



# Technical Assistance Report

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Project Number: 42110  
Regional–Capacity Development Technical Assistance (R-CDTA)  
April 2009

## Supporting Investments in Water-Related Disaster Management (Financed by the Japan Special Fund)

## ABBREVIATIONS

ADB	–	Asian Development Bank
APWF	–	Asia-Pacific Water Forum
DMC	–	developing member country
ICHARM	–	International Centre for Water Hazard and Risk Management (Tsukuba, Japan)
IWRM	–	integrated water resources management
Lao PDR	–	Lao People’s Democratic Republic
NARBO	–	Network of Asian River Basin Organizations
NDRMP	–	National Disaster Risk Mitigation Project (Bangladesh)
TA	–	technical assistance
WFP	–	Water Financing Program 2006–2010

## TECHNICAL ASSISTANCE CLASSIFICATION

<b>Type</b>	–	Regional–capacity development technical assistance (R-CDTA)
<b>Targeting Classification</b>	–	General intervention
<b>Sector</b>	–	Agriculture and natural resources
<b>Subsector</b>	–	Water-based natural resources management
<b>Themes</b>	–	Economic growth, environmental sustainability, regional cooperation
<b>Subthemes</b>	–	Widening access to markets and economic opportunities, natural resources conservation; client relations, network, and partnership development

## NOTE

In this report, “\$” refers to US dollars.

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## I. INTRODUCTION

1. Water-related disaster management is a priority area of the Water Financing Program 2006–2010 (WFP) of the Asian Development Bank (ADB), which seeks to double investments in water, with supporting reforms, capacity development, and regional cooperation. A targeted outcome is reduced vulnerability to floods for 100 million people in the Asia and Pacific region. The program is also helping to introduce integrated water resources management (IWRM) in 25 river basins across the region. Water-related disaster management is an important element of IWRM.
2. WFP implementation is backed by the Water Financing Partnership Facility, which mobilizes cofinancing and investments from development partners. Contributions to the facility finance (i) demonstration projects under the WFP in ADB's developing member countries (DMCs) (project support) (70%); and (ii) regional cooperation, knowledge and capacity building, and innovation services (program quality support) (30%).
3. ADB's *Water for All* (2001) policy<sup>1</sup> and *Disaster and Emergency Assistance Policy* (2004)<sup>2</sup> guide ADB investments and technical assistance (TA) both before and after disasters. Flood disasters accounted for more than half of ADB's disaster-related loans in 1987–2007. About 33% of such loans during the period went to mitigation assistance, 27% to emergency response, and 40% to rehabilitation and reconstruction.
4. Aware of the need to boost investments and knowledge in water-related disaster management under WFP, ADB's Regional and Sustainable Development Department in 2007 initiated the preparation of a regional TA project to help implement the WFP. The project, conceived in consultation with ADB's Water Community of Practice, would rely on both in-country and regional assistance in water-related disaster management, and on financing from ADB's Japan Special Fund within the framework of the Water Financing Partnership Facility. The regional TA received concept clearance from ADB's Management in April 2008.<sup>3</sup>
5. Water-related disaster management is one of the three main themes of the Asia-Pacific Water Forum (APWF) and is supported by the International Centre for Water Hazard and Risk Management (ICHARM). Both organizations were established in 2006—APWF by the Government of Japan and ADB, and ICHARM by the Government of Japan and the United Nations Educational, Scientific and Cultural Organization (UNESCO). Flood-related risk management is the initial focus of ICHARM.
6. At the inaugural Singapore International Water Week in June 2008, marking the midpoint of the WFP, ADB President Haruhiko Kuroda outlined a seven-point agenda prioritizing water investments in the region. Pointing out that water-related disasters are causing more loss of life and destruction in the region, he urged all sectors to invest more to reduce vulnerability and

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<sup>1</sup> ADB's *Water for All* policy looks forward to helping ADB's DMCs anticipate natural calamities, and minimize economic and social damage, through a better understanding of climatic patterns. The policy supports the introduction of IWRM in river basins and promotes both structural and nonstructural approaches to flood protection.

