

ASIAN DEVELOPMENT BANK

TAR: IND 35045

**TECHNICAL ASSISTANCE
(Financed by the Government of United Kingdom)**

TO

INDIA

FOR THE

**MADHYA PRADESH INTEGRATED WATER RESOURCES
MANAGEMENT STRATEGY**

September 2001

CURRENCY EQUIVALENTS

(as of 1 August 2001)

Currency Unit	–	Rupee/s (Re/Rs)
Re1.00	=	\$0.0212
\$1.00	=	Rs47.10

ABBREVIATIONS

ADB	–	Asian Development Bank
ha	–	hectare
IWRM	–	integrated water resources management
MP	–	Madhya Pradesh
NGO	–	nongovernment organization
O&M	–	operation and maintenance
SWP	–	state water policy
TA	–	technical assistance
WMSR	–	water management sector review
WRD	–	Water Resources Department

NOTE

In this report, "\$" refers to US dollars.

I. INTRODUCTION

1. The Government of India (the Government) requested the Asian Development Bank (ADB) for advisory technical assistance (TA) to formulate a strategy for integrated water resources management (IWRM) in the state of Madhya Pradesh (MP). A fact-finding mission visited New Delhi and MP in May 2001 and reached an agreement on the TA objective, scope, cost estimates, financing plan, and implementation arrangements. These were defined through a consultative process including central and MP state governments, external funding agencies, private sector, including nongovernment organizations (NGOs) and local stakeholders. The TA is included in ADB's 2001 program for India.¹ The TA framework is attached as Appendix 1.

II. BACKGROUND AND RATIONALE

2. MP remains one of the poorest states in India, with a per capita income of only about \$180 in 1998.² About 40 percent of the population of 59 million live below the poverty line. Along with other poor states such as Bihar, Rajasthan, and Uttar Pradesh, MP ranks extremely low compared with other states in India for all indicators of the human development indices,³ such as per capita state domestic product, life expectancy, average years of schooling, literacy, and infant mortality rates. More than one third of the population also belong to socially and economically disadvantaged groups officially designated as scheduled tribes and scheduled castes, whose rights and interests are protected under the constitution. With poverty reduction as its primary policy objective, the MP government has embarked on far-reaching policy reforms in the public sector encompassing fiscal management, governance, and decentralization, with the support of the Public Resource Management Program loan and its related TA assisted by ADB.⁴ High priority has been given to promoting poverty reduction by devolving greater administrative and financial authority to local governments and organizations.

3. Poverty in MP is predominantly a rural phenomenon, with more than 80 percent of the poor living in rural areas, although the incidence of urban poverty is equally serious. Geography varies substantially within the state; poverty is highly concentrated in the eastern, central northern, and far-western regions. District poverty and environmental status data⁵ indicate that lack of water resources and overexploitation of forest land and other watersheds has lowered land productivity, exacerbating poverty. The proportion of the poor is also substantially higher among the tribal population. Poverty also has gender dimensions; women bear a heavier burden in terms of fetching water and fuelwood, and grazing livestock. Under the circumstances, sustainable management of water and related natural resources with stakeholder participation and consideration of social and gender issues is one of the key challenges in poverty reduction and economic growth in MP.

4. Of the 14 major river systems of India, MP constitutes the upper catchment of seven river systems. With annual rainfall ranging from 800 millimeters (mm) to 1,600 mm from west to east, concentrating in the brief monsoon, most watercourses naturally remain dry from January to June. As a result, water availability depends critically on the extent of water storage from surface

¹ The TA first appeared in ADB Business Opportunities in May 2001.

² The per capita income includes the state of Chhattisgarh, which was bifurcated from MP in November 2000.

³ Government of MP. 1998. *The MP Human Development Report*, Bhopal.

