

# **UNITED NATIONS DEVELOPMENT PROGRAMME**

**People's Republic of China'**

**Report of the Evaluation Mission**

**CPR/96/302**

**21<sup>st</sup> Century Urban Water Management In China**

**Mission members**

**Team leader: Mr. John Gildea Consultant: Mme. Qian Yi Consultant**



**June, 2001**

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*21<sup>st</sup> Century Urban Water Management  
Report  
UNDP/AusAID CPRI961302*

*Project Evaluation*

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### ABBREVIATIONS

ADB	Asian Development Bank
AusAID	Australian Agency for International Development
CICETE	
GOA	Government of Australia
GOPRC	Government of the Peoples' Republic of China
IEC	Information, Education and Communication
MGS	Municipal Government of Shijiazhuang
MOC	Ministry of Construction
NPC	National Project Director
O.&M	Operations and Maintenance
PPER	Project Performance Evaluation Report
PPIU	Pilot Project Implementation Unit
RMB	Renimbi (Currency of GOPRC)
TOR	Terms of Reference
TPR	Tripartite Review
UNDP	United Nations Development Programme
UWRC	
WB	World Bank

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### EXECUTIVE SUMMARY



This report presents the findings of an evaluation mission, mobilized in February 2001 to conduct an assessment of the design, relevance and performance of the UNDP/AusAID 21st Century Urban Water Management Project. The evaluation team comprised Mr John Gildea as Team Leader and Urban Water Supply/Institutional Specialist and Madam Qian Yi as Environmental/Water Resources Specialist. This final evaluation is the first in-depth external evaluation that has been made of the project.

The project was formulated and designed against a background that saw urban water management in China in the mid 1990s facing serious crisis. Demand for urban water supply was increasing rapidly. The need for sewerage improvement and wastewater treatment was escalating dramatically. Costs of providing urban water services were rising faster than price inflation. Municipalities and provinces could not afford increasing subsidies to meet needs. In many areas groundwater was overexploited leading to problems of polluted water supply and land subsidence. Cumbersome institutional arrangements were causing response to problems to be slow. The continued provision of adequate water services in China's cities would not be sustainable without rapid and appropriate action.

The Municipal Government of Shijiazhuang (MGS), in 1996, sought UNDP assistance to address their water resources and water supply shortages through technical interventions promoting wastewater re-use and improved water management. Shortly afterwards, a team comprising representatives of UNDP, CICETE, MOC, MGS and consultants formulated a project and prepared a draft project document. AusAID, who had previously assisted MGS with the construction of a new water treatment plant, were consulted by UNDP regarding the potential cooperation opportunities. They confirmed a strong interest in participating in the project and in providing cost sharing support for some activities. The completed project document was signed on 9 July 1997.

The project, as designed, aimed to bring about institutional reforms to improve urban water and wastewater management; to bring about tariff reforms to improve cost recovery; and to bring about better pricing to improve urban water demand management. The Municipality of Shijiazhuang was selected as a pilot area to test processes for institutional improvement and to plan tariff increases to achieve cost recovery and demonstrate the influence of price in water demand management. Implementation commenced in late 1997 and the project was effectively completed in June 2000.

The project design clearly identified the following as the problems it sought to address:

- *Fragmented organizational and institutional framework*
- *Lack of financial resources to maintain and expand existing infrastructure to meet future demand*
- *Lack of tools for holistic management of urban water resources*
- *Inefficient water use*
- *No national support program for cities facing water crises*

In seeking to address the above problems, the project design presented three clear objectives:

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- *Organizational and institutional framework and pilot implementation modalities in place for efficient and demand-responsive urban water and waste water management in Shijiazhuang.*
- *An action plan for increased water and sewerage tariffs prepared and tested to allow long-term financially sustainable operation, maintenance and expansion of services to' 100 per cent of domestic, municipal and industrial service users in the urban service area.*
- *National Program designed for dissemination of lessons from Shijiazhuang and other cities, and provision of training for municipalities on implementation of strategies for demand management of water and sanitation services.*

The approach to address the problems and objectives, as set out in the project document was refined as the formulation of the project developed. Originally the project proposed adopting a strong technical focus, which promoted a combination of water management and water price system reform together with strong technical inputs for improved wastewater treatment and re-use. Originally it was proposed, that the international consulting requirements, study tours, training courses were to focus on:

- Urban water resource management
- Water conservation
- Wastewater treatment, reclamation and re-use and groundwater recharge.

Later development of the project design saw the strengthening of an approach promoting technical aspects combined with increased financial, economic and social considerations for improved demand management of water resources. The overall strategic approach finally adopted by the project sought to:

- Foster institutional reform and organizational consolidation;
- Support tariff adjustment measures that will provide the financial basis for independently operated water and wastewater companies; and
- Provide technical assistance for water conservation

The project document clearly identified two groups of project beneficiaries - immediate beneficiaries and further beneficiaries. The evaluation found that the immediate beneficiaries played a significant and meaningful role in both the preparation as well as the implementation of the project. The further beneficiaries had less of a role in the project formulation and design but did benefit through the implementation of the project. The evaluation mission found that the project document could have strengthened its approach with regard to the training interventions, the public awareness campaigns and

materials to be developed to support these activities, to ensure that these activities included tasks that specifically recognized the important role women play as consumers in water resources management.

Institutionally the project proposed to work at both the National and Municipal/Local levels of government to strengthen these institutions and improve their levels of coordination in addressing water resources management and reform, which are nation wide issues. The Ministry of Construction (MOC), which has

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national responsibility for urban water supply services, was selected as the implementing agency. A National Project Coordination Unit (NPCU) providing overall guidance supported them and facilitated

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project coordination and management. These institutional arrangements were assessed to be appropriate and effective.

Project inputs and scheduling were also assessed to be both appropriate and realistic, although the implementation schedule provided only a broad indication of the proposed timing for project activities and did not indicate specific timing for international expert and national consultant inputs. Whilst assignment terms of reference (TOR) were included for the international experts, quality indicators for the reporting to be prepared by international experts and national consultants were not included in the project document. Assignment terms of reference (TOR) for project assignments by national consultants were prepared during the project implementation by CICETE and MOC.

The project document clearly set out the risks it expected the project to face and the end of project situation that was expected. Whilst the document did not include a logical framework matrix, it is acknowledged that primarily as a capacity building only project, it is often difficult to establish meaningful indicators that are both easily verifiable and quantifiable. The project, as formulated, also fitted quite well the comparative advantages of UNDP and sought to address issues in most of the areas of UNDP concentration, such as:

Poverty alleviation and grass roots participation in development

- Environmental problems and natural resources management
- Management development
- Technical cooperation between developing countries
- Transfer of technology; and
- Women in development

Project monitoring was to follow the usual UNDP review, reporting and evaluation requirements with the National Project Coordinator situated in MOC having the leads responsibility for monitoring and reporting project progress. No separate provision was identified in the project budget specifically for project

monitoring.

The evaluation mission found that given the accelerating environment in China for the reform of Government enterprises and in particular service utilities, the project purpose, approach and modality of execution remained relevant throughout implementation, and still remains highly relevant to the needs of all project beneficiaries in the sector. Given the difficulties that China was reportedly facing in the mid-1990s with urban water management, the project was relevant and timely.

The selection of Shijiazhuang, located in the water-scarce northern provinces of China was particularly relevant to the reform of urban water resources management. In these northern provinces, the unmet demand for urban water supply in large urban centres was increasing rapidly, costs of providing urban water services were rising faster than price inflation and municipalities and provinces could not afford increasing subsidies to meet needs. Outdated and overly bureaucratic institutions were unable to respond quickly and positively to the rapidly emerging problems.

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Institutional and management reforms adopting a modern combination of technical, financial and social approaches as provided by the project were needed. The project was able to trial these new approaches to reform during the pilot project in Shijiazhuang and then share the learning experiences gained through provincial, regional and national workshops in seminars and workshops in Shijiazhuang and Beijing. Delegates and municipal/provincial officials responsible for water resources management in other urban centres throughout China attended these. The project was certainly a facilitator of and catalyst for reform in the urban water management sector in China.

When the project commenced in 1997, municipal/provincial authorities throughout China were generally reluctant to increase water tariffs and use water pricing as a means to control demand for water. The project tackled this issue head on in Shijiazhuang. With MOC as project implementing agency and the national institution responsible for urban water supply and water resources policy development and monitoring, this approach of using water pricing as a demand control tool appears to now be approaching adoption nationwide. The China Daily of 21 February 2001 reported " the price of water will increase over the next five years as the nation seeks to douse the unrestrained and wasteful use by industry and farming before a water supply crisis is at hand" .

The evaluation found Project achievements at both the municipal level in Shijiazhuang and at national level in MOC to be impressive. The project was instrumental in encouraging the water and wastewater management authorities and the Municipal Government in Shijiazhuang to adopt the open market economic view that water is an "economic good" and not simply a "social good" . An analysis of the intended results shows that all of the project objectives were realized through the successful completion of 92.5% of the planned project activities.

The project activities that were unable to be completed in full are few and do little to diminish the overall positive achievements of the project. In general they do not detract from the achievement of project objectives, but they are activities that could have complemented and increased the potential for the project to make quality, long term, sustainable impacts on improved public and institutional awareness of tariff and institutional reform in the provision of water supply services and the management of water resources.

A number of these shortcomings were identified during the implementation of the project and steps were taken at Tripartite Review Meetings to try to ensure that these activities were addressed. It is assessed that it may have been difficult for institutions at both the National and Local level to effectively undertake the public awareness and education campaign activities without assistance from an international expert. Information, education and communication (IEC) techniques used to promote

modern public awareness campaigns are just being introduced in China. Similarly modern approaches in urban services management, which promote improved quality of services and customer relations, have also been introduced in recent years.

The GOPRC, at both the national and municipal level, maintained a strong commitment to the project throughout. Almost all of the activities requiring coordination among Government agencies at the National and Local level were found to have been well executed. Political support has been provided at the highest levels of Government as and when required. The evaluation team found that the Government views the project as very successful and one, which has provided them with knowledge of the best international practices and strategies for effective water resources management in a market oriented economy. The project has been timely and the approaches adopted fit well with GOPRC' s drive to see urban public utilities become more effective and financially independent.

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Project mobilization was a little slower than planned due to difficulties in recruiting suitably qualified international experts who were available to undertake project assignments at the times scheduled in the project work plan. But overall, appropriate and competent technical inputs and services were provided in a timely manner. This allowed project implementation to remain close to the originally planned schedule. The evaluation did identify a clear bias in the selection of mostly male candidates to fill international expert and national/municipal consultant positions. This probably reflects both an international and national dominance of male professionals working in the water supply and sanitation and water resources disciplines but the evaluation team felt that a more appropriate balance could have been possible.

In reviewing project documents, the evaluation team found a clear change of thinking and focus exhibited in the later project reports prepared by the national consultants and MGS staff. These reports reflect acceptance of the project introduced economic, financial and technical approaches applied to water resources management. Many of these approaches promoting international best practice were also reinforced for the national and municipal consultants during project funded study tours and fellowships to overseas countries. It is less evident that the social approaches focusing on strong customer relations and public awareness of water resources reform and conservation issues are as strongly embedded. There is confidence that the national and municipal consultants engaged on the project are able to continue to apply the experiences they have gained in their regular work activities.

Most of the national consultants engaged are linked to the MOC or its Departments and Institutes. MOC has national responsibility for the development of new policies for and the guidance of provincial, municipal and local agencies engaged in the provision of water supply and water resources management throughout China. There is positive optimism that the experiences gained by these experts on the 21st Century Urban Water Management Project will be evident in future similar activities that these staff undertake for other cities in China.

The evaluation team through the examination of project documents, field visits and discussions with UNDP, CICETE, MOC, MGS and AusAID staff and project beneficiaries prepared the following assessment of the Project' s results and impact.

<u>Project Output/Result</u>	<u>Impact</u>	<u>Comment</u>
Organizational and institutional	High	This strategy and plan formed the catalyst for

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reform strategy and action plan. going institutional reform now underway in Shijiazhuang. International study tours and fellowships had a high impact through the introduction of global management practices.

