater aquifer. The legally mandated and actually paid extraction charges of raw water should be documented.

9. The second part of the study should focus on WWCs that play a key role in providing the water and wastewater services of a quality that is mandated. Under the assumption that water and wastewater services are best provided by specialized and professional WWCs the study should suggest ways in which the WWCs could be provided greater financial and investment autonomy. In the belief that cash operating surpluses offer the most secure source of financial revenue for operations, maintenance and investment costs the study should propose how WWCs could be given sufficient incentives to manage efficiently in order to maximize their operating cash flows.

10. The second part of the study should also identify and evaluate different options for Public-Private-Partnerships (PPP) that could be considered by individual WWCs in order to raise the efficiency and quality of project implementation and particularly operations and maintenance. The legal feasibility of different PPP options should be analyzed and confirmed. Analogously, the financial feasibility of PPP without relying on government subsidies should be evaluated. Finally, the political support in favor of PPP should be gauged, both at the level of the central government and at the WWCs. In this respect, the

objectives and expectations of both WWCs and other sector agencies in contracting with private firms should be clarified. The WWCs are likely to expect that private operators will transfer knowledge and bring international best practice to the sector. It is also likely that both the WWCs and the Central Government expect private operators to either bring investment financing or strengthen their operating cash flows in a way that would facilitate private, non-recourse borrowings in order to accelerate investments.

Expected Reports

12. Three reports are expected. The first would be a short progress report to be written during the field mission and that should list collected legislation and other relevant documentation. The second draft report should be produced within two months of the completion of the field mission. It should be submitted to the Ministry of Energy for their comments on the basis of which the third and final report should be produced within one month upon receipt of the comments from the Ministry of Energy.

Additional Annex 13c: Terms of Reference: Customer Health Education Program

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AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT

Background

1. The customer of water supply and wastewater services is the most important link in the chain to provide safe water and adequate sanitation. A population that is better educated as to safe hygiene practice is able to compensate for the eventual inadequacies of the public water supply and sanitation system such is the case when consumers will always boil water before ingesting it. By the same token, well-educated customers are able to make optimal use of improved water supply and wastewater systems. Knowledgeable consumers are also best placed to monitor the quality of services and demand improvements and put the provider of water supply and wastewater services under scrutiny and pressure to correct for any inadequacies that may result. Conversely, when continued unsanitary hygiene practices could negate many of the benefits that new investments in a water supply and wastewater project may bring. For this reason it becomes essential to match the water supply and wastewater project being under preparation with a customer health education program, first in the two project cities of Ahwaz and Shiraz, and later in other cities as well.

Objectives

2. The objectives of the assignment are to design and implement a pilot health education program for the beneficiaries of the proposed Iran Water Supply and Wastewater Project. The pilot program should be based on existing or collected information on hygiene practices of the project population and initially targets those population segments where the incidence of water and sanitation-related disease is the highest.

Scope of Work

3. The assignment comprises three distinct components:

- A survey to identify practices of water consumption and of hygiene practices in those areas and among those population segments where the incidence of water and sanitation related disease is the highest;
- The design of a customer health education program; and
- The implementation of the health education program on a pilot basis.

4. The *survey of present water drawing and sanitation practices* should be sufficiently large to be statistically significant. It should not only map present practices but should also attempt to identify the historical sources of health education for those included in the survey. The survey should assess the population's understanding of the links between better health and the level and quality of water service and sanitation. The survey should also attempt to quantify the incidence of water and sanitation related disease and the associated burden and cost of health care. It will be key to map the population's level of satisfaction of on-site sanitation systems and to evaluate the motives and willingness to pay for collective wastewater collection and treatment system. For the same reason it is important to identify and quantify the present costs of on-site sanitation systems, including the collection and disposal of septic tank sludge.

In order to optimize the costs of the survey and maximize its usefulness it is likely that collaboration with a Non Governmental Organization (NGO) or academic institution will prove justified.

5. The *design of the customer health education program* should build on the results of the survey and be keyed to cost efficiency and sustainability. To this end the design should identify the present modes and sources of health education, such as schools, religious institutions, and health care facilities and build and improve and possibly introduce health education to disseminate and sustain safer and more hygienic water use and sanitation practices. It is likely that elementary school curricula will prove to be central to disseminate and inculcate better health education. The design phase should include the preparation of educational pamphlets or the like, and possibly the use of media such as radio and television.

6. The *implementation of the health education program on a pilot basis* should aim at maximum cost efficiency and sustainability as well. For this reason it will likely prove of advantage to conduct the pilot program through a NGO, through the existing education channels, and in collaboration with religious institutions. The pilot should include a simple system of monitoring to permit a subsequent evaluation of the program's effectiveness. If possible, the pilot program should dovetail with the implementation of the Bank-financed water supply and wastewater investment program so as to increase the motivation of the target population to modify its water use and hygiene practices.