⁴ Relevant ongoing programs include Loan 1717-IND: *Madhya Pradesh Public Resource Management Program*, for \$250 million, approved on 14 December 1999; TA 3338-IND: *Capacity Building of Public Enterprise Reform and Social Safety Net in MP*, for \$0.600 million, approved on 14 December 1999; and TA 3423-IND: *Environmental Management at the State Level*, for \$3.620 million, approved on 1 March 2000.

⁵ Government of MP. 1998. *The MP Human Development Report*, Bhopal, and Government of MP. 2000. *Environmental Report*, Bhopal.

water capture or as groundwater. While substantial efforts have been made to augment water availability by constructing reservoirs, this option has become increasingly difficult in recent years, due to rising financial, social, and environmental costs.⁶ Increased attention is now required to promote more efficient use of available water resources. In terms of water use, irrigation accounts for more than 90 percent, followed by domestic and industrial water use. While agriculture, the largest economic sector employing 80 percent of the labor force, is dependent on the availability of irrigation most critically in the dry season, only about one third of the net sown area of 15.1 million hectares (ha) has been irrigated. Competition for water resources within the agriculture sector is severe.

5. The irrigated area in MP has increased more than three-fold since 1986 reaching 5.4 million ha in 2000. This was mainly accomplished by expanding groundwater irrigation, with only a modest increase in surface water irrigation.⁷ However, groundwater exploitation by irrigation has caused a widespread decline in the groundwater table across a large part of MP, leading to severe conflicts with the domestic water supply, which draws heavily on groundwater. On the other hand, the performance of surface water irrigation schemes has been poor, with only about half of the created irrigation potential utilized, due largely to insufficient operation and maintenance (O&M). The urban and domestic water supply sector, while covering most of the habitations through spot sources and piped water systems, faces similar problems. Furthermore, water quality is emerging as a major issue, with increasing salinity intrusion and high concentration of fluoride in deeper aquifers in wide areas, deteriorating surface water quality due to untreated urban discharge, and growing incidence of waterborne diseases.

6. MP also has large areas of degraded forest amounting to about half of the 8.6 million ha of forestland, and other degraded land reaching an additional 5.5 million ha categorized as barren, fallow, and cultivable wasteland, out of the state's total land area of 30.8 million ha. The large area of degraded land in the catchment areas also has serious implications for water resources management, causing substantial siltation of reservoirs, watercourses, and irrigation canals. The MP government has been actively implementing programs for joint forest management and participatory watershed management with delegation of greater authority to local institutions. While commendable progress is emerging,⁸ coordination of the water agencies and those responsible for the management of watershed land is lacking to ensure that integrated and strategic approaches are used to resolve this issue. Under these circumstances, promoting the sustainability and efficiency of water use while addressing these cross-sectoral linkages and concerns has become the major challenge facing the water resources sector. This requires comprehensive as well as decentralized approaches to water resources management.

7. Over the past years, interventions in water resources sector in MP have not been able to cope with these issues effectively. This has been generic across India. The Water Management Sector Review (WMSR), a joint study by the central government and the World Bank completed in 1998, identified several shortcomings of interventions: (i) lack of a comprehensive water management perspective; (ii) predominance of supply-side approaches resulting in high economic, social, and environmental costs; (iii) insufficient institutional arrangements leading to inadequate cost recovery and O&M funding affecting sustainability; and (iv) lack of cooperation between states. Recognizing these lessons, the WMSR has provided guidance to

⁶ This issue is exemplified in large schemes implemented in the Narmada River basin by the state governments of MP (Narmada River Development Authority), Gujarat, and Maharashtra, which have drawn concern from project-affected persons and NGOs because of resettlement problems and financial and environmental viability.

⁷ As a result, the share of groundwater irrigation to total irrigated area has reached about 80 percent.

⁸ In MP and Chhattisgarh (separated from MP in November 2000) combined, watershed program has covered about 1.2 million ha of degraded land up to 1999. Village level joint forest management committee has been formed in one third of the villages located in forest or forest fringe areas.

comprehensive sector reforms for central and state governments. Accordingly, the Government is revising its 1987 National Water Policy, strengthening the cross-sectoral perspectives of water management, and arrangements to sustain service delivery.