Water resources management case studies conducted to test improved collaboration	Low	Institutional reform not sufficiently advanced to really expect the testing interagency
sector agency collaboration and relationships. streamlined institutional framework.		and streamlined working

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Water resources information management system to facilitate inter-agency coordination and exchange of information.

Comprehensive economic analysis of water and wastewater service costs, the costs of inadequate wastewater management, and the current tariff systems.

Assessment of price and demand elasticity of water.

An action plan for revised water tariff structure for water and wastewater services and implementation schedule.

Proposed tariff structure tested.

Public awareness and education campaign to introduce and promote water conserving technologies and practices for domestic and industrial consumers, and to ensure public understanding and acceptance of the need for tariff increases.

Analysis of experience and current best practice in urban water management in Chinese cities and globally.

Analysis and documentation of lessons learned from the Shijiazhuang pilot project.

Medium Development of system a high impact for UWRC/MOC but now system needs to be purchased and operationalized by cities throughout China. Some form of incentive may be needed to increase interest from these cities.

High Provided MGS, its authorities and MOC with a clear economic and financial picture of existing urban water resources management costs and tariff. Formed a strong basis for

MGS agreeing to tariff reform plan.

- High Gave MGS and MOC confidence to proceed with tariff reforms and aided shift in their recognition of water as an " economic good" . Strong recognition also at National level.
- High This plan is clearly supported by MGS who are moving ahead with its implementation. Has had high impact at National level as MOC seek to encourage all urban centres to address tariff reforms.
- High MGS has seen that customer resistance to higher tariffs has been minimal. Has also shown MGS that tariffs can be used to moderate demand. Good recognition at National level from Shijiazhuang testing.
- Low Project could have benefited through input from an international expert in this field. Such campaigns and focus of customer service and relations are new for local authorities. Campaigning and materials development techniques used in other international countries are also not well known at present in China.
- Medium Given administrative arrangements and National/Provincial coordination it is difficult for MOC to build a complete, ' current picture of best practices, particularly within China.
- High Project sponsored workshops in Beijing and Shijiazhuang were effective in providing a forum for the analysis and documenting of Shijiazhuang pilot trials.

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From this successful project the evaluation team were able to identify a number of important lessons applicable to other areas of utility reform and to GOPRC' s water management strategies. These include:

- Stakeholder engagement As correctly recognized in the project, even reform-minded organizations can be very protective of their mandate and functional responsibilities. If they are not fully involved in the background analysis of their own organization or its operations and the decision-making processes that arise from the analysis, they will be reluctant to accept reforms and may, in fact, resist reorganization. Management and, in particular, workers of institutions are particularly cautious of reforms that they perceive are eroding or changing their responsibilities.
- Multiple case studies/pilot projects Future project designs and project implementation utilizing case studies may benefit from the selection of, at least, two or more pilot cities ( usually in different municipalities/provinces) so that the diversity of China and an element of competition can be introduced. The bureaucracy in China is not a unified central administration and significant differences do occur in institutional

organization and administrative procedures from province to province and/or municipality. This approach allows the project case studies/pilot projects to address a broader institutional picture that will provide more diverse lessons and experiences, which will be more appropriate for National dissemination.

- **Introduce international experience** This aspect of the project was particularly successful and appears to be an ideal project entry point for utility reform projects. The use of both short study tours and longer fellowships worked equally well. Future use of these activities needs to be well planned and structured so that exactly the correct aspects of management or a technical, financial and/or social issue are being addressed.
  
- **Phased implementation** Further benefits to timely and effective project implementation may be achieved by linking the flow of further project financial incentives to the achievements of clearly defined milestones to accelerate the pace of institutional reforms. Whilst this was not specifically an issue for this project, it could be with institutions that find it more difficult to reform. However, it must be cautioned that the financial incentives offered from an externally funded project should not be the strong motivating factor directing institutional reforms. Milestones and the use financial incentives need to be carefully structured to ensure that the pace of reform is in accordance with the aspirations of the target institution and its capacity to absorb these changes.
  
- **Project design** In this instance overall project design was good and relevant in addressing the identified problems and difficulties. However, it is felt that in designing future projects for utility or water management reform in China that the following issues should

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receive particular attention:

- Public awareness programs
- Gender issues
- Dissemination of project information
- Project quality issues

o **Project monitoring and evaluation** Whilst it is difficult to build greater and meaningful project monitoring and



evaluation activities into utility reform projects, it is considered that, where possible, the number of verifiable and quantifiable indicators (success criteria) needed to be increased and more intermediary milestones set to regularly monitor the implementation of all project activities.

It is also strongly recommended that project monitoring and evaluation activities be written up in the project document as a separate activity set and that a separate line item is provided for these activities in the project budget.

In undertaking the evaluation of this project, the team also looked at the broader sector issues facing services utility reform in China and identified a number of key constraints and issues that are still to be fully addressed. These include:

- o Institutional diversity Services utility institutions in China whilst working to Nationally framed legislation and guidelines often use quite different organizational structures and diverse operational procedures. These institutions, being under Municipal or Provincial Governments, reflect the often quite large differences that exist in bureaucratic establishment and procedures across the municipalities and provinces in China. These variations exist due to the relatively flexible nature of some legislation and procedural regulations when drafted. Often the result is overlap in institutional responsibilities and mandates.

Added to this is the advisory and policy making role of National ministries, which does not allow them to administer or direct the operations of Municipal/ Provincial institutions. They are often able to provide guidance only and have little or no budgetary strength to insist that National programmes be implemented in a uniform way.

- o Demand management approaches Past history has seen demand management solutions being purely technical in nature. In recent years there has been a shift to also consider the financial, economic and social aspects inherent in any attempt to moderate or change human behaviour or attitudes. These changes in approach are still not well-entrenched and further efforts are required to ensure that administrators are provided with and trained to use all of the tools that they may need in

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adopting a holistic approach to demand management.

- o Public awareness A public awareness program is an important tool that can be used to support utility/ institutional reform. Public opinion can be an important

factor in achieving Government support for reforms. The public, as customers of services utilities, are also important stakeholders in the reform process and need to be involved or informed about that process. In building the stronger customer relations, that characterize successful service utility institutions, a public awareness program plays a vital role.

Public awareness activities need to be designed into every project. It is important that schoolchildren be included in public awareness and education campaigns. Not only are the children the next generation of households, but even in China they can influence parents, thus saving on present consumption of water.

- v Cost of services The costs of all urban services in China, including water, will continue to increase significantly, in real terms, as incomes increase over the next 10 to 20 years. The challenge is that for these services to be sustainable, 'the tariffs and charges for the services also will need to continue to increase significantly. Long term plans for tariff increases to achieve cost recovery will need to be reviewed continually. Public awareness programs will be required to explain the costs of meeting urban service needs.

For urban water supply, the costs of providing services will continue to increase in real terms. Comparison of experience in countries around the world shows that costs of meeting water demands increase more rapidly when incomes are low, than when incomes are high. When urban household incomes average about RMB 2,000 per month, costs of water supply services average about RMB 2.5/m<sup>3</sup>. When household incomes average about RMB 15, 000 per month to RMB 20,000 per month, costs of water services average about RMB 5.0/m<sup>3</sup>. All in constant 1998 prices.

- a Governance standards Accounting and reporting procedures used by some urban service utility companies have improved dramatically over the past five years. However, the procedures followed by many urban service utility companies require significant improvement in order to approach acceptable international standards. These standards are a desirable basis for good governance, for worthwhile economic and incentive regulation and to attract reliable private investment.

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a Regulatory control

With continued water price increases, the relative monopoly position of water supply companies and

wastewater companies will come under increasing scrutiny. As revenue approaches cost recovery level, it is likely that there will be some conspicuous refurbishment of water supply company offices and facilities. Questions will start to be asked about the use of water supply revenues. There will begin to be concerns expressed about the fairness of prices, lack of competition, cost control and quality of service. Efficiency, service levels and quality, cost control and competition can be achieved by independent economic regulation and incentive regulation. Around the world there already exists a number of successful models.

It is desirable that independent economic and incentive regulation be in place before widespread private participation in urban water supply service provision is permitted so as to reduce the risk and growth of unscrupulous practices.

o Resources exploitation and management The present level of natural resources use (including water) in many areas of China is not sustainable. The present overexploitation needs to be controlled through a combination of legislation/regulation and punitive charges. With appropriate and adequate resource fees charged to all users demands will be reduced. Incentive schemes may be appropriate to encourage resource savings/protection and the use of renewable resources.

o Private sector participation In the 21st Century, urban service utility companies will be major stakeholders in urban services delivery, its planning, operation, management, and financing. International financiers are emphasizing and supporting the need for institutional and financial strengthening of these utilities. As a basis for future private participation, there is much that needs to be done in transferring assets to the companies, strengthening accounting, management information systems, planning and public relations sections in the companies. Much also needs to be done to take the utilities nearer to a corporate structure and operational entity, to be responsible for the design, construction, operation and maintenance of all the urban water facilities and to be responsible to an independent board of directors. The utilities need to be able to finance capital expansion and to be fully responsible for servicing debts. They need to be able to sue and to be sued. They need to be confidently able to meet regulated service levels and provide quality services.

Some service utility institutions in China are taking tentative steps in this direction. A number are actively down sizing and arranging to out-source or contract former workers as private contractors to provide the

performed. These are all positive steps along the path to sustainable reforms.

In completing this evaluation, the team also identified that related to this sector in China there are further opportunities for UNDP assistance in the following strategic areas:

U Demand management approaches and public awareness

building .o Governance standards; and

o Regulatory control

A UNDP Project Evaluation Information Sheet was also completed by the evaluation team as the final task of their assignment and is attached to this report.

## 1 PROJECT EVALUATION

Commenced in late 1997, the UNDP/AusAID 21<sup>st</sup> Century Urban Water Management Project aimed to bring about institutional reforms to improve urban water and wastewater management; to bring about tariff reforms to improve cost recovery; and to bring about better pricing to improve urban water demand management. The Municipality of Shijiazhuang was selected as a pilot area to test processes for institutional improvement and to plan tariff increases to achieve cost recovery and demonstrate the influence of price in water demand management. The project was completed in 2000.

As this project was in the final stage of implementation, an evaluation was conducted to assess the design, relevance and performance of the project. The evaluation would also be used to identify lessons learned from the project implementation. The questions to be raised and addressed by the evaluation team were included in the Terms of Reference document, which is given in **Appendix 1**.

The evaluation was undertaken in China from 1<sup>st</sup> to 15<sup>th</sup> February 2001. The evaluation team comprised Mr John Gildea as Team Leader and Urban Water Supply/Institutional Specialist and Madam Qian Yi as Environmental/Water Resources Specialist. The evaluation mission initially met with UNDP, CICETE and MOC at the beginning of the evaluation mission. AusAID was also invited to participate in the meetings but could not due to other contingencies. The following steps were then undertaken to complete the evaluation:

- Project documentation review
- Meetings with stakeholders in both Beijing and Shijiazhuang
- Field visits to water supply, water treatment and wastewater facilities in Shijiazhuang

- Follow-up meetings with stakeholders
- Draft report preparation and presentation; and
- Report finalization

The detailed itinerary and persons met by the evaluation team is provided at **Appendix 2**. AusAID, Beijing was invited to attend all stakeholder meetings.

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## 2 PROJECT DESIGN

### **2.1 Context of the Project**

In the mid 1990's urban water management in China was facing crisis. Demand for urban water supply was increasing rapidly. The need for sewerage improvement and wastewater treatment was escalating dramatically. Costs of providing urban water services were rising faster than price inflation. Municipalities and provinces could not afford increasing subsidies to meet needs. In many areas groundwater was overexploited leading to problems of polluted water supply and land subsidence. Cumbersome institutional arrangements were causing response to problems to be slow. The continued provision of adequate water services in China's cities would not be sustainable without rapid and appropriate action.

Against this background the Municipal Government of Shijiazhuang (MGS) sought UNDP assistance to address their water resources and water supply shortages through technical interventions promoting wastewater re-use and improved water management. The complementary considerations of using economic, financial and social interventions to try to slow water resource demands and consumption had not been included at that stage. During UNDP's further assistance to CICETE and the MGS in project formulation these economic, financial and social considerations were introduced into the project.