Additional Annex 13d: Terms of Reference: National Sanitation Strategy and Action Plan for Sanitation and Hygiene

ISLAMIC REPUBLIC OF IRAN

AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT

Purpose of consultancy

The purpose of this consultancy is to assist the Government of Iran in the development of a National Strategy and Action Plan for Sanitation and Hygiene⁷. The Strategy is intended to increase the effectiveness and efficiency of the investments of the government and people of Iran through the provision an overall policy framework to guide decision-making and resource allocation within the sector. The Action Plan will present a realistic programme of specific, affordable and concrete actions to implement the Strategy.

The Strategy and Action Plan shall consist of:

- The clear identification of institutional, financial, technical and capacity issues;
- The development of alternatives to address these issues;
- A range of analyses of these alternatives (e.g. SWOT analyses for institutional feasibility, sensitivity analyses to test the robustness of alternative financial approaches, etc.); and
- Recommendations based on these analyses.

Background

About 92% of the urban population of Iran is connected to public water supplies. By contrast, only 16% is connected to public sanitary sewerage and only part of the sewage is treated before disposal. The remarkably high water supply connection rates of 92% are not matched by connection rates to sanitary sewerage which only average 16%, creating an environmental hazard. In Teheran, only 15% of the population is connected to a sanitary sewerage system although the bulk of collected wastewater is being treated. The remainder is discharged untreated and constitutes a major source of pollution and public health risk. Five major cities lack a sewerage system altogether. Most households use traditional seepage pits causing a threat to groundwater contamination. In a number of cities without sanitary sewerage, households resort to discharging their sewage through the open rainwater drains.

The rural situation is different, but hardly better. At least one in five rural homes in Iran does not have access to basic sanitation⁸. Research literature in Iran (<http://www.irvl.net/IRAN32.HTM>) confirms that the diarrhoeal disease caused by poor water and sanitation contributes to malnutrition, a major public health problem with long-term consequences for health and productivity.

⁷ “Sanitation” in this document refers to the physical systems (e.g. sewers, septic tanks, latrines, treatment works) for the safe management of human excreta. “Hygiene” refers to the related human behaviors that promote health (e.g. washing hands with soap after defecation and before preparing food, safe handling of water in the home, etc.)

⁸ Surveys and estimates of rural sanitation coverage between 1994 and 1999 indicate that between 40% and 80% of the rural population have access to improved sanitation. In reviewing these data, the WHO/UNICEF Joint Monitoring Programme for Water and Sanitation estimated rural coverage at 74%

In this context, the Iranian government is undertaking a number of initiatives to improve water and sanitation in both rural and urban areas. In particular, the Government of Iran is planning to invest the equivalent of 11 billion US dollars to improve sanitation and water supply services over the coming six years. Loans from the World Bank are being sought to finance approximately 10% of this amount. One of the Bank loans being considered will, among other objectives, enable the prioritized extension of sewerage services in six towns, with a goal of improving both health and the quality of life of urban residents. These funds must be used strategically to maximize public health benefits, and the Government of Iran (GoI) wishes to review and update the institutional, financial, and technical framework for these and other investments in urban and rural sanitation and hygiene.

Strategy development Process

Sanitation and hygiene involve many stakeholders working in a variety of institutions. At the ministerial level, these will include the Ministry of Energy, the Ministry of Economic Affairs and Finance, the Ministry of the Interior, The Ministry of Housing and Urban Development, the Ministry of Health, the Management and Planning Organization, the Environmental Protection Organization, and the Ministry of Education. A similarly broad range of governmental stakeholders will exist at provincial and community levels. Other key stakeholders include: international organizations and agencies, including UNICEF, UNDP, and WHO; the private sector; international and local NGOs; universities and research centers; Community-Based Organizations, etc. The strategy must reflect the needs and concerns of this broad range of stakeholders if they are to put its guidance in practice. Accordingly, the strategy will be developed in a consultative and participatory manner to ensure the broadest possible ownership.

3.1 Sequence of strategy development

A. Project Inception. Consultants shall prepare, (under appropriate guidance and review from the Bank and local authorities and experts,)

1. an initial outline of topics and issues for a national sanitation strategy, which highlights the questions to be addressed by such a strategy and
2. a process by which the sanitation strategy may be developed in close coordination with all major stakeholders

B. Inaugural Workshop, at which the consultants will present the strategy outline, issues, and process for review, comment, and debate by various stakeholders. The outline should present leading options to address the substantive issues.

C. Development of a draft strategy based on the guidance of the inaugural workshop, field work throughout Iran, and discussions with sector specialists, community representatives, government authorities, members of the private sector and other stakeholders. The strategy must address the diversity of geographic, environmental, social and cultural conditions in Iran, and may well propose different approaches in different regions to contribute to the overall goals. Informal review and comment should be sought on preliminary drafts of the strategy before the validation workshop. The strategy must address capacity constraints within the sector, and how they may be reduced.

D. Validation workshop for the draft strategy. The complete Draft Strategy should be circulated to the relevant stakeholders at least two weeks before the workshop. The workshop will review the key issues of the strategy and the options available to address them.