8. Taking into account these initiatives, and in line with the state policy reforms for public resource management, the MP government is also preparing a state water policy (SWP). The SWP will set out policy objectives, principles, and institutional framework for IWRM on the basis of river basins, with emphasis on community participation, decentralization, conjunctive use of surface and groundwater; coordination of competitive use; financial sustainability of O&M; and sound management of environmental and social issues. The MP government has also taken important steps to sustain service delivery of surface water irrigation systems by (i) enacting a participatory irrigation act that establishes a legal basis for water user associations, and (ii) rationalizing irrigation fees and organization staffing. These were implemented by 2000, although the process to establish self-sustained irrigation management is constrained due to lack of funds to rehabilitate deteriorated infrastructure. Similarly, the preparation of draft legislation on the use of groundwater has also been initiated.

9. With this new policy direction, the need to define sound policy principles of the SWP, and to develop an effective strategy and action plan is generally recognized. These would encompass institutional arrangements and capacity development for IWRM and sustainable service delivery, a legal and regulatory framework, and information base, while strengthening the participatory framework with due attention to social and gender concerns. These need to be promoted, while establishing sufficient awareness and support from sector institutions and civil society at large. ADB's water policy⁹ will provide effective guidance to these processes. Similarly, an investment strategy and priority interventions need to be formulated within this framework, to effectively implement the SWP while addressing poverty problems. Given the linkage between the livelihood of the poor and effective management of water and related natural resources in MP, the output of the TA will also constitute one of the key elements of the MP government's overall strategies and actions toward its primary policy goal of poverty reduction.

II. THE TECHNICAL ASSISTANCE

A. Objective

10. The overall objective of the TA is to contribute to the enhancement of sustainable growth and poverty reduction in MP through effective management of water and related natural resources within the framework of IWRM. The immediate objective is to provide a comprehensive strategy and action plan to implement IWRM and other principles in the emerging SWP. The output will set out a sequence of actions to improve the enabling environment along with an investment strategy and a prioritized list of projects to achieve policy goals. The output will also be used by the Government and interested funding sources including ADB when designing projects relevant to IWRM.

B. Scope

11. The TA will cover both water resource management and service delivery functions, encompassing cross-sectoral and sustainability aspects of surface and groundwater resource management, irrigation and drainage, urban and rural domestic water supply, industrial water use, hydroelectricity, fishery, navigation, and catchment management. It will particularly address

⁹ ADB. 2000. *Water for All: The Water Policy of the Asian Development Bank*. Manila.

issues of competitive use, quantity and quality management, sustainable O&M of infrastructure, integrated catchment protection, and conservation of water resources. The scope will include (i) identifying action agenda by preparing a comprehensive sector profile, (ii) assessing institutional options to address the identified action agenda, (iii) preparing a sectoral investment strategy including a list of prioritized projects, and (iv) synthesizing the output into a IWRM strategy and action plan. The TA will utilize available data and materials, and follow a participatory approach.

12. **Integrated Water Sector Profile.** The profile will be prepared for the state and a representative river basin, using the standard ADB format based on available data and materials. The activities will include (i) review of existing policy and institutional framework, status, and projections for resource availability, use by subsectors, and quality; (ii) analysis of emerging sector challenges including areas of conflict; (iii) analysis of gaps and constraints between the required and existing management framework; and (iv) identification of an action agenda, including stakeholder awareness, institutional arrangements, legal and regulatory base, information base, capacity development, and other subsector management issues.

13. **Institutional Options Assessment.** This component, conducted simultaneously with the sectoral investment strategy study, will assist the analysis to establish the improved institutional framework of sector operations. The TA will identify and analyze options to address each of the institutional action agenda items defined in the sector profile, covering institutional setup, functions, and coordination framework for sustainable water management and service delivery, legal and regulatory base, and economic/financial incentive mechanisms. These options will form the basis for defining an appropriate institutional strategy and action plan.