The Project as formulated fitted well into GOPRC national sector and sub-sector plans. GOPRC was seeking to continue and speed up the institutional reform in urban public sector utilities through the adoption of new technologies and market oriented management approaches. Involvement with this Project continued the active support of UNDP China in water resources development planning and management. It built upon previous UNDP assistance, such as the North China Water Management Study (CPR/88/068) and China Water Sector Assessment, Guizhou (CPR/91/140). Since the work envisaged under the Project was policy development oriented and strategic, it would provide a comprehensive demonstration guide for the other cities in China. UNDP's multi-lateral neutrality appeared to have been preferred over other support that may have commercial interests in the result of the project.

The Project also brought strong linkages to other sources of external assistance directed to both the National and local levels. ADB was embarking upon a National Water Tariff Study' to be undertaken with UWRC/MOC and World Bank was discussing with the MGS support for the Hebei Urban Environment Project. This project sought to improve the urban environment in five cities of Hebei province through improved management of urban utilities and the rehabilitation and upgrading of urban services The Bank was seeking a commitment from MGS to also undertake institutional reform as an integral

component of this proposed project.

From 1993 to 1996, the Australian Agency for International Development (AusAID) had assisted the MGS with the construction of a new water treatment plant with a capacity of 300,000 m<sup>3</sup>/day. This plant was drawing water from a surface water reservoir 22 kilometers away. A further seven water treatment plants were in operation throughout the city of Shijiazhuang but all were drawing on groundwater sources. Due to the extreme over exploitation of the groundwater resources, MGS was seeking

National Water Tariff Study, TA No. 2773-PRC, Asian Development Bank - Implementing consultant was the S M Group International Incorporated.

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*assistance to curb groundwater extraction through more effective water resources management and service more of the water demand in Shijiazhuang from the newly constructed water treatment plant.*

*Following the submission of a project proposal document<sup>2</sup> prepared by the Municipal Government of Shijiazhuang, UNDP and CICETE mobilized a project formulation mission, which visited Shijiazhuang from 18 April to 23 April 1996. Consultants, UNDP, CICETE, MOC and MGS participated in the formulation mission. A draft project document was then prepared. During the formulation of the project, UNDP consulted with AusAID regarding potential cooperation opportunities. AusAID indicated strong interest in participating in the project and confirmed cost sharing to support some activities. At a meeting, held in Beijing on 9 June 1997, UNDP, AusAID, CICETE and the expert team finalized the project document.*

The completed project document was signed on 9 July 1997. A summary of the project design is contained in the project logical framework matrix given in **Appendix 3**.

## **2.2 Project Document**

### *2.2.1 Problem Identification*

*The project document set out clearly the problems it sought to address. These were:*

- Fragmented organizational and institutional framework*
- Lack of financial resources to maintain and expand existing "infrastructure to meet future demand*
- Lack of tools for holistic management of urban water resources*
- Inefficient water use*
- No national support program for cities facing water crises*

### *2.2.2 Project Objectives*

*The project, as designed had three stated objectives, as follows:*

- *Organizational and institutional framework and pilot implementation modalities in place for efficient and demand-responsive urban water and waste water management in Shijiazhuang.*
- *An action plan for increased water and sewerage tariffs prepared and tested to allow long-term financially sustainable operation, maintenance and expansion of services to 100 per cent of domestic, municipal and industrial service users in the urban service area.*
- *National Program designed for dissemination of lessons from Shijiazhuang and other cities, and provision of training for municipalities on implementation of strategies for demand management of water and sanitation services.*

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**Brief Introduction to Shijiazhuang Water Resources and Management, Municipal Government of Shijiazhuang, April 1996.**

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2.2.3 Project Approach

The overall approach selected to address the problems and objectives set out above changed, to some extent, as the formulation of the project developed. Originally the project was to adopt a strong technical focus on promoting a combination of water management and water price system reform together with strong technical inputs for improved wastewater treatment and re-use. The original international consulting requirements, study tours, training courses were to focus on:

- Urban water resource management
- Water conservation
- Wastewater treatment, reclamation and re-use and groundwater recharge.

Later development of the project design saw the strengthening of an approach promoting technical aspects combined with increased financial, economic and social considerations for improved demand management of water resources. The overall strategic approach finally adopted by the project sought to:

- Foster institutional reform and organizational consolidation;
- Support tariff adjustment measures that will provide the financial basis for independently operated water and wastewater companies; and
- Provide technical assistance for water conservation.

Assisting the implementation of this approach, the project would carry out a pilot project in one city ( Shijiazhuang) to determine the most appropriate methodology for carrying out fiscal, organizational and

institutional reforms. The pilot approach would be based on known current best practices in other Chinese cities as well as global experience. The pilot phase would also provide MOC with time and experience with which to develop the institutional capacity to plan and implement the national program.

The project design documentation noted that organizations could be very protective of their mandates and functional responsibilities. If not fully involved in the analytical and decision making processes, they might resist efforts at reorganization and institutional reform that involve erosion or change of their responsibilities. Recognizing the complexity of this issue the project proposed that a three phased approach be adopted to promote and implement reforms. These were:

1. Carry out an in-depth organizational and institutional situation assessment and needs analysis. Based on this analysis, a strategy and action plan for reforms would be prepared in close consultation with all stakeholders. A reform strategy and action plan would provide recommendations on the establishment of an integrated urban water management authority, and consolidation of the existing multi-agency structure.

To support integrated water management, the project would also develop a comprehensive management information system. To be developed as a computer network based system, this would enable agencies to test alternative water management and conservation scenarios.

2. Supporting water tariff reforms, a detailed financial and economic analysis of water management would be undertaken and a revised tariff schedule with implementation plan would be prepared and tested. The analysis would also assess the willingness to pay of end users and assist in predicting

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their reaction to different price increases. It was expected to be an important tool for informed decision making in the water and wastewater management sector.

3. Based on the pilot experience, the project was to assist MOC at the national level in developing a dissemination and training plan supporting the preparation of the national programme on sustainable urban water resource management in China. In the final phase, training and technical support would be introduced in additional cities in Hebei Province.

With the agreement of AusAID to commit to the proposed project, some project objectives were broadened slightly through increasing the number of international study tours and the number of participants able to undertake each study tour. A further output, incorporating a public awareness campaign was also added.

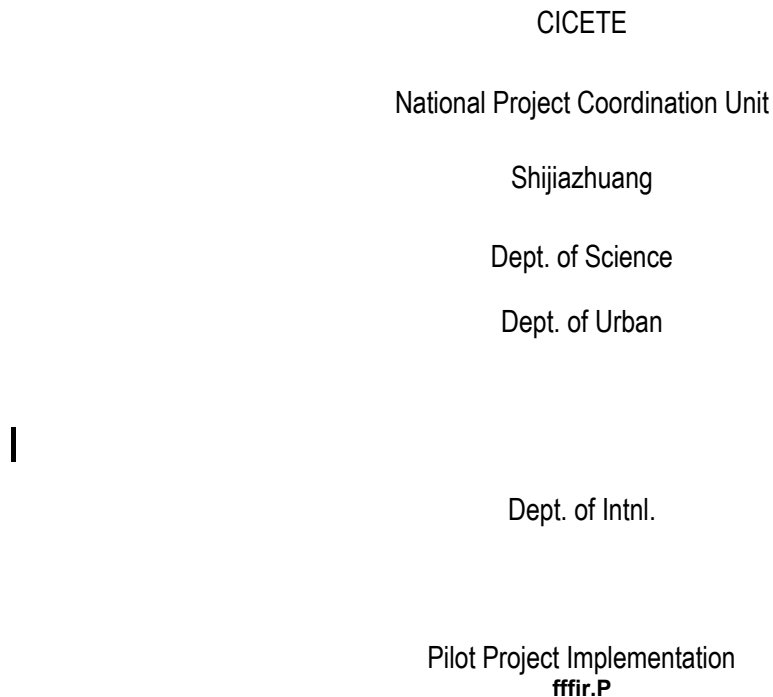
#### 2.2.4 Project Institutional Arrangements

The institutional arrangements proposed in the original project background documentation were carried into the project design. The project, as proposed would work at both the National and Municipal/Local levels of Government to strengthen these institutions and improve their levels of coordination in addressing water resources management and reform, which are nation wide issues. A chart showing the complex organizational structure for the institutions in Shijiazhuang working in the provision of urban water and wastewater services was provided in the project document.



The institutional arrangements adopted by the project are shown in **Figure 1.1**.

**Figure 1.1 Project Institutional Arrangements for Implementation**



The project was to be executed by the China International Center for Economic and Technical Exchange (CICETE) under the Ministry of Foreign Technical and Economic Cooperation (MOFTEC).

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Having national responsibility for urban water supply services, the Ministry of Construction (MOC) was selected as the implementing agency for the project. It would be the focal agency for planning and coordinating the implementation of the dissemination and training plan. It would also have the lead responsibility for compiling pilot project reports, monitoring progress and ensuring the project objectives were being met.

A National Project Coordination Unit (NPCU) was to be set up to provide overall guidance and facilitate project coordination and management. It was to be headed by a National Project Director (NPD) from the Ministry of Construction. A Deputy Mayor of the Shijiazhuang Municipal Government would also be

a member of the NPCU and serve as the Deputy Project Director. Staff drawn from the MOC Departments of Science and Technology, Urban Construction and International Relations would be responsible for the operational tasks of project implementation.

At the local level, it was proposed that a Pilot Project Implementation Unit (PPIU) be established by the Municipal Government of Shijiazhuang to oversee project implementation. A full time Pilot Project Coordinator would be recruited to assist with project management and technical coordination.

## 2.2.5 Project Beneficiaries

The project document identified two sets of project beneficiaries. They were clearly shown as

follows: Immediate Beneficiaries

- *Agencies involved in water and wastewater management for the City of Shijiazhuang;*
- *Staff of relevant departments of the Ministry of*

Construction Further Beneficiaries

- *Citizens of Shijiazhuang and downstream residents will also benefit from improved water quality and environmental health conditions.*
- *In the longer term, other cities facing similar water and sanitation crises and the need for sector institutional reform and tariff increases will benefit by being able to learn from the pilot experience in Shijiazhuang.*

From the project files associated with the formulation of the project, it is evident that the immediate beneficiaries identified above did play a meaningful role in the preparation of the project. The further beneficiaries did not have a substantive role in the project identification and formulation.

Owing to the broader capacity building and organizational reform nature of the project no special concerns and needs of, and potential contributions from women were recognized in the project document. There is little doubt that in describing the training interventions, the public awareness campaigns and materials to be developed to support these activities, the document should have ensured that these activities in fact undertook tasks that specifically recognized the important role women play as consumers in water resources management.

A logical framework matrix was not prepared as part of the project document. The logical framework matrix given at Appendix 3 has been prepared as part of the evaluation mission's review. Whilst the project objectives and outputs have been clearly stated in the project document, the verifiable indicators (listed in the project document as " success criteria" ) are less clear and quantifiable. The project as designed has a considerable number of outputs yet the verifiable indicators are few. Most of the indicators selected are verifiable and but a lesser number are quantifiable. It is acknowledged that this

is primarily a capacity building project and as such it is often difficult to establish meaningful indicators

that are both easily verified and quantifiable.

#### 2.2.6 Project Inputs and Scheduling

The inputs outlined in the project document appeared to be consistent with the project's outputs and activities. All major initiatives were to be supported with inputs from both international experts and national consultants except for the public awareness activities. This appears to be a considerable oversight given that canvassing public opinion and input to policy formulation and development as well as awareness campaigns is a relatively new phenomenon in China. Public utility enterprises utilizing international best practices place great emphasis on developing improved customer service and customer relations. It would seem to have been appropriate for the project as designed to require a short input from an international expert, experienced in this field.

A proposed list of equipment to be procured under the project was included in the project document and was appropriate.

The implementation schedule as set out in the project document is shown at Appendix 4. The phasing and timing of project activities proved to be realistic. The implementation schedule provided only a broad indication of the proposed timing for project activities and did not indicate the detailed timing for international expert and national consultant inputs.

Terms of Reference for all of the international experts proposed in the project document and the Pilot Project Coordinator were given in the project document. These TORs specified the tasks, responsibilities, expected duration of assignments and qualifications expected for each position. The outputs required in the form of training activities to complete and working papers, training papers and reports to prepare were not included. Quality requirements for the project reports to be prepared were not included.