<sup>2</sup> ADB's *Disaster and Emergency Assistance Policy* takes a holistic approach to disasters through measures that prevent as well as protect from such disasters. It provides for risk management and a more systematic understanding of disaster and its management. The aim is to (i) help DMCs manage hazards more effectively by reducing their exposure to risk; and (ii) facilitate rapid and adequate assistance in response to shocks. Both are seen as essential to mainstreaming disaster in ADB's sustainable development agenda. An important feature of the policy is the development of partnerships for the systematic reduction of disaster risk.

<sup>3</sup> The TA first appeared in the business opportunities section of ADB's website on 4 December 2008.

make communities better prepared, and more resilient. The challenge, he said, is as much institutional as it is about infrastructure building, and both need much more attention in the years ahead. President Kuroda also reaffirmed ADB's offer to work together with clients and partners on the WFP platform, underlining the huge dividends to be gained from working in partnership. Working together to catalyze and leverage investments and pool the region's knowledge in the priority areas can raise the standard of living for hundreds of millions of poor people in the region—and increase water security for all.

7. APWF launched its *KnowledgeHubs* initiative during the Singapore International Water Week, to promote knowledge networking for water security in the 21st century.<sup>4</sup> *KnowledgeHubs* is a network of internationally recognized institutions committed to generating and sharing water knowledge and capacity building in the Asia and Pacific region. Among the 12 founding members, ICHARM serves as the regional water knowledge hub for disaster risk reduction and flood management. Also during Water Week, ADB and ICHARM convened a regional consultation meeting on water-related disaster management and climate change adaptation. Senior government officials of ADB's DMCs, experts, and partner organizations at the meeting endorsed the proposed TA and provided further direction to its design.

8. ADB and ICHARM started collaborating on training workshops in water-related disaster management for the Network of Asian River Basin Organizations (NARBO) in 2007.<sup>5</sup> With ICHARM's recent appointment as regional water knowledge hub for disaster risk reduction and flood management under the APWF *KnowledgeHubs* initiative, ADB expects ICHARM to provide knowledge and capacity-building assistance in the preparation and implementation of disaster risk reduction and flood management projects throughout the region. Funding from the proposed TA will allow wider collaboration between ADB and ICHARM in a number of interested DMCs, including Bangladesh, India, Indonesia, and with the Mekong River Commission Secretariat for the lower Mekong basin.

## II. ISSUES

9. The past 50 years have seen a sharp rise in large-scale disasters. In the Asia and Pacific region, water-related disasters, more than other types, have increased in frequency. The scale and impact of the damage they inflict have also become more serious. Water-related disasters in the region killed around 63,000 people each year on average in 2001–2005, 91% of the world's total. Economic damage resulting from water-related disasters has soared in recent decades, to \$466 billion in 1992–2001, and the economic losses in 1995–2004 were more than 60 times higher than the losses in 1965–1974. Worldwide, flood disasters were responsible for 84% of disaster-related deaths (2000–2005) and 65% of disaster-related economic losses (1992–2001). More people than ever before live and work in vulnerable floodplains. By 2050, more than 2 billion people are expected to be at risk from flood damage. Furthermore, water-related disasters are expected to intensify with global warming.

10. The countries participating in the regional TA are all faced with flood risk management challenges. Bangladesh, at the confluence of three major regional river systems, is beset with

<sup>4</sup> Further information on the APWF *KnowledgeHubs* initiative is available at [www.apwf-knowledgehubs.net](http://www.apwf-knowledgehubs.net).

<sup>5</sup> NARBO was formed in 2004 to help introduce IWRM in river basins and to strengthen the capacity and effectiveness of river basin organizations in promoting IWRM and improving water governance. NARBO now has 65 member organizations. Its chair for 2008–2010 is from Indonesia and its vice-chair from Sri Lanka. The secretariat comprises the Japan Water Agency, ADB, and ADB Institute.

massive monsoon floods, drainage congestion, and riverbank erosion. Floods also devastate India with increasing regularity, most recently in 2008 in the states bordering Nepal, and also in Orissa state, where incessant rains caused flooding in the Mahanadi river basin. Flooding in the lower Mekong river basin countries is an annual event that disrupts economic and human activities, often claims lives, and causes extensive damage to important infrastructure, human settlements, and essential services. Indonesia experiences flooding about 300 times each year, with severe impact on the poor and their livelihood. Flood damage in Java grows more serious with each passing year.