14. **Sectoral Investment Strategy.** This component will help develop an appropriate sectoral investment strategy in support of the MP government's key principles of the emerging SWP and the overall policy goal of poverty reduction¹⁰. The activities will include (i) sectoral public expenditure review to achieve sustainable O&M and prioritized investments; (ii) identification of major investment issues based on the sector profile; (iii) participatory appraisal of key water and related natural resource investment projects; (iv) development of priority criteria for selecting effective investments in the light of the MP government's policy goals and principles, with a focus on those with a strong poverty focus with participatory and gender-sensitive approaches; and (v) preparation of a ranked list of recommended projects, for possible follow-on project preparatory TA.

15. **IWRM Strategy and Action Plan.** Based on the outcome of these activities, an IWRM strategy and action plan will be synthesized, covering all relevant issues including institutional and investment aspects. These will provide medium-term direction for intervention decisions of the Government in partnership with ADB and other interested financiers.

C. Cost Estimates and Financing Plan

16. The TA is estimated to cost \$630,000 equivalent, comprising \$290,000 in foreign exchange and \$340,000 equivalent in local currency. The entire foreign exchange cost and \$210,000 equivalent of the local currency cost will be financed on a grant basis by the Government of United Kingdom. The Government will contribute the balance of the local currency cost of \$130,000 equivalent through the provision of counterpart staff, office space, administrative services, and data. Details of the cost estimates and financing plan are given in Appendix 2.

¹⁰ The assessment will be primarily based on available project documents and evaluation reports.

D. Implementation Arrangements

17. The Executing Agency for the TA will be the MP Water Resources Department (WRD). WRD will appoint a full-time TA manager who will lead a working group comprising representatives of the concerned departments to work with the consultants. A steering committee will be established, chaired by the chief secretary, and with the participation by WRD principal secretary as executive chairperson/secretary, principal secretaries of other concerned departments, and a senior representative from the Central Water Commission. The committee will meet when called by the chairperson to provide guidance to TA implementation and decide on policy issues. A central level coordination committee will also be established, chaired by the secretary of the Ministry of Water Resources and comprising the principal secretary of WRD and senior representatives of the concerned ministries.

18. The TA will be implemented over about six months commencing in November 2001 with completion expected in May 2002. A total of 38 person-months of consulting services will be required, comprising 10 person-months of international consulting, including a water resources institutional specialist (team leader), water resources specialist, and environment specialist, and 28 person-months of domestic consulting, including a water resources specialist (deputy team leader), institutional specialist, legal adviser, agricultural economist, environment specialist, financial analyst, poverty reduction specialist, and senior water policy and institutional adviser. ADB will recruit (i) an international consulting firm in association with domestic consultants, and (ii) an individual domestic senior water policy and institutional adviser in accordance with *ADB's Guidelines on the Use of Consultants* and other arrangements on the engagement of domestic consultants satisfactory to ADB.¹¹ The selection of consultants will be done using the simplified technical proposal procedure, and advance action will be taken to recruit the consultants on a noncommittal basis. The outline terms of reference is provided in Appendix 3.

19. Active involvement of stakeholders will be sought by organizing stakeholder workshops during TA implementation to disseminate main features of the emerging SWP and to reflect the stakeholders' views of TA implementation and outputs. Three state-level workshops will be convened, the first at inception, and the next two to discuss the draft sector profile, and the draft final report, followed by workshops held at regional and selected river basin levels. Experienced NGOs will be engaged by consultants to facilitate the process. Furthermore, the TA will be implemented with intensive interaction with external funding agencies, to produce output that can be effectively utilized in the design of future IWRM-related investment projects.

20. The following reports will be produced: (i) an inception report at the end of the third week; (ii) an interim report and sector profile at the end of two and a half months; (iii) a draft final report four weeks prior to TA completion; and (iv) a final report upon completion of the TA.