Terms of Reference for all national consultants were not included in the project document. Upon the commencement of the project, these were prepared by CICETE/MOC and were modeled on the tasks/activities outlined in the project document to be undertaken by the international experts. These TORs also specified the tasks, responsibilities and expected duration of assignments. The outputs required in the form of training activities to complete and working papers, training papers and reports to prepare is not detailed. Quality requirements for project reports were not included.

#### 2.2.7 Project Assumptions and Risks

There is no statement of assumptions in the project document but some can be inherently drawn from the statement of risks that is included in the project document. The document states that the project is likely to face four significant risks. These risks, as stated in the project document, were as follows:

Risk	Comment	Level
Local organizations	At present, all local government agencies are constrained by limited	Med.

may be unwilling to modify existing mandates.	financial resources and are therefore protective of whatever sources of revenue they currently control, and of sectoral mandates that justify budget allocations. Though the process of organizational consolidation and streamlining, mandates will inevitably change and some agencies will have reduced or eliminated responsibilities in the water sector. However, in the pilot city of Shijiazhuang, the agencies	
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	themselves have recognized the need for change, and the pilot project has strong support from the Mayor's office.	
Central Government agencies and the Municipal Government may not cooperate adequately or coordinate functions.	This project will be innovative and the functional relationships between MOC and the Municipal Government of Shijiazhuang (as well as any Provincial agencies that may become involved) are not well defined. There is risk that these agencies will not be able to agree on satisfactory divisions of responsibility or authority. However a major objective of the project launch workshop to be held at the outset of implementation will be to resolve and define the functional relationships through a consensual process involving all stakeholders.	Med.
Lack of political will to carry out institutional reforms.	To enhance local decision-making and local financial independence, regulatory and legislative changes may be required at several levels. These changes may also have implications regarding central and provincial government control and authority, which may lead to a lack of political will to make the changes. However, prevailing policy trends and legislation already under consideration indicate that central government will support increased, but still limited, local autonomy for water sector agencies with appropriate reforms.	Med. to Low
Negative reaction from service consumers to tariff increases.	The willingness and ability of consumers to pay more for already fairly high service levels is not yet well understood. Large and sudden increase in tariffs may lead to increased attempts to steal water and avoid more costly wastewater treatment services. For industries, increased wastewater treatment costs in the absence of higher pollution fees may lead to economic choices in favor of increased pollution. This would erode revenues and inhibit water conservation. However, laws and regulations pertaining to tariffs are generally strictly enforced in China, and penalties for non-compliance severe. Pollution fees are also steadily increasing. Also the public awareness and education campaigns to be carried out through the project should ameliorate public resistance.	Med. to Low

The expected end of project situation was clearly outlined, in the project document, as follows:

- A process for establishing a consolidated, more efficient and responsive organizational structure supported by appropriate institutional rules will be in place in one demonstration city,

Shijiazhuang.

- An action plan for implementing a revised tariff structure will have been prepared that aims towards full recovery of O&M and capital costs for water supply and wastewater management, and that is sufficient to finance infrastructure expansion in response to future needs in Shijiazhuang.
- The financial management and revenue-earning conditions will have been established to enable the Municipality of Shijiazhuang to access additional external resources for the extension of its water and wastewater infrastructure

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- o A dissemination and training plan will be formulated to support the Ministry of Construction in implementing its national programme for sustainable urban water resources management in China.

Supporting the project document is an Agreement between UNDP and the Government of Australia outlining AusAID's contribution to the funding of the project.

## 2.2.8 Addressing UNDP Comparative Advantages

Whilst not specifically discussed in the project document or background files, the project as formulated, fitted quite well the comparative advantages of UNDP and sought to address issues in most of the areas of UNDP concentration. These areas of concentration are as follows:

- *Poverty alleviation and grass roots participation in development* *Whilst not specifically addressing poverty alleviation, the project's tariff reform activities would guide tariff policy development and setting for poor households. The public awareness for water conservation and the public hearing activities for tariff reforms would bring consumer participation into the project.*
- *Environmental problems and natural resources management* *In promoting international practices for water resources management and conservation, the project had the potential to make significant impacts in this area throughout China.*
- *Management development* *The project brought a strong focus to improved market oriented management of a public utility and the institutional reforms needed to make that sustainable.*

- *Technical cooperation between developing countries* Given the fellowships provided within the project it was proposed that training be undertaken in Thailand, Malaysia or Singapore.

*The gaining of international experience and technologies* associated with best practice water supply and water resources management was to be delivered through a number of structured study tours to UK, France, USA, Australia and New Zealand.

- *Women in development* Not a specific focus for the project, but improvements to water supply services to households in Shijiazhuang initially and then other cities, throughout China would benefit women as well as men.

- Transfer of technology

The project document indicated that the National Project Coordinator situated in MOC would have the lead responsibility for monitoring project progress<sup>3</sup>. The project would follow the usual UNDP review, reporting and evaluation requirements<sup>4</sup> set out in the project document. These would include:

- Preparation of an annual Project Performance Evaluation Report (PPER), which will describe project status and results to date, major achievements, any constraints encountered and the modalities for overcoming them, and any proposed changes in the work plan or strategy.
- Additional PPERs, as requested.
- Annual tripartite reviews (TPR) - a joint review by representatives of the Government, UNDP and AusAID to review each PPER
- Project Terminal report
- Technical reports; and
- Project Evaluation report

The following preliminary schedule for tripartite review meetings was proposed:

<u>Type of Review</u>	<u>Location</u>	<u>Date</u>
1st Tripartite Review	Beijing	July, 1998
2nd Tripartite Review	Shijiazhuang	July, 1999
Terminal Tripartite Review	Beijing	December, 1999

No separate provision was identified in the project document budget specifically for project monitoring.

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Section 4, *Institutional Arrangements/Project Management Structure*, Project Document, page 9

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Section G, Project Document, page 20

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### 3 PROJECT RELEVANCE

#### **3.1 Relevance to Project Beneficiaries**

Given the accelerating environment in China for the reform of Government enterprises and in particular service utilities, the project purpose, approach and modality of execution remained, throughout implementation, and still remains highly relevant to the needs of all project beneficiaries in the sector.

The project beneficiaries were identified as:

- *Agencies involved in water and wastewater management for the City of Shijiazhuang;*
- *Staff of relevant departments of the Ministry of Construction*

*↳ Citizens of Shijiazhuang and downstream residents who will also benefit from improved water quality and environmental health conditions.*

- *In the longer term, other cities facing similar water and sanitation crises and the need for sector institutional reform and tariff increases will benefit by being able to learn from the pilot experience in Shijiazhuang.*

For all of them the project addressed the problems and issues they faced in 1996 in a new and innovative way. It chose not to follow the traditional approach of adopting technical solutions only in trying to address the growing water demands of urban populations. Its combination of a technical approach together with increased financial, economic and social considerations for the management of

water resources was a new and untested approach for China. This approach brought the Municipal Government of Shijiazhuang, the relevant water resources authorities and the citizens of Shijiazhuang (as consumers) in to closer contact in order to address the problems they all faced.

There is little doubt that resources allocation and management in large urban centres cannot be simply tackled by one authority or institution alone. These problems are usually technically and financially complex and in modern society impact upon a wide cross section of Government, management enterprises and the public as consumers. The project was timely in introducing this multi-sectoral approach to resources management in China.

### **3.2 Relevance to National Urban Water Management Reform**

Given the difficulties, described in Section 2.1 that China was facing in the mid-1990s with urban water management, the project was relevant and timely. The selection of Shijiazhuang, located in the water-scarce northern provinces of China was particularly relevant to the reform of urban water resources management.

In these northern provinces, the unmet demand for urban water supply in large urban centres was increasing rapidly, costs of providing urban water services were rising faster than price inflation and municipalities and provinces could not afford increasing subsidies to meet needs. Outdated and overly bureaucratic institutions were unable to respond quickly and positively to the rapidly emerging problems.

Institutional and management reforms adopting a modern combination of technical, financial and social approaches as provided by the project were needed. The project was able to trial these new approaches to reform during the pilot project in Shijiazhuang and then share the learning experiences

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gained through provincial, regional and national workshops in seminars and workshops in Shijiazhuang and Beijing. Delegates and municipal/provincial officials responsible for water resources management in other urban centres throughout China attended these. The project was certainly a facilitator of and catalyst for reform in the urban water management sector in China.

When the project commenced in 1997, municipal/provincial authorities throughout China were generally reluctant to increase water tariffs and use water pricing as a means to control demand for water. The project tackled this issue head on in Shijiazhuang. With the Ministry of Construction as project implementing agency and the national institution responsible for urban water supply and water resources policy development and monitoring, this approach of using water pricing as a demand control tool appears to now be approaching adoption nationwide. The *China Daily* of 21 February 2001 reports

" the price of water will increase over the next five years as the nation seeks to douse the unrestrained and wasteful use by industry and farming before a water supply crisis is at hand" .

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## 4 PROJECT PERFORMANCE

### 4.1 Achievement of Intended Results

Project achievements at both the municipal level in Shijiazhuang and at national level in MOC are impressive. The project was instrumental in encouraging the water and wastewater management authorities and the Municipal Government in Shijiazhuang to adopt the open market economic view that water is an "economic good" and not simply a "social good" .

An analysis of the intended results (as shown in the project logical framework matrix - Appendix 3) shows that all of the project objectives were realized through the successful completion of 92.5% of the planned project activities. This analysis is presented to project output level in **Table 4.1**.

**Table 4.1: Analysis of Project Achievements**

<u>Objective/Output</u>	<u>Evaluation Comment</u>
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**Objective 1:** *Organizational and institutional framework and pilot implementation modalities in place for efficient and demand-responsive urban water and wastewater management systems in Shijiazhuang.*

Output 1.1: Organizational and institutional situational analysis to identify needs and constraints to efficient water management.

Output 1.2: Organizational and institutional reform strategy and action plan.

Output 1.3: Water resources management case studies conducted to test improved sector agency collaboration and streamlined institutional framework.

Output 1.4: Water resources information management system to facilitate inter-agency coordination and exchange of information.

**Objective 2:** *An action plan for increased water and sewerage tariffs prepared and tested to allow longterm, financially sustainable operation, maintenance and expansion of [services](#). to 100 percent of domestic, municipal and industrial service users in the urban service area.*

Successfully completed in full.

Successfully completed in full.

Successfully completed in full. Note that not all improved management practices could be . implemented within the project timeframe so

the urban water management reform plan was revised to address constraints.

The water resources information management system was successfully developed and staff from Shijiazhuang and other cities were trained. The system software is in institutions in Shijiazhuang but further time is required to institutionalize the use of this system.

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Output 2.1: Comprehensive economic analysis of water and wastewater service costs, the costs of inadequate wastewater management, and the current tariff systems.

Output 2.2: Assessment of price and demand elasticity of water.

Output 2.3: An action plan for revised water tariff structure for water and wastewater services and implementation schedule.

Output 2.4: Proposed tariff structure tested.

Output 2.5: Public awareness and education campaign to introduce and promote water conserving technologies and practices for domestic and industrial consumers, and to ensure public understanding and acceptance of the need for tariff increases.

*Objective 3: National Program designed for dissemination of lessons from Shijiazhuang and other cities, and provision of training for municipalities on implementation of strategies for demand management of water and sanitation services.*

Successfully completed in full.

Successfully completed however Activity 2.2.1 was not undertaken<sup>5</sup>.

Successfully completed in full.

Successfully completed and the evaluation team was provided with brief reports. Records detailing changes in bill payment delinquency/ defaults and actual revenues were not included. The public hearings organized by the PPIU made a contribution to the monitoring required.

Partially completed. The raising of public awareness as outlined in urban water institutional specialist's reports<sup>78</sup> and the summary<sup>9</sup> of the September 1999 Project Workshop prepared by the MOC Public Awareness Campaign Consultant was only partially pursued.

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Mission Report, Water Resource Economist, July 1998, UNDP Project Report No.3 reports " that the required activity was not considered to be appropriate, so was not undertaken" . The evaluation team does not support this assessment.