### III. THE PROPOSED TECHNICAL ASSISTANCE

#### A. Impact and Outcome

11. The proposed TA will help prepare and implement flood management investment projects through knowledge and capacity development services that will reduce vulnerability to water-related disasters with in-country and regional assistance. The TA will contribute to the achievement of the WFP's targeted outcome of reducing vulnerability to floods for 100 million people in the Asia and Pacific region. The TA design and monitoring framework is in Appendix 1.

#### B. Methodology and Key Activities

12. The proposed TA will have two components: (i) in-country project support, and (ii) program quality support through regional cooperation.

13. **Project Support.** Support will be provided to Bangladesh, India, Indonesia, and to the Mekong River Commission Secretariat. More countries are expected to participate in the regional cooperation activities under the program quality support component. National executing and implementing agencies will be assisted with a package of advisory services and financial support in formulating and implementing (i) flood management investment projects, strategies, and programs, including flood hazard mapping applications; (ii) demonstration projects to improve flood forecasting and warning through a regional, satellite-supported flood alert system with advanced geophysical data integrating satellite, radar, and ground observations; (iii) action research on innovative practices in community-managed flood preparedness and disaster risk management; (iv) the identification of "no regret" investments in flood management to accommodate the impact of climate change; and (v) capacity development activities, including diagnostic assessments of executing and implementing organizations, in preparation for long-term capacity-building, governance, and training programs.

14. In Bangladesh, the TA is expected to support the preparation of the upcoming National Disaster Risk Mitigation Project (NDRMP)<sup>6</sup> to implement the recommendations of an earlier TA<sup>7</sup> for early-warning systems studies, which identified 22 high-priority improvements in the flood forecasting strategy of Bangladesh. The proposed TA will extend the scope of NDRMP to cover water-related disaster management including storm surges, river erosion management, and improved flood forecasting. Its output will be used in the design of ADB's project

<sup>6</sup> The project preparatory TA is scheduled for 2010 and the TA loan is expected in 2011.

<sup>7</sup> ADB. 2005. *Technical Assistance to the People's Republic of Bangladesh for Early Warning Systems Study*. Manila (TA 4562-BAN, \$250,000). This TA Project is attached to ADB. 2005. *Report and Recommendation of the President on a Proposed Loan and Technical Assistance Grants to the People's Republic of Bangladesh for Emergency Flood Damage Rehabilitation Project*. Manila (Loan 2156-BAN).

preparatory TA for NRDMP, and the second phase of the Comprehensive Disaster Management Project of the United Nations Development Programme (UNDP).

15. In India, the TA is expected to support the National Disaster Management Authority in preparing the National Flood Mitigation Project, developing the capacity of the newly created state disaster management authorities as appropriate, and facilitate the preparation, planning, and implementation of state level water disaster management projects in India. International good practices in comprehensive risk mitigation, integrated planning for long-term flood management in river basins, nonstructural flood risk management, and community-based participatory flood risk management, as well as capacity building in the states, are expected to be analyzed and exchanged.

16. In Indonesia, the TA is expected to support improvements in (i) flood management strategy and implementation in the Bengawan Solo river basin, shared by the Central and East Java provinces (ADB and NARBO will help prepare a road map for a long-term IWRM investment program for that purpose); and (ii) community-managed structural and nonstructural flood management interventions in the Jratunseluna river basin territory in Central Java province.

17. The Mekong River Commission Secretariat will be supported in developing flood and drought vulnerability indices for the lower Mekong basin, which have been identified as a priority requirement for preparing further investment projects.