IV. THE PRESIDENT'S DECISION

21. The President, acting under the authority delegated by the Board, has approved ADB administering technical assistance to the Government of India, in an amount not exceeding the equivalent of \$500,000 to be financed by the Government of United Kingdom on a grant basis, for the purpose of the Madhya Pradesh Integrated Water Resources Management Strategy, and hereby reports such action to the Board.

¹¹ Individual recruitment is necessary to recruit a qualified expert who has advised on water sector reforms in India, and to provide advice to the team of consultants as well as to the MP government.

TECHNICAL ASSISTANCE FRAMEWORK

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p>Sector Goal</p> <p>To enhance sustainable growth and poverty reduction in Madhya Pradesh (MP) through effective management of water and related natural resources</p>	<ul style="list-style-type: none"> • Reduction in MP's poverty incidence • Improved water resources management in (i) competitive use, (ii) quantity and quality, (iii) infrastructure operation and maintenance (O&M), and (iv) integration with catchment management 	<ul style="list-style-type: none"> • National and state statistics • Government, nongovernment organization (NGO), and external financiers' reports and assessments 	<p>Favorable political and macroeconomic environment</p>
<p>Purpose</p> <p>To develop effective strategy and actions for institutional reforms and investments to implement integrated water resources management (IWRM).</p>	<ul style="list-style-type: none"> • General consensus on strategy and actions to operate IWRM in MP • Implementation of strategy and action plan initiated 	<ul style="list-style-type: none"> • Regular dialogue among MP government, stakeholders, NGOs, and financial agencies • Technical assistance (TA) review missions and tripartite review meetings for the TA • Progress reports and other consultants' reports • TA completion report 	<p>Strong ownership of the IWRM strategy and action plan by the MP government.</p> <p>Timely support from financing agencies for preparing and implementing a strategy and action plan</p>
<p>Outputs</p> <p>1. Integrated Water Sector Profile</p> <p>2. Institutional Options</p> <p>3. Investment Strategy and Prioritized List of Projects</p> <p>4. IWRM Strategy and Action Plan</p>	<ul style="list-style-type: none"> • Comprehensive sector review completed within 2.5 months of TA inception, along with identification of action agenda • Options to address institutional action agenda to operate state water policy assessed within 5 months of TA inception • Sectoral strategy and priority projects identified within 5 months of TA inception • Institutional and investment strategy and action plan completed within 6 months of TA inception through consultative process 	<ul style="list-style-type: none"> • TA review missions and tripartite review meetings for the TA • Progress reports and other consultants' reports <p>(Same as above.)</p> <p>(Same as above)</p> <p>(Same as above)</p>	<p>Effective cooperation and access to necessary information by the MP government and other agencies.</p> <p>Effective consultation with stakeholders</p> <p>(Same as above.)</p> <p>(Same as above)</p> <p>(Same as above)</p>

(Reference in text: page 1, para. 1)

4. Activities	Inputs		
<p>1. Preparation of integrated water sector profile using standard Asian Development Bank (ADB) format</p> <ul style="list-style-type: none"> - Review policy and institutional framework - Review existing resource base and future projections - Analyze sector challenges, gaps, and constraints; and - Define action agenda 	<ul style="list-style-type: none"> • 4 person-months of international water resources (WR) institutional specialist and environmental specialist • 9 person-months of domestic WR specialist, WR institutional specialist, agricultural economist, agronomist, and environmental specialist 	<ul style="list-style-type: none"> • TA review missions and tripartite review meetings for the TA • Progress reports and other consultants' reports 	<p>Effective cooperation and access to necessary information by the MP government and other agencies</p> <p>Effective consultation with stakeholders</p>
<p>2. Analysis of institutional options to address issues in each action agenda</p>	<ul style="list-style-type: none"> • 2 person-months of international WR institutional specialist • 4 person-months of domestic WR specialist and senior water policy and institutional adviser 	<ul style="list-style-type: none"> • TA review missions and tripartite review meetings for the TA • Progress reports and other consultants' reports 	<p>Adequate assistance and guidance from the MP government</p>
<p>3. Identification of investment strategy and prioritized list of projects.</p> <ul style="list-style-type: none"> - Undertake water sector expenditure review - Appraise key water sector investment projects - Prepare a ranked list of recommended investments 	<ul style="list-style-type: none"> • 2 person-months of international WR specialist • 13 person-months of domestic WR institutional specialist, agricultural economist, agronomist, environmental specialist, financial analyst, poverty specialist, and legal adviser 	<p>(Same as above.)</p>	<p>Adequate assistance and guidance from GOMP.</p> <p>Effective consultation with stakeholders.</p>
<p>4. Preparation and finalization of IWRM strategy and action plan</p>	<ul style="list-style-type: none"> • 2 person-months of international WR institutional specialist and WR specialist • 2 person-months of domestic WR specialist and senior water policy and institutional adviser <ul style="list-style-type: none"> • Total costs involved \$630,000 <ul style="list-style-type: none"> - UK financing \$500,000 - GOMP financing \$130,000 	<p>(Same as above.)</p>	<p>Timely coordination among the MP government and key external funding agencies.</p>