E. Development of a draft action plan. The purpose of the action plan is to translate the strategy, (as revised at the validation workshop) into actions, which can increase the effectiveness and efficiency of

investments in sanitation and hygiene. The action plan may include proposed capital investment plans, institutional rearrangements, promotional campaigns, and/or policy revisions. The action plan must include activities to increase sector capacity to address the challenges of sanitation and hygiene. Informal review and comment should be sought on a preliminary draft of the action plan well before the validation workshop (see below).

F. Final validation workshop for the Draft Strategy and Action Plan. The complete Draft Strategy and Action Plan should be circulated to the relevant stakeholders at least two weeks before the workshop. The workshop should review the final strategy (as revised in light of the preceding workshop) and the concrete proposals of the Action Plan. The workshop should foster debate and discussion, with the clear purpose of strengthening the final Draft Strategy and Action Plan.

G. Submission of the Final Draft Strategy and Action Plan, incorporating feedback from the second workshop.

3.2 Overall approach

The documentation and workshops for the strategy and action plan should highlight:

- The clear identification of institutional, financial and technical issues;
- The development of alternatives to address these issues;
- A range of analyses of these alternatives (e.g. SWOT analyses for institutional feasibility, sensitivity analyses to test the robustness of alternative financial approaches, etc.); and
- Recommendations based on these analyses.

Draft documents prepared along these lines should provide the basis for discussion and validation at the three stakeholder workshops outlined above.

It is anticipated that the consultant will use the following methods in developing a draft Strategy and Action Plan:

Review of existing technical studies on environmental health and sanitation in Iran.

Review of existing policies and practices on sanitation, hygiene, environmental health, and wastewater management in Iran at national, provincial and municipal levels. In particular, are there sanitary surveys designed to permit the review of neighborhoods and communities to determine the suitability of their sanitation and wastewater management? Is there a “tool” in existence, which would permit a local government to conduct a survey to classify neighborhoods as to their suitability or unsuitability for on-site sanitation, and to observe the extent to which on-site sanitation is failing or not failing? Are their existing percolation test standards, and how helpful are these?

Interviews with sector professionals and managers in water and sanitation agencies, provincial and municipal governments, health departments, and other related ministries and government departments, such as environment and rural development

Field visits to study the most acute problems, and to learn of proposed approaches to address these problems visit the proposed towns visit rural areas/schools as well.

Consultations (both formal and informal) with major stakeholders from a variety of sectors. These will include workshops with participation from such sectors as health, urban development, rural development, water resources, etc.

Team composition

It is proposed that a five-person team can best address the needs of the task:

International expert in sanitation and hygiene as team leader, to coordinate the work, and bring international experience to bear on the problem.

International expert on finance and economics, familiar with the costing and financing of sanitation and hygiene programs, and the financial implications of public policy.

Local specialist in environmental health, familiar with both the problems on the ground and the ways and means by which policies and practices may be effected in the GoI.

Local specialist in urban sanitary engineering, familiar with the planning and implementation of sanitary investments in infrastructure.

Local specialist in rural community health, familiar with the status and nature of rural public health promotion.

It is anticipated that the first three consultants will do the bulk of the work, with support from the urban sanitary engineer and rural community health specialist.

Additional Annex 13e: Capacity Building Program
ISLAMIC REPUBLIC OF IRAN
AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT

Background

1. The ultimate sustainability of the Ahwaz and Shiraz Water Supply and Sanitation Project is contingent on a sequence of reforms and their effective implementation. First, *the appropriate sector development goals* must be clearly formulated and benefit from explicit political support from the highest level. An example would be the adoption of the general principle that revenue from consumer tariffs plus government subsidies in both water supply and sanitation should cover the costs of operations and maintenance, and replacement (OMR). Second, the project reforms must be accompanied by *the necessary instruments of implementation* such as laws and executive decrees to enable effective implementation. Third, institutional reforms are required to create the sense of *accountability* with service providers *and* give them *incentives* to implement, operate and maintain the project facilities in an efficient and sustainable fashion. Fourth, *the capacity* of the service providers and of those agencies or units that monitor and regulate the service providers *must be built*. Failure to ensure the success of each link in the chain to prepare, implement and operate the project will reduce overall program effectiveness and sustainability or even cause the project to fail.

2. At the present time only the first link in the chain of reform has been forged. A general agreement on principles of sector development resulted from the September 2003 discussions between the Bank and the Ministry of Energy. However, the second step to provide the necessary instruments is still largely pending. Similarly, the third step to reform institutional accountability and incentives can only be taken once the institutional study has been conducted and its conclusions have been adopted and internalized by the relevant Iranian agencies and ministries. Finally, the capacity building has only been identified in general terms and must now be detailed for the two project cities Ahwaz and Shiraz and for the NWWEC. It is expected that Ahwaz and Shiraz be the precursor for similar capacity building programs in the four project WWCs in Phase 2 of the Bank's sector assistance and subsequently for other WWCs.