Analysis Report of Public Response and Water Demand after Water Tariff Adjusting, Ma Xiang-ling, June 1999, UNDP Report No. 65

Inception Report on Institutional Arrangements, Thames Water International Consulting, (not dated), UNDP Report No. 7

Appendix F, Interim Report on Institutional Arrangements, Thames Water International Consulting, (not dated), UNDP Report No. 8

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Output 3.1: Analysis of experience and current best practice in urban water management in Chinese cities and globally.	Successfully completed
Output 3.2: Analysis and documentation of lessons learned from the Shijiazhuang pilot project.	Successfully completed
Output 3.3: Package of demand management orientation and training materials.	Successfully completed, however MOC that additional budget would have resulted in better packaging of materials for multi-use.
Output 3.4: National dissemination and training plan.	Successfully completed through National workshops and conferences.

The project activities that were unable to be completed in full are few and do little to diminish the overall positive achievements of the project. In general they do not detract from the achievement of project objectives, but they are activities that are likely to complement and increase the potential for the project to make quality, long term, sustainable impacts on improved public and institutional awareness

of tariff and institutional reform in the provision of water supply services and the management of water resources.

A number of the shortcomings discussed above were identified during the implementation of the project and steps were taken at Tripartite Review Meetings to try to ensure that these activities be addressed. It is evident that it would have been difficult for institutions at both the National and Local level to effectively undertake the activities under Output 2.5 without assistance from an international expert. Information, education and communication (IEC) techniques used to promote modern public awareness campaigns are just being introduced in China. Similarly modern approaches in urban services management, which promote improved quality of services and customer, relations, have also been introduced in recent years.

The GOPRC, at both the national and municipal level, has maintained a strong commitment to the project throughout. Almost all of the activities requiring coordination among Government agencies at the National and Local level were found to have been well executed. Political support has been provided at the highest levels of Government as and when required. The evaluation team found that the Government views the project as very successful and one, which has provided them with knowledge of the best international practices and strategies for effective water resources management in a market oriented' economy. The project has been timely and the approaches adopted fit well with GOPRC' s drive to see urban public utilities become more effective and financially independent.

#### 4.2 Effectiveness of Technical Inputs and Services

Project mobilization was a little slower than planned due to difficulties in recruiting suitably qualified international experts who were available to undertake project assignments at the times scheduled in the project work plan. It was necessary to identify and recruit a number of alternative international experts to those originally selected. Given these difficulties, it was agreed, in October 1997, that many of the main tasks scheduled for July to December 1997 should be delayed until after March 1998. This would also ensure that activities were better scheduled around the winter and spring holidays and the government elections, which were to follow in February/March 1998. A revised work plan was prepared

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for the entire project, discussed at the Project Launch Workshop (10th October 1997) and agreed. This revised work plan is shown in **Appendix 4**.

This revision to the work plan rescheduled the originally proposed inputs to be provided by most of the international experts, particularly the Financial Analyst/Tariff Specialist and Water Resources Economist. As many of the national consultants were mobilized in July 1997, they would undertake the initial phases of their assignments without the supporting inputs and guidance from international experts. This situation may have caused some national consultants to revisit work that they had already done. That is reflected in a number of the early national consultant assignment reports, which were later reviewed and redrafted to reflect the different approaches and thinking brought to the project by the international experts. Following these initial mobilization difficulties, the project implementation was then able to follow the revised work plan and implementation schedule.

Under the project, international experts and national consultants worked together with counterparts to research current global and local practices in urban water resources management and then applied that information in implementing project activities. A summary of all of the personnel inputs is provided at **Appendix 5**.

As shown below, the inputs for international experts proceeded generally in accordance with the project

document. It is difficult to accurately review the inputs, as often the expert involved has not provided the duration of their input in their Mission Report. The international expert inputs are summarized in the following **Table 4.1**.

**Table 4.1: Summary of International Expert Inputs**

Title	Name	Gender	Input PM	Design PM
Urban Water Institutional Specialist	Peter Jacques	M	4	4.5
Financial Analyst/Water Tariff Specialist	Lindsay Shepherd	M	3	2
Water Resources Economist	Jim Elston	M	3	7.5

Note that the design person months were again amended during the October 1997 revisions to the project implementation schedule. The proposed inputs for the urban water institutional specialist and the financial analyst/water tariff specialist were raised to 5 and 3 person months respectively whilst the inputs for the water resources economist were reduced to 6 person months. From the above table, it can be seen that only the financial analyst/water tariff specialist provided the full inputs as designed.

Towards the end of the project three new international experts were mobilized. It is not clear from project records whether or not approval was sought for these changes to be made. During the revision of the project implementation schedule in October 1997, it was agreed that Dr Wei Yan would be a valuable expert to be involved with training but no changes were made at that time to the proposed consultant positions. It is not evident how the other two international experts were selected to take part in the project. All appear to have been requested to prepare a paper on their technical subject area and

Missions to Washington, Beijing and Ulaanbaatar- Back to Office Report, UNDP Project Report No. 52

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present it at the project sponsored international seminar" held in Beijing in September 1999. The details of these experts are shown in **Table 4.2**.

**Table 4.2: Summary of Additional International Expert Inputs**

Title	Name	Gender	Person Design pm months
Urban Water Management Strategy Wean	M	0.5	Engineering and Quality Control
Glen Daigger	M	0.75	Water Conservation
	David Pyne	M	
			0.75

Some 17 national consultants (see Appendix 5), worked with the project: Some at the national level were

involved primarily in researching project subjects whilst, at the local level in Shijiazhuang, they were primarily involved in preparing the actual reform plans, implementation schedules and guiding the introduction of the reforms. The engagement of Chinese consultants at the national and municipal levels is summarized in **Table 4.3 and Table 4.4.**

**'Table 4.3: Summary of National Consultant Inputs**

Title	Name	Gender	input PM	Design PM
Urban Infrastructure Institutional Expert	Shao Yisheng		10	14
Water Law and Policy Expert	Song Lanhe	M	3	
Water Resources Economist	Hu Lianqi	M	4	
Water Tariff Expert	Zheng Xingcan	M	4	18
	Wang Yonghang	M	5	
Water Conservation Expert	Qiu Shenchu	M	4	12
	Long Tengrui	M	4	
	Wang Baozhen	M	4	
Public Awareness Campaign Expert	Guo Zhentong	M	6	8
Wastewater Treatment Planning Expert				4

21st Century Urban *Water* Management in China - International Seminar, Ministry of Construction, People' s Republic of China, Beijing, September 1999

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**Table 4.4: Summary of Municipal Consultant Inputs**

Title	Name	Gender	Input PM	Design PM
Pilot Project Coordinator	Ying Ruozhi	M	30	30
Urban Infrastructure Institutional Expert	Zhang Luzhong	M	4	

Feasibility/Case Study Team	Liu Yingcai	M	6	18
	Jin Shuhua		6	
	Li Yuzhu		6	
Water Resources Economist	Xu Zhenci	M	5	4*
Water Tariff Expert	Lu Shuangbao		5	
	Feng Qiancheng		1	
	Zhang Baoquan		1	
	Li Lusi		1	
	Liu Jianbo		1	
Public Awareness Campaign Expert	Wang Wenyuan	M	6	

\* Position called wastewater treatment planning consultant in project document.

As can be seen from Tables 4.3 and 4.4, there were some differences in the positions fielded and the duration of inputs compared to that stated in the project document. It is not clear why so many national consultants were often appointed to similar positions.

Examination of the above Tables 4.1 to 4.4 and Appendix 5 also shows a clear bias in the selection of male candidates to fill international expert and national/municipal consultant positions.

The Terms of Reference (TOR) prepared for national consultant positions did not exactly reflect the same positions as those outlined in the project document. However, all of the activities covered in the project document appear to have been addressed in the TORs prepared for the national consultants.

TORs were provided for the national consultant positions indicated in **Table 4.5**.

Staffing on the project remained stable throughout the entire project implementation period. There was minimal staff turnover and the project suffered no impacts due to staff shortages or unavailability.

Table 4.5: National **Consultant Positions Provided with Terms of Reference**

<u>National Consultants</u>	<u>Municipal Consultants</u>
	Pilot Project Coordinator for PPIU
Urban Infrastructure Institutional Expert for MOC PPIU	Urban Infrastructure Institutional Expert for

Water Tariff Expert for MOC

Water Tariff Expert for

PPIU Water Law and Policy Expert for MOC

Water Conservation Expert for MOC

Water Resources Economist for MOC

Water Resource Economist for PPIU

Public Awareness Campaign Experts for MOC

Public Awareness Experts for PPIU

The training activities, particularly the study tours and fellowships to overseas countries, are considered to have been very successful. They have been instrumental in bringing new ideas and an awareness of international practices to water resources management practitioners in China. A brief summary of the study tours and fellowships provided by the project is given at Appendix 6. Eighty-two per cent of the candidates selected for overseas training were male.

The financial and administrative management appears to have been quite well executed. As shown in Appendix 7, final expenditure was close to the expenditure proposed in the project document. From stakeholder interviews, it is understood that the flow of funds was such that the project was able to proceed on the revised schedule and no cost overruns were reported. MOC did report some financial difficulties for the completion of all of the activities under Output 3.4 (National dissemination and training plan). The project document did not allocate separate financial resources for the costs of production of materials in addition to the staffing inputs required to undertake these activities. It may have been assumed that the financial resources required would be provided by GOPRC.

The project appears to have suffered from no major problems or constraints. Some minor issues invariably arose. One important issue, arising in early 1999, related to MOC not providing sufficient detail in the 1999 work plan to describe how they proposed to prepare the training and information dissemination action plan. Further information relating to the staffing and other resources required was requested and then provided.

Equipment provided under the project was mostly document production (computers, printers and photocopiers) and video equipment. Stakeholders advise that the equipment was both adequate and appropriate and is still being put to good use. Maintenance services and spare parts for most of the equipment (except video cameras) are available in both Beijing and Shijiazhuang.

The project produced a large number of reports (see **Appendix 8**) and the quality of technical reporting under the project was variable. TORs prepared for consultant assignments usually stated the numbers and type of reports required but did not give and detail as to the quality requirements. The following quality requirements, if included, would have improved many of the project reports:

*21st Century Urban Water Management*  
a Report to be dated and author's name or  
position provided

*Project Evaluation Report UNDP/AusAI D CPR/96/302 a*  
o Duration of assignment and itinerary to be  
provided



o Include TOR for assignment in reporto Page numbering and

#### formatting **4.3 Sustainable Urban Water Management Needs**

The pilot studies undertaken in Shijiazhuang yielded very effective results on tariff reform activities and good results for institutional and organizational reforms. A comprehensive institutional reform plan with timetable was produced and on a number of occasions the Municipal Government of Shijiazhuang provided assurances that they will continue to press forward until the reforms are achieved. The final timetable prepared shows that reforms should be complete by 2005. At the urging of the Municipal Government of Shijiazhuang, this somewhat more optimistic timetable has been adopted over that originally prepared under the project, which sought to have reforms in place by 2010.

##### 4.3.1 Institutional Reform Plan in Shijiazhuang

In Shijiazhuang, the project through meetings, seminars and "on the job" discussions, provided a forum for the interchange of ideas. This led to the development of a plan for a more efficient *organizational structure in the municipal government* - see **Figure 4.1. Water resources functions**, which were previously dispersed amongst ten municipal government agencies under the direction of four Deputy Mayors, will be reduced to four agencies under the control of one Deputy Mayor. A Municipal Water Coordinating Committee has been established as a precursor to establishing a Water Affairs Bureau. Wastewater and drainage functions have been amalgamated and formed into a separate company.

Along with the World Bank, this project has played a leading role in the development of new MOC policy (MOC Circular 1192) requiring all cities to establish wastewater companies, which merge the drainage functions into the wastewater company and charge consumers for wastewater services.

The project promoted the efficiencies to be gained by combining water supply and wastewater services into the one water supply and sewerage utility. In Shijiazhuang, this concept is being trialled in the Shijiazhuang High Tech Zone before consideration as an institutional concept that may be applied over the entire city. It is understood that MOC is also considering the feasibility and benefits that may flow from the amalgamation of water supply companies and wastewater companies in urban centres throughout the nation.

As part of the project, the Urban Water Resources Centre (UWRC) of MOC has developed an Urban Water Management Information System (UWMIS) to assist the planning, management and monitoring of production, consumption and costs of water and wastewater services. It is a comprehensive package complete with a user manual. Training was provided to 36 operators from 16 cities and the software was distributed to a number of municipal agencies and companies. The system has been provided to Shijiazhuang institutions but the system is yet to become fully operational.