COST ESTIMATES AND FINANCING PLAN
(\$'000)

Item	Foreign Exchange	Local Currency	Total Cost
A. Government of United Kingdom Financing			
1. Consultants			
a. Remuneration and Per Diem			
i. International Consultants	215.0	0.0	215.0
ii. Domestic Consultants	0.0	132.0	132.0
b. International and Local Travel			
i. International Travel	27.0	0.0	27.0
ii. Local Travel ^a	0.0	14.0	14.0
c. Reports and Communications	0.0	6.0	6.0
2. Surveys, including Poverty Assessment	0.0	10.0	10.0
3. Administrative and Support Services			
a. Office O&M	0.0	6.0	6.0
b. Office Equipment ^b	10.0	0.0	10.0
c. Workshop and Seminar	0.0	15.0	15.0
4. Representation at Contract Negotiation	5.0	0.0	5.0
5. Contingencies	33.0	27.0	60.0
Subtotal (A)	290.0	210.0	500.0
B. Government Financing			
1. Office Facilities and Administrative Support	0.0	40.0	40.0
2. Counterpart Staff	0.0	40.0	40.0
3. Local Travel and Vehicles for Counterpart Staff	0.0	15.0	15.0
4. Studies, Surveys, Data Analysis, and Reports	0.0	35.0	35.0
Subtotal (B)	0.0	130.0	130.0
Total	290.0	340.0	630.0

O&M = operation and maintenance.

^a Includes vehicle rental and operation and local airfares

^b Includes two computers and peripherals, a photocopier, and a fax machine

Source: Staff estimates.

(Reference in text: page 4, para 16)

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

1. The consultants' inputs are shown in Table A3.1.

Table A3.1: Consulting Service Inputs

Expertise	Person-months for Activities		
	(i) ^a	(ii) – (iv) ^a	Total
I. International			
Water Resources Institutional Specialist/ Team Leader	2.5	3.0	5.5
Water Resources Specialist		3.0	3.0
Environmental Specialist (Forestry)	1.5		1.5
Subtotal	4.0	6.0	10.0
II Domestic			
Water Resources Specialist/ Deputy Team Leader	2.5	3.0	5.5
Water Resources Institutional Specialist	2.5	2.5	5.0
Agricultural Economist	1.0	2.0	3.0
Agronomist	1.5	2.0	3.5
Environmental Specialist	1.5	1.5	3.0
Financial Analyst		2.0	2.0
Poverty Specialist		2.0	2.0
Legal Adviser		1.0	1.0
Senior Water Policy and Institutional Adviser ^b		3.0	3.0
Subtotal	9.0	19.0	28.0
Total	13.0	25.0	38.0

^a (i) integrated water sector profile; (ii) institutional options assessment; (iii) sectoral investment strategy; and (iv) integrated water resource management strategy and action plan.