Capacity Building Priorities

3. A number of priority areas where capacity must be strengthened have been identified (See Annex 13.) The priorities relate to four areas:

- A. The minimum criteria for the participation of WWCs in the program regarding
 - Governance
 - Financial management
 - Commercial management
 - Efficient operations and administration
 - Environmental health impact
- B. The development and upgrading of the regulatory capacity of NWWEC regarding
 - Coverage of service provision
 - Quality of service provision
 - Efficiency of service provision

- C. The capacity to analyze the economic costs and benefits of project investments including but not limited to areas such as
 - Demand projections
 - Least-cost analysis
 - Economic cost benefit analysis

- D. The capacity of individual WWCs to analyze tariffs, costs and subsidies with a view to achieve cash flow equilibrium by a given time horizon with respect to
 - Calculation of economic and financial costs of service
 - Design of the average tariff level and structures
 - Design of level and targeting of subsidies and manner of administration
 - Design of public awareness and consumer education programs

Proposed Program Implementation

4. The capacity building must begin as early as possible during project implementation and may actually precede the planned Board presentation in the case of water supply and wastewater tariffs (where a workshop on water supply and sanitation pricing policies with the World Bank Institute (WBI) is planned) It is expected that the WBI will play the lead role in guiding the capacity building for which the NWEEC will be well placed to assume the main responsibility on the client side. To the extent possible all training materials should be available in Farsi. It is similarly proposed that training materials be available over the Internet for reasons of cost efficiency and individual client convenience. The WBI is already the repository of a number of training modules that could be updated and adapted to Farsi.⁹

5. A special effort will be made to achieve a multiplier effect through implementing the program by or with the participation of training institutions, such as universities and technical institutes. The incorporation of selected sections of the capacity building training materials into the standard curricula should be encouraged in order to modernize the education of direct relevance to the sector. The substantial period of professional isolation for sector staff justifies this kind of broader upgrading of the relevance and modes of academic and practical training.

Monitoring and Evaluation of the Capacity Building program

6. The entire capacity building must be continuously monitored and evaluated in order to adapt it to the specific needs of the WWCs and the NWEEC. Program implementation should be monitored in terms of number of trainees, volume of training as measured in trainee days, and costs of individual events, comprising all relevant costs and the form of financing. It must also be noted that the capacity building programs will also benefit the entire sector since training materials will be developed in a format that permits easy dissemination.

⁹ The WBI already has training modules in the following areas that are of direct relevance to the Iran capacity building program: (1) economic cost-benefit analysis;(2) demand forecasting; (3) least cost analysis; (4) elements of finance; (5) tariff analysis; (6) procurement of works; (7) procurement of goods; (8) user of consultants; (9) planning for maintenance; (10) institutional analysis; and (11) reducing unaccounted water;.