**Figure 4.1: Institutional Reform Plan in Shijiazhuang**

**Shijiazhuang agencies in urban water affairs before 1997.**

Construction Committee

Construction Committee

**Institutional reforms first steps. Situation in 1998.**

-----Urban Planning Bureau-----

Planning Committee.-----

**Institutional reforms second steps. Situation in 1999.**

-----Financial Bureau

**Institutional reforms third steps. Situation in 2000.**

-----

Utilities Bureau-----

-----Financial Bureau

Construction Committee

Construction Committee

**Institutional reforms planned.**

**Situation in 2005.**

Water Conservancy Bureau  
Water Conservancy Bureau  
Water Conservancy Bureau

NAr Conservancy Bureau

Environmental Protection  
Environmental Protection  
Environmental Protection

x\*onmental Protection

Public Health Bureau  
Public Health Bureau  
Public Health Bureau

%W Health Bureau

Utilities Bureau  
Utilities Bureau  
Medi-agencies

Jtilities Bureau

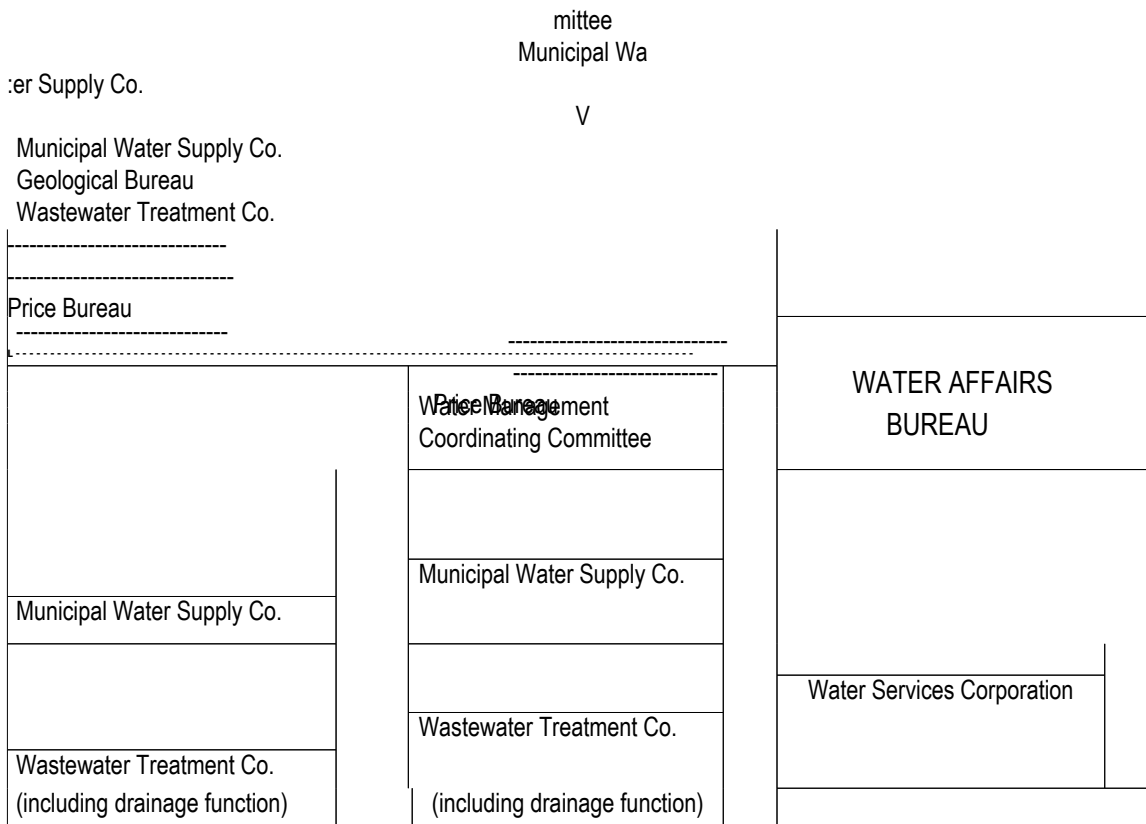
Financial Bureau

Financial Bureau  
au

Price Bureau

Drice Bureau

Urban Planning Bureau  
Planning Con



### 4.3.2 Tariff Reform Plan in Shijiazhuang

Studies were undertaken to determine the full costs of water supply and wastewater services in Shijiazhuang and plans were prepared to increase tariff levels to achieve full cost recovery. Further research examined the price impacts of tariff changes and modelled the likely effects on water demand. Following the completion of these detailed financial and economic studies, a revised tariff schedule and implementation plan was prepared. They were prepared with a view to achieving full cost recovery of operation, maintenance and capital costs for water supply and wastewater services.

The aim of this tariff plan was to provide a basis for the Water Supply Company and the Wastewater Treatment Company to have the financial capacity to operate in the future as independent corporate entities. The aim of the economic analysis was to assess the impact of different tariff structures and levels on water demands and to demonstrate the influence of price in demand management.

The PPIIJ reviewed these results and with further considerations of international practices and the National Guidelines for Water Tariffs (NGWT), it proposed a plan incorporating three categories of urban water use. Previously there had been ten categories. The tariff levels given in the plan show increases annually to the year 2003, as shown in **Table 4.6**.

**Table 4.6: Pilot Project Tariff Plan for Shijiazhuang in 2000 and 2003 (RMB/m<sup>3</sup>)**

Year	User Category	Water supply and distribution	Wastewater drainage and treatment	Combined tariff
2000	Life water	1.05	0.31	1.36
	Industrial water	1.40	0.60	2.00
	Service water	1.55	0.64	2.19
2003	Life water	1.38	0.57	1.90
	Industrial water	1.61	0.69	2.30
	Service water	1.82	0.83	2.63

Xu Zhenci "Urban Water Tariff Reform and its Implementation Plan in Shijiazhuang", paper presented at 21st Century Urban Water Management in China, International Seminar, Beijing, September 1999.

In Shijiazhuang, the evaluation team found that water tariffs have increased 25 per cent since 1997 and a further 25 per cent was being considered for application in the year 2001. If this latest increase is accepted, tariff levels and structure will be quite similar to that proposed in the PPIU plan for the year 2000. Modeling developed by the project suggests that without the tariff increases that have occurred in Shijiazhuang in 1998 and 1999, water demand would have been around 21 per cent higher than current levels. Furthermore if there had been no tariff increases since 1993, the project model suggests that water demand would be nearly 38 per cent higher than at present.

#### 4.4 Use of Project Resources

The project used the resources available to it very effectively to successfully produce the two major outputs of the project, namely the institutional reform plan and the water tariff reform plan for

Source:

Given the findings of the case study reported in this section, it is likely that further time is required for the citizens of Shijiazhuang to become fully aware of and committed to the tariff and institutional reforms taking place. It is also likely that they will not be interested in the reforms themselves but will only be concerned with the quality of services and the future cost of these services. Improved revenue collection through 1998 to 2000 is allowing the Municipal Water Supply Company to expand the water distribution system and connect new customers. With these extensions, they estimate that by the end of 2001 over 90 per cent of the consumers in the Shijiazhuang urban area can be served. There is little doubt that greater numbers of the citizens of Shijiazhuang are becoming customers of the water service and, as such, project beneficiaries are continuing to increase.

The evaluation team found that there was scope within the implementation of project activities to

improve upon the gender aspects. As detailed in section 4.2 no international expert engaged by the project was a woman and only one of sixteen local consultants engaged was a woman. Similarly only 5 of the 28 counterparts (18 percent) undertaking project sponsored study tours were women. A review of the gender aspects of project implementation was not an agenda item for the project Tripartite Review (TPR) meetings held in 1998 and 2000.

Shijiazhuang. When discussing these outputs with the authorities in Shijiazhuang, the evaluation team sensed a certain pride that clearly suggests that these plans have been developed cooperatively and with the full agreement of these authorities. This pride in the plans produced imparts a certain confidence that the project's institutional beneficiaries are committed to pursuing fully the reforms outlined in these plans.

#### **A Case Study on Public Awareness in Shijiazhuang of the Project CPR/961302:**

Whilst the project evaluation was underway a television report screened in Beijing on the evening of 9 February 2001 sought to publicize the project's successful experiences. It also brought out the public understanding or awareness of these recent positive tariff and institutional reforms that had been undertaken in the water resources sector in Shijiazhuang. Interviews with residents were used to learn of their understanding of the reforms that were taking place and the impact that higher tariffs might be having on their household. A number of these people were unaware that water tariffs had increased and many were not aware of the institutional reforms underway. The report concluded that whilst the reforms introduced by the Municipal Government were successful many of the people interviewed were not

#### **4.5 Alational Impact on Urban Water Management Reforms**

The project through seminars, workshops and media publicity was able to achieve a widening influence in accelerating tariff reform in Shijiazhuang as well as in other cities in China. Participants in project seminars and workshops came from many cities and were encouraged by the exchange of views and information. The example set by cities such as Shijiazhuang in accelerating tariff reforms has been studied and is being taken up and implemented by more cities in China. MOC was not able to provide detailed data to the evaluation team on the number of other cities in China that are undertaking tariff and institutional reforms and the progress to date with those reforms. As a National policy and planning institution, MOC provides policy direction and technical and management advice to municipal/provincial water resources management institutions. They are not able to direct municipal/provincial authorities to engage in reform activities. This is a municipal/provincial Government responsibility. MOC anecdotal information suggests that an increasing number of municipal/provincial authorities are engaged in both

institutional and tariff reforms associated with water resources management. This information suggests that upwards of twenty cities might presently be undertaking reforms. Despite the project successes in Shijiazhuang, it is not the most reform-minded city in China. In Shanghai and Shenzhen, Municipal Water Boards have already been established and are responsible for water supply operations, In Dalian and Qingdao extensive water saving programmes are being implemented.

There is little doubt that all of the project's institutional stakeholders at both the national and local level

have been in full agreement on the new and innovative methods the project has introduced to address the main issues of tariff and institutional reforms. It is less likely that there has been substantial agreement on the procedures and processes that should be used to disseminate lessons learned to the wider audience of all of China's municipal and local Government institutions.

In reviewing project documents, there is a clear change of thinking and focus exhibited in the later project reports prepared by the national consultants. These reports reflect acceptance of the project introduced economic, financial and technical approaches applied to water resources management. Many of these approaches promoting international best practice were also reinforced for the national and municipal consultants during project funded study tours and fellowships to overseas countries. It is less evident that the social approaches focusing on strong customer relations and public awareness of water resources reform and conservation issues are as strongly embedded. There is confidence that the national and municipal consultants engaged on the project are able to continue to apply the experiences they have gained in their regular work activities.

Most of the national consultants engaged are linked to the MOC or its Departments and Institutes. MOC has national responsibility for the development of new policies for and the guidance -of provincial, municipal and local agencies engaged in the provision of water supply and water resources management throughout China. There is positive optimism that the experiences gained by these experts on the 21st Century Urban Water Management Project will be evident in future similar activities that these staff undertake for other cities in China.

#### **4.6 Sustainability of Project Results**

The Municipal Government of Shijiazhuang through the responsible Deputy Mayor reported to the evaluation team that they were committed to the reforms, which had been set in place by the project, and these would be pursued to completion. The responsible Deputy Mayor was previously the Director of the Municipal Water Supply Company so is directly familiar with the pre-project and present situation. The MGS believe that water supply services in Shijiazhuang are improving, the rate of acceleration of water resources demand is reducing and the Water Supply Company is moving towards a stronger financial position. Discussions with the Vice-Director of the Water Supply Company supported these findings and also revealed important reforms that were occurring internally with the Company.

As part of the overall institutional reforms introduced by the project, the Water Supply Company is actively downsizing through the retrenchment of staff who have reached retirement age and the re-deployment of staff who wish to become independent contractors. As private contractors, they will initially receive ongoing support from the Water Supply Company in the form of housing and medical assistance, however they will not receive a salary from the Company. When successfully established as private contractors, the support mechanisms from the Water Supply Company will be progressively reduced.

The evaluation team is confident that the reforms described above have developed directly from project interventions and that MGS is already aware of benefits being delivered through the reform process. This awareness is driving their commitment to follow through on the planned tariff and institutional reforms.