^b To be individually recruited by Asian Development Bank to (i) serve as an adviser to MP government working group and steering committee, (ii) advise and assist the consultant team in carrying out the terms of reference; and (iii) help organize workshops; and (iv) help the team prepare the reports.

Source: Staff estimates.

A. Integrated Water Sector Profile at State and River Basin Levels

2. The consultants will prepare an integrated water sector profile (IWSP) for Madhya Pradesh (MP) based on the standard format developed by the Asian Development Bank (ADB) at the levels of the state and a selected river basin, which faces key sectoral challenges of the state, to be defined with Water Resources Department (WRD). The profile will be prepared effectively utilizing the available documentation. The consultants will also assist MP government to undertake two state workshops and district workshops. The first state workshop will be held at the inception stage to present main features of the emerging State Water Policy, discuss key water and related natural resources management issues, and discuss the technical assistance (TA) work plan. This will be followed by workshops held at district and selected river basin levels to be held for the same purpose. The second state workshop will be held to review and discuss the draft IWSP. Experienced nongovernment organizations (NGOs) will be engaged by the consultants as necessary to facilitate the process. The outline activities of the consultants and key issues in each activity will comprise the following:

- (i) Review available policy and plan documents and sector studies on water and other related natural resources.
- (ii) Review socioeconomic status and projections. Review policy goals, priorities, existing strategies, and action plan.

(Reference in text: page 5, para. 18)

- (iii) Assess legal and regulatory framework governing integrated water resources management, and economic/financial incentive mechanisms including water pricing.
 - (iv) Assess institutional base at national, state and local government levels. Assess capacities of key sector agencies.
 - (v) Assess existing information base.
 - (vi) Assess status, trend, and projections for water resource availability and quality, use by subsectors including competition among subsectors.
 - (vii) Assess financial resources management for investment and operation and maintenance (O&M).
 - (viii) Synthesize outstanding and emerging sector challenges, fully taking into account stakeholders' views. Assess necessary policy principles and instruments in the light of those challenges.
 - (ix) Identify gaps and constraints in water and related resources management. Identify action agenda.
 - (x) Synthesize findings into the standard ADB sector profile.
3. The IWSP will specifically appraise the following outstanding and emerging issues in MP:
- (i) linkage between irrigation development (including surface water, groundwater, and micro-level water management) and poverty reduction including distributional effects, through poverty assessment in areas of various categories of land;
 - (ii) identification of agenda to effectively address poverty issues through integrated water resources interventions with effective linkage to the MP government's overall poverty reduction strategies;
 - (iii) appropriate functions that should be played by potential IWRM institutions at state and river basin levels in the medium and long term, including the prospects for integrated planning with interaction with local governments;
 - (iv) the extent of data availability to effectively assess and manage surface and groundwater resources on a macro level, or at state and river basin levels;
 - (v) the extent of intersectoral conflicts on the use of surface and groundwater, and issues and constraints, including the effectiveness of existing regulatory mechanism, impact of lifting the irrigation power subsidy, and effectiveness of proposed groundwater regulation being considered by the MP government;
 - (vi) the extent of health and environmental implications of deteriorating surface and groundwater quality and effectiveness of environmental protection mechanisms;
 - (vii) physical, technical, institutional, and other constraints causing low water use efficiency and low utilization of created potentials for irrigation schemes, including the status of internal conflicts between head and tail reaches, and effectiveness of support systems and incentive mechanisms to promote water saving practices;
 - (viii) issues and prospects for implementing integrated catchment approach by integrating watershed, forestry, and water resource interventions, and appropriate institutional arrangements including roles of local governments;
 - (ix) policy-related, institutional, and socioeconomic gaps and constraints impeding effective participation of women in planning, implementation, and O&M of IWRM interventions including service delivery functions; and
 - (x) needs and prospects for introducing water rights, and procedures for inter-sectoral water allocation.