Additional Annex 14: Detailed Procurement Plan

ISLAMIC REPUBLIC OF IRAN

AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT

First Year Procurement Plan for Technical Assistance

REF #	Description	Est. Amount US\$ in million	Procurement Method	Schedule										Contract/End Date	
				TOP Prep.	Adverts (Est)	Prepare Short list	Send RFP & Short List for No-Obj.	WB no-obj	Send out RFP	Proposal Opening	T/Evalua. Comp.	WB no-obj	Evaluation Comp.		WB no-obj	Commence Date
Technical Assistance-Shiraz															
STA-1	Supervision for First Year Water and Wastewater Packages	1.39	OCBS	01-Jun-04	15-Jun-04	15-Jul-04	22-Jul-04	06-Aug-04	13-Aug-04	12-Sep-04	27-Oct-04	11-Nov-04	26-Nov-04	03-Dec-04	18-Nov-07
STA-2	Design and Supervision for Water Networks	1.81	OCBS	15-Jul-04	15-Jun-04	15-Jul-04	22-Jul-04	06-Aug-04	13-Aug-04	12-Sep-04	27-Oct-04	11-Nov-04	26-Nov-04	03-Dec-04	12-Nov-08
STA-3	Design and Supervision for Wastewater Networks	4.89	OCBS	01-Jul-04	15-Jun-04	15-Jul-04	22-Jul-04	06-Aug-04	13-Aug-04	27-Sep-04	11-Nov-04	26-Nov-04	11-Dec-04	18-Dec-04	27-Nov-08
STA-4	Design and Supervision of the Wastewater Treatment Plant	1.29	OCBS	01-Jun-04	15-Jun-04	15-Jul-04	22-Jul-04	06-Aug-04	13-Aug-04	27-Sep-04	11-Nov-04	26-Nov-04	11-Dec-04	18-Dec-04	31-May-08
STA-5	Project Manager-TSU	0.24	IC	01-Mar-04	08-Mar-04	07-May-04			NA			14-May-04	29-May-04	05-Jun-04	10-May-09
STA-6	Engineer-TSU	0.18	IC	01-Mar-04	08-Mar-04	07-May-04			NA			14-May-04	29-May-04	05-Jun-04	10-May-09
STA-7	Environmental Engineer-TSU	0.18	IC	01-Mar-04	08-Mar-04	07-May-04			NA			14-May-04	29-May-04	05-Jun-04	10-May-09
STA-8	Financial Officer-TSU	0.18	IC	01-Mar-04	08-Mar-04	07-May-04			NA			14-May-04	29-May-04	05-Jun-04	10-May-09
STA-9	Procurement Officer-TSU	0.18	IC	01-Mar-04	08-Mar-04	07-May-04			NA			14-May-04	29-May-04	05-Jun-04	10-May-09
	Sub-Total	10.16													
Technical Assistance-Ahwaz															
ATA-1	Supervision for First Year Water and Wastewater Packages	1.05	OCBS	01-Jun-04	15-Jun-04	15-Jul-04	22-Jul-04	06-Aug-04	13-Aug-04	12-Sep-04	27-Oct-04	11-Nov-04	26-Nov-04	03-Dec-04	18-Nov-07
ATA-2	Design and Supervision for Water	2.94	OCBS	15-Jul-04	15-Jun-04	15-Jul-04	22-Jul-04	06-Aug-04	13-Aug-04	12-Sep-04	27-Oct-04	11-Nov-04	26-Nov-04	03-Dec-04	12-Nov-08
ATA-3	Design and Supervision for Wastewater Network	5.10	OCBS	02-Jul-04	15-Jun-04	15-Jul-04	22-Jul-04	06-Aug-04	13-Aug-04	27-Sep-04	11-Nov-04	26-Nov-04	11-Dec-04	18-Dec-04	27-Nov-08
ATA-4	Design and Supervision of the Wastewater Treatment Plant	1.27	OCBS	01-Jun-04	15-Jun-04	15-Jul-04	22-Jul-04	06-Aug-04	13-Aug-04	27-Sep-04	11-Nov-04	26-Nov-04	11-Dec-04	18-Dec-04	31-May-08
ATA-5	Project Manager-TSU	0.24	IC	01-Mar-04	08-Mar-04	07-May-04			NA			14-May-04	29-May-04	05-Jun-04	10-May-09
ATA-6	Engineer-TSU	0.18	IC	01-Mar-04	08-Mar-04	07-May-04			NA			14-May-04	29-May-04	05-Jun-04	10-May-09
ATA-7	Environmental Engineer-TSU	0.18	IC	01-Mar-04	08-Mar-04	07-May-04			NA			14-May-04	29-May-04	05-Jun-04	10-May-09
ATA-8	Financial Officer-TSU	0.18	IC	01-Mar-04	08-Mar-04	07-May-04			NA			14-May-04	29-May-04	05-Jun-04	10-May-09
ATA-9	Procurement Officer-TSU	0.18	IC	01-Mar-04	08-Mar-04	07-May-04			NA			14-May-04	29-May-04	05-Jun-04	10-May-09
	Sub-Total	11.32													
Technical Assistance-Central Unit/AMWEC															
CTA-1	Project Manager	0.24	IC	01-Mar-04	08-Mar-04	07-May-04			NA			14-May-04	29-May-04	05-Jun-04	10-May-09
CTA-2	Engineer-TSU	0.18	IC	01-Mar-04	08-Mar-04	07-May-04			NA			14-May-04	29-May-04	05-Jun-04	10-May-09
CTA-3	Environmental Engineer	0.18	IC	01-Mar-04	08-Mar-04	07-May-04			NA			14-May-04	29-May-04	05-Jun-04	10-May-09
CTA-4	Financial Officer	0.18	IC	01-Mar-04	08-Mar-04	07-May-04			NA			14-May-04	29-May-04	05-Jun-04	10-May-09
CTA-5	Procurement Officer	0.18	IC	01-Mar-04	08-Mar-04	07-May-04			NA			14-May-04	29-May-04	05-Jun-04	10-May-09
	Sub-Total	0.96													
	Total	22.43													

OCBS: Quality and Cost Based Selection

IC: Individual Consultants

TSU: Technical Support Unit

Additional Annex 14: Detailed Procurement Plan
ISLAMIC REPUBLIC OF IRAN
AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT
First Year Procurement Plan for Works