#### 4.6.1 Tariff Reforms

There is a need to continually review the plan in light of changing distribution of water use and continuing inflation. Since 1998, use of 'life water' has increased significantly and industrial and commercial use has declined (in line with expectations from the analysis of demand response). However, the Water Supply Company advises that it is actively connecting more customers. Even with these new customers and with water revenues now more highly dependent on sales in the 'life water' category, the total revenue may drift below targets. Given the additional impact of inflation on water supply and wastewater costs, it may be difficult to achieve full cost recovery in Shijiazhuang, as planned, by 2003.

Water tariffs have been increasing in cities throughout China since before the project commenced, but adjustments had been tentative and insufficient. It is considered that the project, through seminars, workshops and media publicity, has had a significant and widespread influence in accelerating the rate of tariff reform, in many cities in China, as well as in Shijiazhuang. Participants in the seminars and workshops came from many cities and were encouraged by the exchange of views and information. The example set by cities accelerating tariff reforms has been taken up by other cities. If the acceleration due to the project has only amounted to RMB 0.2/m<sup>3</sup> for one year, the financial benefits and demand impacts have paid for the project many times over.

#### 4.6.2 Organizational and Institutional Reform

In Shijiazhuang, the meetings, seminars, and increased interchange of ideas have led to a more efficient organization structure in the municipal government. As described in section 4.3.1, there has been an amalgamation of functions of different departments and devolving of some functions to water and sewerage companies. Functions initially distributed in 10 municipal government agencies (excluding the water and sewerage utility companies) have essentially been integrated into 4. Four Deputy Mayors were previously responsible for water and wastewater functions. This has been rationalized to one. A Municipal Water Coordinating Committee has been established as a precursor to establishing a Water Affairs Bureau. Wastewater functions have been amalgamated and formed into a separate company, and drainage division functions have been merged with the wastewater company.

The project has played a part, along with the World Bank, in formulating MOC policy requiring all cities to establish wastewater companies, establish wastewater charges, and merge drainage functions into wastewater companies - see Appendix 9. The project also stressed the efficiencies to be gained from combining water supply and wastewater services into the one water and sewerage utility. It is reported that the MOC is considering the possibility of amalgamating water supply companies and wastewater companies. The project also supported implementation of wastewater charges and joint billing of water and wastewater charges and has made good progress with regard to these suggestions.

#### 4.6.3 Demand management

Water consumption levels in China are unusually high, particularly in the growing urban centres, despite impending and ongoing water shortages. Inappropriate pricing is largely responsible for this. Compared

to cities of the world, total consumption per capita in Shijiazhuang in 1997 was exceeded by only one city in China, and a number of cities in the planned economies of former states of the USSR.

To test the influence of price on water demand in Shijiazhuang, a forecasting model, developed for other cities of the world that have volumetric tariff charges, was applied - see **Appendix 10**. The model forecasts consumption as a function of population, income and price. Starting from 1993, the modelled projections of consumption for Shijiazhuang, applying actual tariff changes to 1997, were virtually identical to observed consumption from 1993 to 1997. It showed that response to income and price in Shijiazhuang is the same as response to income and price in other cities of the world.<sup>12</sup> With data for 1998 and 1999 now available, the same model has been used to incorporate actual tariff changes since 1997. The modelled projections, from 1993, continue to be almost identical to observed consumption to 1999.

The figure in Appendix 10 illustrates various projected scenarios since 1993 with and without price changes. It should be noted when viewing the figure that the projected production requirements incorporating actual price changes are almost identical to the observed production.

The modeling suggests that without the tariff increases in 1998 and 1999, water demand in Shijiazhuang would have been about 21 percent higher than it is now. If there had been no tariff increases since 1993 the model suggests that water demand would be nearly 38% higher than it is now. The implication is that accelerating tariff reforms is having a significant impact on urban water demand management. When tariffs reach a level to achieve and sustain full cost recovery, it can be expected that consumption in Chinese cities will be similar to levels in other parts of the world.

#### 4.6.4 Groundwater depletion

Shijiazhuang groundwater is being depleted, and groundwater levels are reported to be falling more than 2 metres per year. The potential impacts of this practice continuing are untenable in terms of costs arising from land subsidence and groundwater pollution. Sustainable groundwater use for urban purposes in Shijiazhuang is estimated to be about 250 million m<sup>3</sup> per year. In 1998, about 335 million m<sup>3</sup> was abstracted for the city, more than half by the Water Supply Company. Shijiazhuang WSC has an excellent surface water treatment plant, which is underutilized. During the evaluation team's field visit the water treatment plant was operating at around 50 percent of total capacity. The WSC prefers to use groundwater because it is cheaper. Groundwater resource fees are only RMB 0.07/m<sup>3</sup>.

The project stressed the need for groundwater resource fees to be increased to all groundwater users. Groundwater fees for private extractions have recently increased from RMB 0.07/m<sup>3</sup> to RMB 0.50/m<sup>3</sup>. This is probably below the appropriate level for private abstractors, but should still have a significant impact on reducing overexploitation of groundwater. RMB 0.50/ms groundwater resource fee would be an appropriate level for the water supply company. This charge is not yet levied on the WSC, the biggest user of groundwater. It is reported that consideration is being given to charging the full fee to WSC but that will mean tariffs will have to increase further to recover WSC costs.



"Economics of Price and Demand Management for Efficient Urban Water Resource Use", Elston J, Project Report - CPR/96/302, July 1998.

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#### 4.6.5 Urban Water Management Information System

As a part of the Project, the UWRC of MOC developed an Urban Water Management Information System. This proposed computer network system is to provide a means to track and monitor many aspects of production, consumption, costs, service and management aspects of water and wastewater as a basis for planning. It is a professionally presented package complete with comprehensive user manuals. Training in use of the system was provided under the project to 36 students from 16 cities. This MOC developed software is available for sale and distribution to municipal agencies and water supply companies.

The PPIU in Shijiazhuang advises that the software has been provided to institutions in the city but that more time is required to fully operationalize the system. To be the useful planning tool that it is designed to be, the system needs to be computer networked between institutions. It was not exactly clear to the evaluation team if the telecommunication infrastructure presently in use in the relevant institutions in Shijiazhuang can provide the connectivity demanded by the system.

#### **4.7 Quality of Monitoring and Backstopping**

Project monitoring was based upon UNDP's standard project financial and progress reporting. As outlined in the project document project specific monitoring and evaluation mechanisms included:

- Tripartite reviews (TPR) of Project Terminal report
- Technical reports; and of Project Evaluation report

Tripartite Review (TPR) meetings were held during the project. An initial TPR meeting was convened in Shijiazhuang in November 1998 and a terminal TPR was convened in Beijing in May 2000. The issues and problems discussed included the following:

##### TPR, November 1998

##### TPR, May 2000

- Implementation of the institutional reform and tariff adjustment action plans - noted the clear objectives in the draft action plans but less clear how objectives would be achieved.
- Public awareness campaign - further information required on the proposed campaign and the role of the project in supporting the campaign
- National dissemination and training plan - a plan should be prepared as soon as possible to show a clear set of steps for dissemination of the pilot experience of Shijiazhuang and the international best practice to other cities..
- Monitoring of long-term impacts - UNDP and AusAID expressed interest in receiving information

regularly on the reforms and on the impact on water consumption and quality of water services provided in Shijiazhuang

- Dissemination of project results - how to disseminate the successful project experience and results was raised. MOC explained that major project achievements could be incorporated into the legal framework.
- Impact of tariff on low income groups - issue of preferential policies for low income groups was raised. For households that cannot pay their bills, the municipal government covers the cost.

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o 1999 Work Plan - detailed information regarding the following issues should be provided by the NPD to strengthen the plan:

- Timing and area of contribution of the international consultants
- Plans for selection of participants of study tour in China, domestic training workshops and overseas training
- Dissemination plan including dissemination approach and timeframe

o Utility firms - need for strengthening their capacity was stressed. It was suggested that promoting foreign direct investment could be a way of addressing this issue. Shijiazhuang representatives stated that it is difficult to negotiate with foreign firms as they often require high profit levels

o Groundwater tariff - prepare a timetable indicating when it is expected that the Water Supply Company is to pay the same price as other users for its ground water consumption

Strategies to address the above issues were discussed during TPRs and then acted upon during the project.

This final evaluation is the first in-depth external evaluation that has been made of the

project. **4.8 Project results and impact**

**Table 4.7: Analysis of Project Results and Impact**

<u>Project Output/Result</u>	<u>Impact</u>	<u>Comment</u>
Organizational and institutional strategy reform strategy and action plan.	High	As described in Section 4.3.1, this and plan formed the catalyst for on-going institutional reform now underway in Shijiazhuang. International study tours

and fellowships had a high impact through the introduction of global management practices.

Water resources management case studies conducted to test improved sector agency collaboration and streamlined institutional framework.

Water resources information management system to facilitate inter-agency coordination and exchange of information.

Low Institutional reform not sufficiently advanced to really expect the testing interagency collaboration and streamlined working relationships.

Medium Development of system a high impact for UWRC/MOC but now system needs to be purchased and operationalized by cities throughout China. Some form of incentive may be needed to increase interest from these cities.

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Project Output/Result

Impact

Comment

Comprehensive economic analysis of water and wastewater service costs, the costs of inadequate wastewater management, and the current tariff systems.

High

Assessment of price and demand elasticity of water.

High

An action plan for revised water tariff structure for water and wastewater services and implementation schedule.

High

Proposed tariff structure tested.

High

Public awareness and education campaign to introduce and promote water conserving technologies and

practices for domestic and industrial consumers, and to ensure public understanding and acceptance of the need for tariff increases.

Low

Analysis of experience and current best practice in urban water management in Chinese cities and globally.

Medium

Analysis and documentation of lessons learned from the Shijiazhuang pilot project.

High

Provided MGS, its authorities and MOC with a clear economic and financial picture of existing urban water resources management costs and tariff. Formed a strong basis for MGS agreeing to tariff reform plan.

Gave MGS and MOC confidence to proceed with tariff reforms and aided shift in their recognition of water as an " economic good" . Strong recognition also at National level.

As described in Section 4.3.1, this plan is clearly supported by MGS who are moving ahead with its implementation. Has had high impact at National level as MOC seek to encourage all urban centres to address tariff reforms.

MGS has seen that customer resistance to higher tariffs has been minimal. Has also shown MGS that tariffs can be used to moderate demand. Good recognition at National level from Shijiazhuang testing.

Project could have benefited through input from an international expert in this field. Such campaigns and focus of customer service and relations are new for local authorities. Campaigning and materials development techniques used in other international countries are also not well known at present in China.

Given administrative arrangements and National/Provincial coordination it is difficult for MOC to build a complete, current picture of best practices, particularly within China.

Project sponsored workshops in Beijing and Shijiazhuang were effective in providing a forum for the analysis and documenting of Shijiazhuang pilot trials.

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<u>Project Output/Result</u>	<u>Im act</u>	<u>Comment</u>
Package of demand which management orientation and	Medium	MOC is searching for the best way in to package this information so that it is

training materials.suitable for multi-media use. MOC require

additional funds to complete this activity.

National dissemination and budget training plan.

Low

MOC has only a very limited, regular

to continue the dissemination and-training of city authorities throughout the country. City authorities wishing to be trained will be required to share some expenses with MOC. Many may seek other training avenues.

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## 5 SHARED LESSONS

The implementation of this project has involved multiple government agencies, municipal departments and committees and research institutes from a number of cities throughout China. The introduction of international experiences and practices into the management of water resources sector in China has been fruitful. The exchange of ideas and the adaptation of some of these approaches and practices to the operation of a water services utility in China have been valuable.

The most important lessons drawn by the evaluation team from this successful project and applicable to other areas of utility reform and to GOPRC' s water management strategies are seen to include the following:

- Stakeholder engagement
- Multiple case studies/pilot projects
- Introduce international experience
- Phased implementation
- Project design; and
- Project monitoring and evaluation

The importance of acknowledging and addressing these lessons in future projects is discussed in the following sections.