B. Institutional Options Assessment

4. This component will assist the analysis for the establishment of an improved institutional framework of sector operations within the IWRM framework. The consultants will identify and analyze institutional options for the concerned action agenda identified in the IWSP, encompassing institutional setup, functions, and coordination framework for sustained management and service delivery, legal and regulatory framework, and economic/financial incentive mechanisms. This will be undertaken with intensive consultation with policy level staff in the TA steering committee. The outline of the specific activities, which will be further defined in detail in accordance with the identification of key institutional issues by the IWSP, will include the following:

- (i) Analyze agency functions and legal and regulatory framework in relation to current and emerging policy requirements; identify gaps and redundancies.
- (ii) Develop options to address the identified gaps and redundancies regarding institutional structure of sector agencies and coordination framework.
- (iii) Develop options to address the identified gaps regarding legal and regulatory framework and economic/financial incentive mechanisms.
- (iv) Present options and recommendations to the MP government's working group and steering committee to facilitate to consider action appropriate for an institutional framework including legal and regulatory basis.

C. Sectoral Investment Strategy

5. This component comprises two subcomponents: (i) public expenditure management review to analyze measures to prioritize and rationalize investment and O&M expenditure, and (ii) preparation of an appropriate investment strategy and a list of prioritized investment projects (including physical, institutional, human resource related, and other supporting interventions such as agricultural extension) to implement the emerging principles of the state water policy (SWP), thereby supporting the MP government's overall goal of poverty reduction (through income growth, food and income security improvement, empowerment, and improved governance including decentralization). The first subcomponent will be undertaken with activities to prepare the IWSP. The second subcomponent will be undertaken simultaneously with an institutional options study, in a participatory manner through a series of meetings with stakeholders at river basin, district, and project levels. The output will be synthesized into an investment strategy and a list of prioritized projects.

6. The specific activities for public expenditure management review will include the following:

- (i) Review public expenditures (capital and recurrent outlays) for integrated water resources management.
- (ii) Review funding sources and arrangements.
- (iii) Review budgetary process of capital and recurrent expenditure including selection criteria of investment schemes.
- (iv) Assess effectiveness, efficiency, sustainability, and transparency of public expenditure program.
- (v) Recommend measures to rationalize and prioritize public expenditure, and to increase revenues of sector institutions.

7. The specific activities for sectoral investment strategy will include the following:
- (i) Review relevant background information. Analyze major investment issues for integrated water resources management.
 - (ii) Identify key projects (physical, institutional, human resource related, and other supporting interventions) corresponding to investment issues.¹
 - (iii) Assess sample projects in terms of effectiveness in improving integrated water resources management, reducing poverty, and operating key policy principles. Synthesize issues and lessons.
 - (iv) Identify gaps and constraints in achieving intended sustainable benefits through identified projects. Recommend necessary measures to attain objectives.
 - (v) Assess specific options to improve the poverty reduction implications of selected interventions.
 - (vi) Develop priority criteria of selecting investment projects.
 - (vii) Develop a list of priority investment projects based on the priority criteria, to be designed for possible finance by external funding agencies.

D. Integrated Water Resources Management Strategy and Action Plan

8. Based on the outcome of the institutional options assessments and investment strategy study, and in close communication and consultation with the MP government and interested external funding agencies, the consultants will synthesize an IWRM strategy and action plan for MP. These will provide medium-term direction for intervention decisions of the MP government in partnership with interested financiers including ADB. Activities will include the following:

- (i) Based on the activities in sections B and C, synthesize an appropriate IWRM strategy.
- (ii) Develop an action plan to lay out sequence of time-bound actions/interventions that may be appropriate for TA and project interventions funded by external funding agencies including ADB. This should encompass policy and institutions, legal and regulatory framework, information base, awareness of sector agencies and civil society, and investments to address priority IWRM issues.

¹ Inclusive of such interventions as (i) participatory IWRM planning and implementation at river basins, (ii) interventions to improve water use efficiency of existing schemes including tank systems, (iii) information base for river management, (iv) capacity development, and (v) micro water management.