Tender Number	Description	Est. Amount US\$ million	Procu. Method	Bidding document ready	WB-NO	Adverts (invite) after no-obj	Bic Open Contract	WB-NO	Contract Sign date	Comm. Date	Contract End Date
	Shiraz-Water Supply Works										
	Transmission Lines										
SW1	LW1 +2PRV's	8.40	ICB	30-Oct-04	14-Nov-04	21-Nov-04	05-Jan-05	19-Feb-05	06-Mar-05	21-Mar-05	21-Mar-07
SW2	LW2 +FS	1.29	NCB	01-Nov-04	NA	08-Nov-04	08-Dec-04	07-Jan-05	22-Jan-05	06-Feb-05	06-Jun-05
SW3	LW5.1 +LW5.2	0.54	NCB	01-Oct-04	NA	08-Oct-04	07-Nov-04	06-Dec-04	22-Dec-04	06-Jan-05	06-May-05
SW4	LW6 +PRV	0.52	NCB	01-Dec-04	NA	08-Dec-04	07-Jan-05	06-Feb-05	21-Feb-05	08-Mar-05	06-Jul-05
SW5	LW9 +LW16+LW19	0.24	NCB	30-Sep-04	NA	07-Oct-04	06-Nov-04	06-Dec-04	21-Dec-04	05-Jan-05	02-Oct-05
	Reservoirs										
SW6	R10	3.68	NCB	30-Oct-04	NA	06-Nov-04	06-Dec-04	05-Jan-05	20-Jan-05	04-Feb-05	29-Jun-06
SW7	R18 +R20	1.25	NCB	30-Sep-04	NA	07-Oct-04	06-Nov-04	06-Dec-04	21-Dec-04	05-Jan-05	29-Jun-06
	Network and Wells										
SW8	Zone 11+Zone14+Zone 20	0.28	NCB	30-Jul-04	NA	06-Aug-04	05-Sep-04	05-Oct-04	20-Oct-04	04-Nov-04	01-Aug-05
SW9	Zone 12	0.31	NCB	30-Jul-04	14-Aug-04	21-Aug-04	20-Sep-04	20-Oct-04	19-Nov-04	04-Dec-04	03-Apr-05
SW10	Drilling of 8 wells	1.18	NCB	03-Feb-05	NA	10-Feb-05	12-Mar-05	11-Apr-05	26-Apr-05	11-May-05	01-May-07
	Rehabilitation of Water Network										
SW11	First year package	1.04	NCB	01-Jul-04	16-Jul-04	23-Jul-04	22-Aug-04	21-Sep-04	21-Oct-04	05-Nov-04	05-Mar-05
	Sub-Total Shiraz-Water Supply Works	18.73									
	Shiraz-Wastewater Works										
SS1	I2	0.81	NCB	01-Jan-05	NA	08-Jan-05	07-Feb-05	09-Mar-05	24-Mar-05	08-Apr-05	04-Dec-05
SS2	I3	0.81	NCB	30-Sep-04	NA	07-Oct-04	06-Nov-04	06-Dec-04	21-Dec-04	05-Jan-05	02-Sep-05
SS3	I1a	1.36	NCB	30-Nov-04	NA	07-Dec-04	06-Jan-05	06-Feb-05	20-Feb-05	07-Mar-05	02-Dec-05
SS4	I1b	6.68	ICB	31-Oct-04	15-Nov-04	22-Nov-04	06-Jan-05	06-Feb-05	07-Mar-05	22-Mar-05	13-Sep-06
	Laterals and Interceptors										
SS5	I1B2	4.88	NCB	30-Dec-04	NA	06-Jan-05	05-Feb-05	07-Mar-05	22-Mar-05	06-Apr-05	28-Sep-06
SS6	I3-B4-phase 1	3.14	NCB	30-Dec-04	NA	06-Jan-05	05-Feb-05	07-Mar-05	22-Mar-05	06-Apr-05	28-Sep-06
SS9	I3-B1-phase 2	3.14	NCB	30-Dec-04	NA	06-Jan-05	05-Feb-05	07-Mar-05	22-Mar-05	06-Apr-05	28-Sep-06
SS7	I3-B1-phase 2										
	Emergency Treatment Plant										
SS8	Outfall of Emergency Treatment Plant	4.95	ICB	30-Sep-04	15-Oct-04	22-Oct-04	08-Dec-04	05-Jan-05	04-Feb-05	19-Feb-05	14-Feb-06
SS9	Sludge Storage at Emergency Treatment Plant	1.68	NCB	30-Sep-04	NA	07-Oct-04	06-Nov-04	06-Dec-04	21-Dec-04	05-Jan-05	01-Nov-05
	House Connections										
SS10	First Year Package	1.04	NCB	30-Dec-04	NA	06-Jan-05	05-Feb-05	07-Mar-05	22-Mar-05	06-Apr-05	28-Sep-06
	Sub-Total Shiraz-Wastewater Works	27.44									
	Ahwaz-Water Supply Works										
AW1	Emergency WTP	0.17	NCB	30-Jun-04	15-Jul-04	22-Jul-04	21-Aug-04	20-Sep-04	20-Oct-04	04-Nov-04	01-Aug-05
	Reservoirs										
AW2	Extension of Water Networks	3.71	NCB	01-Sep-04	NA	08-Sep-04	08-Oct-04	07-Nov-04	22-Nov-04	07-Dec-04	27-Nov-06
AW3	First Year Package	4.13	NCB	01-Jan-05	NA	08-Jan-05	07-Feb-05	09-Mar-05	24-Mar-05	08-Apr-05	30-Sep-06
	Rehabilitation of Water Network										
AW4	First Year Package	3.35	NCB	01-Jan-05	NA	08-Jan-05	07-Feb-05	09-Mar-05	24-Mar-05	08-Apr-05	30-Sep-06
	Sub-Total Ahwaz Water Supply Works	11.36									
	Ahwaz-Wastewater Works										
	Trunk Mains										
AS1	E1.1	3.89	NCB	30-Sep-04	NA	07-Oct-04	06-Nov-04	06-Dec-04	21-Dec-04	05-Jan-05	02-Oct-05
AS2	E1.7	2.0	NCB	30-Sep-04	NA	07-Oct-04	06-Nov-04	06-Dec-04	21-Dec-04	05-Jan-05	04-Jul-05
AS3	E2.1	4.7	NCB	30-Nov-04	NA	07-Dec-04	06-Jan-05	06-Feb-05	20-Feb-05	07-Mar-05	02-Mar-06
AS4	E2.2	2.43	NCB	30-Nov-04	NA	07-Dec-04	06-Jan-05	06-Feb-05	20-Feb-05	07-Mar-05	02-Dec-05
AS5	WT&2	3.11	NCB	30-Sep-04	NA	07-Oct-04	06-Nov-04	06-Dec-04	21-Dec-04	05-Jan-05	02-Oct-05
	Rehabilitation of Western Treatment Plant										
AS6	Rehabilitations	1.48	NCB	30-Dec-04	NA	06-Jan-05	05-Feb-05	07-Mar-05	22-Mar-05	06-Apr-05	28-Sep-06
AS7	Sludge Lagoon, Storage	5.92	ICB	30-Mar-05	14-Apr-05	21-Apr-05	05-Jun-05	05-Jul-05	04-Aug-05	19-Aug-05	09-Aug-07
	Sub-Total Ahwaz Wastewater Works	23.57									
	Grand Total	81.10									