### **5.1 Stakeholder Engagement**

As correctly recognized in project CPR/96/302, even reform-minded organizations can be very protective of their mandate and functional responsibilities. If they are not fully involved in the background analysis of their own organization or its operations and the decision-making processes that arise from the analysis, they will be reluctant to accept reforms and may, in fact, resist reorganization. Management and, in particular, workers of institutions are particularly cautious of reforms that they perceive are eroding or changing their

responsibilities.

The three-phased approach adopted by project CPR/96/1302 has worked particularly well. The three phases were:

1. Carry out an in-depth organizational and institutional situation assessment and needs analysis. (Note: If tariff reform is not involved in the proposed reform process it would also be useful to include at this assessment stage a detailed financial and economic analysis of management and operations.)

Support the assessment with a number of focused seminars and workshops involving institutional managers, workers and the political administrators responsible for the institution.

2. Through institutional working groups, seminars and workshops develop a reform strategy and action plan; and

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3. Implement the action plan ensuring that it is complemented at all times by an adequate and proper dissemination of information and awareness raising.

For future utility reform projects in China that include tariff reform, it is critical that the project engage with Municipal/Provincial Price Bureaus and the members of Municipal/Provincial Standing Committees that approve price s/tariffs. These people are important project stakeholders and should participate fully in project supported institutional assessments, financial analyses and the workshops/seminars that support these activities.

### **5.2 Multiple Case Studies/Pilot Projects**

Future project designs and project implementation utilizing case studies may benefit from the selection of, at least, two or more pilot cities (usually in different municipalities/provinces) so that the diversity of China and an element of competition can be introduced. The bureaucracy in China is not a unified central administration and significant differences do occur in institutional organization and administrative procedures from province to province and/or municipality. This approach allows the project case studies/pilot projects to address a broader institutional picture that will provide more diverse lessons and experiences, which will be more appropriate for National dissemination.

This approach also helps to eliminate the risk of non-performing institutions or case studies/pilot projects for future projects. CPR/96/302 benefited greatly in that the Municipal Government of Shijiazhuang was reform-minded and keen to learn from international experience. This interest in reforms may not apply equally across all cities, municipalities and provinces in China.

### **5.3 Introduce International Experience**

This aspect of CPR/96/302 was particularly successful and appears to be an ideal project entry point for utility reform projects. The use of both short study tours and longer fellowships worked equally well. Future use of these activities needs to be well planned and structured so that exactly the correct

aspects of management or a technical, financial and/or social issue are being addressed. Some suggestions for future projects include:

- For each study tour and/or fellowship identify the institutional needs that are to be addressed;
- Ensure that the target international institution(s) can meet those needs;
- Prepare a broad profile of the types and skill levels required of participants;
- Have study tour/fellowship nominees identify the information/skills that they would like to derive from the proposed activity;
- Ensure each study tour/fellowship is evaluated through participant surveys and survey of the recipient international institution; and
- Have study tour/fellowship participants report around six months following their return to China how the training has assisted them in undertaking their current duties.

#### **5.4 Phased Implementation**

Further benefits to timely and effective project implementation may be achieved by linking the flow of further project financial incentives to the achievements of clearly defined milestones to accelerate the pace of institutional reforms. Whilst this was not specifically an issue for CPR/96/302, it could be with

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institutions that find it more difficult to proceed with reform. However, it must be cautioned that the financial incentives offered from an externally funded project should not be the strong motivating factor directing institutional reforms. Milestones and the use financial incentives need to be carefully structured to ensure that the pace of reform is in accordance with the aspirations of the target institution and its capacity to absorb these **changes**.

#### **5.5 Project Design**

Overall the project design of CPR/96/302 was good and relevant in addressing the identified problems and difficulties. However, it is felt that in designing future projects for utility or water management reform in China that the following issues should receive particular attention:

##### **5.5.1 Public awareness programs**

A public awareness program is an important tool that can be used to support utility/institutional reform. Public opinion can be an important factor in achieving Government support for reforms. The public, as customers of services utilities, are also important stakeholders in the reform process and need to be involved or informed about that process. In building the stronger customer relations, that characterize successful service utility institutions, a public awareness program plays a vital role.

Public awareness activities need to be designed into every project document. International expert services are required to design, develop and assist the implementation of effective awareness raising activities, which need to be adequately resourced. Activities need to be designed around current public knowledge and aspirations and built on proven social marketing techniques if they are to be effective. Project resourcing to assist the development and production of public awareness materials is essential.

## 5.5.2 Gender issues

Greater care needs to be exercised in seeking gender balance in a project, to ensure that project benefits flow equally to both men and women. All project related approaches, strategies, processes, procedures and activities should be actively checked against the following indicators<sup>13</sup>:

- Gender policies incorporated
- Women have access to information
- Women equally involved in project decision • Women are equal decision makers at all

making

Project work is distributed equally

- Project benefits available equally

stage of project implementation

- Equal access to training and payments

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Derived from "Methodology for Participatory Assessments -with Communities, Institutions and Policy Makers" , Rehka Dayal, Christine van Wijk, Nilanjana Mukherjee, Water and Sanitation Program, World Bank, 2000.

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## 5.5.3 Dissemination of project information

The activities associated with the preparation of training plans and the dissemination of case study/pilot project information needs to be separately and adequately funded within the project so that supporting materials can be produced and one or two National/Provincial training courses held.

## 5.5.4 Project quality issues

To design more effective and successful development projects, it is important to continue to focus on providing the most appropriate international and national level expert services that can be provided. The services provided need to be carefully linked to project activities to ensure that the desired outcomes are produced. The technical reporting of the expert input provided is also critical for the capacity building and information dissemination activities that it supports. For future projects it is important that the quality aspects associated with consultant terms of reference (TOR) and project reporting be improved.

TOR for experts/consultants should include: the tasks, responsibilities, expected duration of assignments and qualifications and the outputs required in the form of training activities to complete and working papers, training papers and reports to prepare. Quality requirements for any project documentation should also be included.

Project reporting should include:

u Report to be dated and author' s name or

o Duration of assignment and itinerary to be



position providedprovided

o Include TOR for assignment in report

o Page numbering and

### formatting **5.6 Project Monitoring and Evaluation**

Whilst it is considered difficult to build greater and meaningful project monitoring and evaluation activities into utility reform projects, it is considered that, where possible, the number of verifiable and quantifiable indicators (success criteria) needed to be increased and more intermediary milestones set to regularly monitor the implementation of all project activities.

It is also strongly recommended that project monitoring and evaluation activities be written up in the project document as a separate activity set and that a separate line item is provided for these activities in the project budget.

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## **6 POLICY RECOMMENDATIONS**

### **6.1 Key Constraints and issues**

#### **6.1.1 Institutional diversity**

Services utility institutions in China whilst working to Nationally framed legislation and guidelines often use quite different organizational structures and diverse operational procedures. These institutions, being under Municipal or Provincial Governments, reflect the often quite large differences that exist in bureaucratic establishment and procedures across the municipalities and provinces in China. These variations exist due to the relatively flexible nature of some legislation and procedural regulations when drafted. Often the result is overlap in institutional responsibilities and mandates.

Added to this is the advisory and policy making role of National ministries, which does not allow them to administer or direct the operations of Municipal/Provincial institutions. They are often able to provide guidance only and have little or no budgetary strength to insist that National programmes be implemented in a uniform way.

#### **6.1.2 Demand management approaches**

Past history has seen demand management solutions being purely technical in nature. In recent years there has been a shift to also consider the financial, economic and social aspects inherent in any attempt to moderate or change human behaviour or attitudes. These changes in approach are still not well entrenched and further efforts are required to ensure that administrators are provided with and trained to use all of the tools that they may need in adopting a holistic approach to demand management.

#### **6.1.3 Public awareness**

A public awareness program is an important tool that can be used to support utility/institutional reform. Public opinion can be an important factor in achieving Government support for reforms. The public, as

customers of services utilities, are also important stakeholders in the reform process and need to be involved or informed about that process. In building the stronger customer relations, that characterize successful service utility institutions, a public awareness program plays a vital role.

Public awareness activities need to be designed into every project. It is important that schoolchildren be included in public awareness and education campaigns. Not only are the children the next generation of households, but even in China they can influence parents, thus saving on present consumption of water.

#### 6.1.4 Cost of services

The costs of all urban services, including water, will continue to increase significantly, in real terms, as incomes increase over the next 10 to 20 years in China. The challenge is that for these services to be sustainable, the tariffs and charges for the services will need to continue to increase significantly. Long term plans for tariff increases to achieve cost recovery will need to be reviewed continually. Public awareness programs will be required to explain the costs of meeting urban service needs.

For urban water supply, the costs of providing services will continue to increase in real terms. Comparison of experience in countries around the world shows that costs of meeting water demands

increase more rapidly when incomes are low, than when incomes are high<sup>14</sup>. When urban household incomes average about RMB 2,000 per month, costs of water supply services average about RMB 2.5/m<sup>3</sup> (constant 1998 prices). When household incomes average about RMB 15,000 per month to RMB 20,000 per month, costs of water services average about RMB 5.0/m<sup>3</sup> (constant 1998 prices).

#### 6.1.5 Governance standards

Accounting and reporting procedures used by some urban service utility companies have improved dramatically over the past five years. However, the procedures followed by many urban service utility companies require significant improvement in order to approach acceptable international standards. These standards are a desirable basis for good governance, for worthwhile economic and incentive regulation and to attract reliable private investment.

#### 6.1.6 Regulatory control

With continued water price increases, the relative monopoly position of water supply companies and wastewater companies will come under increasing scrutiny. As revenue approaches cost recovery level, it is likely that there will be some conspicuous refurbishment of water supply company offices and facilities. Questions will start to be asked about the use of water supply revenues. There will begin to be concerns expressed about the fairness of prices, lack of competition, cost control and quality of service. Efficiency, service levels and quality, cost control and competition can be achieved by independent economic regulation and incentive regulation. A number of successful models already exist around the world such as OfWat (The Office of Water Services) in the United Kingdom and the various independent and regulatory State tribunals in Australia.

It is desirable that independent economic and incentive regulation be in place before widespread private participation in urban water supply service provision is permitted so as to reduce the risk and growth of

unscrupulous practices.

#### 6.1.7 Resources exploitation and management

The present level of natural resources use (including water) in many areas of China is not sustainable. The present overexploitation needs to be controlled through a combination of legislation/regulation and punitive charges. With appropriate and adequate resource fees charged to all users demands will be reduced. Incentive schemes may be appropriate to encourage resource savings/protection and the use of renewable resources.

Specifically, in relation to water resources, there is a need to:

- Introduce licensing, management, and appropriate resource user fees for **all users** exploiting surface and groundwater resources, including water supply companies.
- Resource user fees for groundwater and surface waters should be levied on a volumetric basis as far as possible and should reflect the long run marginal cost of the resource exploitation.

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" Findings from a UNDP/AusAID Initiative - 21<sup>st</sup> Century Urban Water Management in China" , Project Report - CPR/96/302, May 2000.

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#### 6.1.8 Private sector participation

In the 21<sup>st</sup> Century, the major stakeholders in urban services delivery, its planning, operation, management, and financing will be urban service utility companies. The World Bank and the Asian Development Bank are strongly emphasizing and supporting the need for institutional and financial strengthening of these utilities. As a basis for future private participation, there is much that needs to be done in transferring assets to the companies, strengthening accounting, management information systems, planning and public relations sections in the companies. Much also needs to be done to take the utilities nearer to a corporate structure and operational entity, to be responsible for the design, construction, operation and maintenance of all the urban water facilities and to be responsible to an independent board of directors. The utilities need to be able to finance capital expansion and to be fully responsible for servicing debts. They need to be able to sue and to be sued. They need to be confidently able to meet regulated service levels and provide quality services.

Some service utility institutions in China are taking tentative steps in this direction. A number are actively downsizing and arranging to out-source or contract former workers as private contractors to provide the services they previously performed. These are all positive steps along the path to sustainable reforms.

### **6.2 Future UNDP opportunities**

UNDP office in China has provided and is currently providing assistance in for resources exploitation and

management in a number of sectors, including the water resources sector. The project evaluation team considers that there are further opportunities for UNDP assistance in the following strategic areas:

- Demand management approaches and public awareness building
- Governance standards; and
- Regulatory control

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## **7 PROJECT EVALUATION INFORMATION SHEET**

A completed Project Evaluation Information Sheet is provided at Appendix 11.

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