ICB: International Competitive Bidding
NCB: National Competitive Bidding
NA: Not Applicable

Additional Annex 15: Organizational Charts of Ahwaz and Shiraz WWCs and NWVEC

ISLAMIC REPUBLIC OF IRAN: AHWAZ AND SHIRAZ WATER SUPPLY AND SANITATION PROJECT

CHART NO 1- Organization of Ahwaz WWC

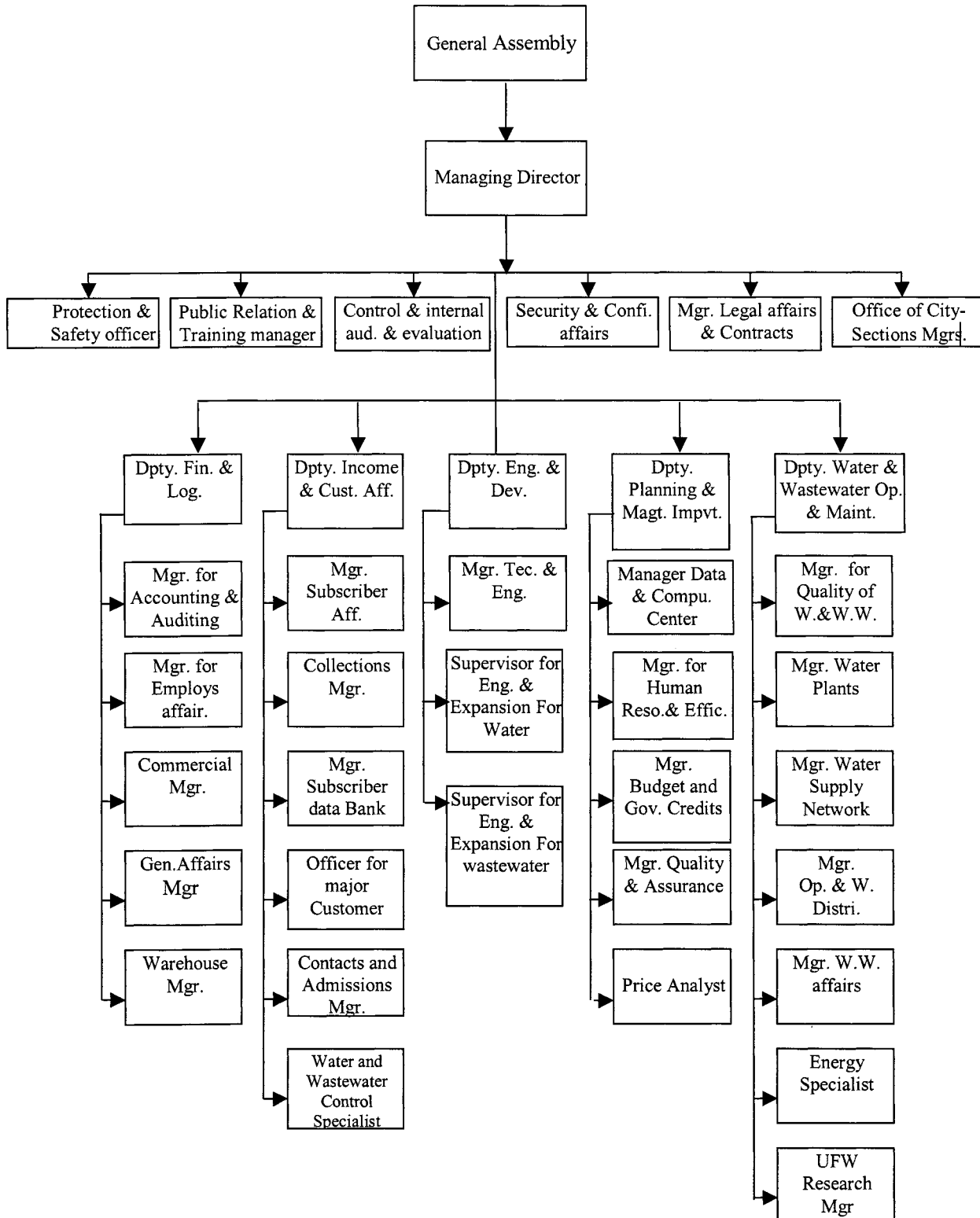


CHART NO 2- Organization of Shiraz WWC

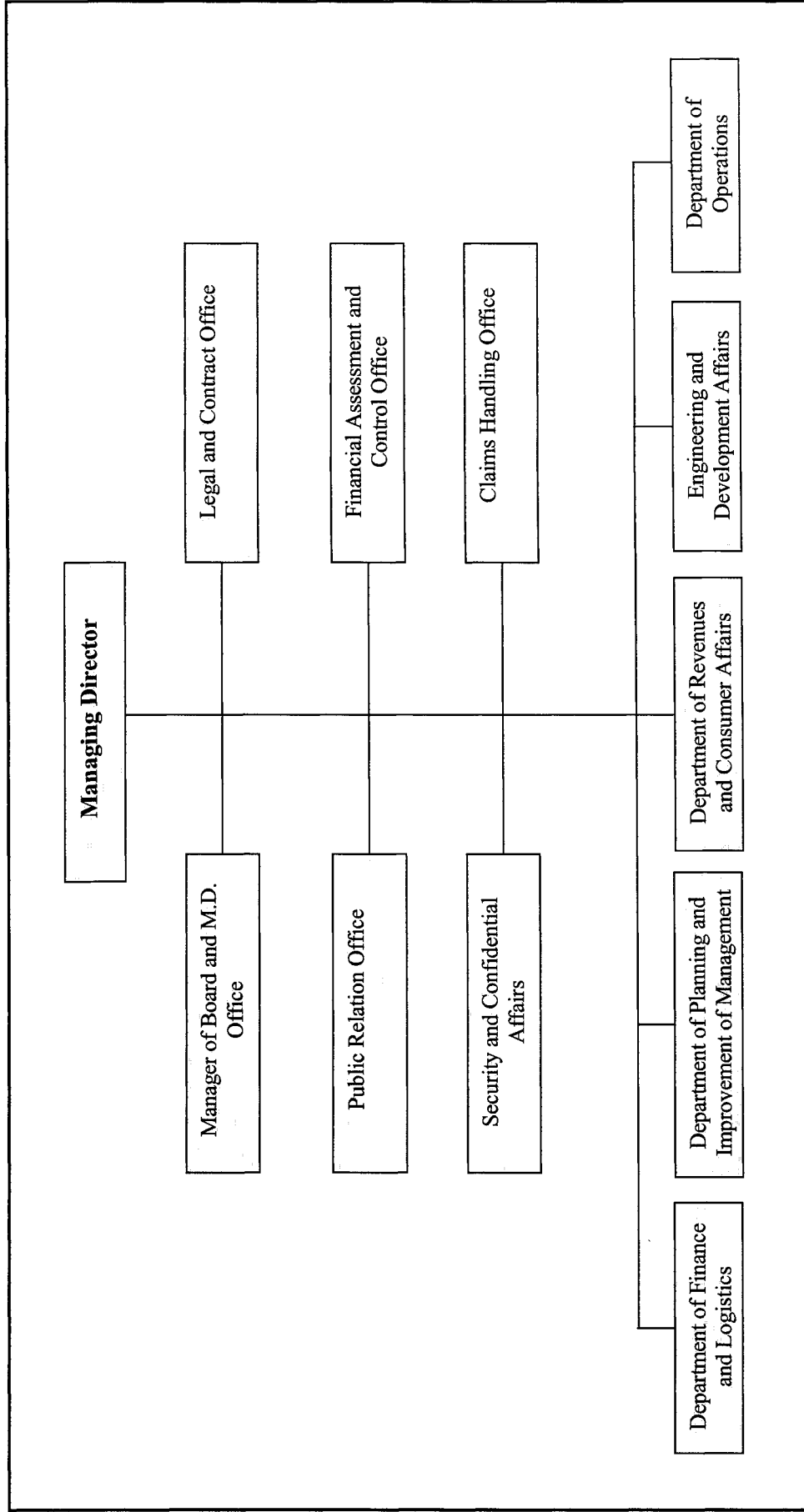


CHART NO 3- Organization of NWVEC