18. **Program Quality Support.** To improve knowledge networking and regional cooperation among interested DMCs and development partners in the Asia and Pacific region (i) workshops and exchange visits among professionals will be held to share experiences in flood management; (ii) climate change adaptation effects will be incorporated into flood risk management; (iii) river basin organizations will be trained in flood risk management for NARBO; (iv) training will be provided to make flood risk management an integral part of city preparedness planning, through city networks like CityNet; (v) policy and institutional training elements will be developed for ICHARM's master's degree program in disaster management, with a link to local action research in the participating countries; (vi) a pool of regional experts will be organized to improve flood management and emergency response services; (vii) a regional index for in-country water-related disaster preparedness will be developed to introduce performance benchmarking and improvement through project investments and capacity development; and (viii) a comparative study of institutional arrangements for flood risk management in the region will be made.

### **C. Cost and Financing**

19. The total cost of the proposed TA is estimated at \$2.0 million. The proposed TA will be financed by ADB on a grant basis from the Japan Special Fund funded by the Government of Japan. The cost of the in-country project support component is estimated at \$1.4 million, 70% of the total TA cost, and the cost of the regional program quality support component at \$0.6 million, or 30%. ICHARM will contribute in-kind support for staff time, research operations, and administrative and support costs. The cost estimates are shown in Appendix 2.

#### **D. Implementation Arrangements**

20. ADB, through the Sustainable Infrastructure Division and the Public Management, Governance, and Participation Division of the Regional and Sustainable Development Department, will be the Executing Agency of the TA. These divisions will collaborate with the Basin Water Stream of ADB's Water Community of Practice, concerned regional departments, and resident missions. Team members from the regional departments will coordinate the implementation of the in-country project support component. ICHARM, the APWF's regional water knowledge hub for disaster risk reduction and flood management, will be the Implementing Agency. Throughout the implementation of the TA's in-country and regional components, ICHARM will collaborate closely with ADB headquarters, resident missions, and project clients and their consultants. The TA will be implemented only after (i) ADB and ICHARM sign an agreement to that effect, and (ii) ADB approves a detailed work program for each component. No activity financed by the TA will be undertaken in a DMC unless ADB has received a no-objection from the Government of the concerned DMC and in particular, the Governments of the DMCs which will benefit from the project support component will be required to confirm their no-objection to the activities to be undertaken in their territory under the project support component before these activities can take place.

21. ICHARM is expected to hire six international consultants (42 person-months) and six national consultants (52 person-months) to provide expertise in water-related disaster management and climate change adaptation and thus help achieve the intended impact and outcome of the TA. ADB may also hire a TA coordinator for 12 person-months to monitor and coordinate out of ADB headquarters the implementation of the TA activities with ADB's Water Community of Practice and regional departments. All consultants will be hired according to ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time). The outline terms of reference for the consultants are in Appendix 3. Equipment will be procured according to ADB's *Procurement Guidelines* (2007, as amended from time to time). At the end of the project, equipment purchased under the TA will be assigned to the concerned agencies in the developing countries.

22. The TA will be implemented over 24 months, from May 2009 to April 2011. ICHARM will submit (i) an inception report at the end of the 3rd month after mobilization; (ii) quarterly progress reports; (iii) an interim report at the end of the 12th month; (iv) a draft final report at the end of the 22nd month; and (v) a final report with the comments of ADB, clients in the participating countries, and other stakeholders invited by ADB. The TA's outputs will be posted on ADB's website.

#### **IV. THE PRESIDENT'S RECOMMENDATION**

23. The President recommends that the Board approve the provision of technical assistance not exceeding the equivalent of \$2,000,000 on a grant basis for Supporting Investments in Water-Related Disaster Management.

## DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and/or Indicators	Data Sources and/or Reporting Mechanisms	Assumptions and Risks
<p><b>Impact</b> Reduced vulnerability and increased resilience in the face of water-related disasters in the Asia and Pacific region</p>	<p>Significantly decreased economic and human losses from water-related disasters</p> <p>100 million people with reduced flood risk (targeted outcome of ADB's WFP)</p>	<p>National statistics; water publications; reports of APWF, ICHARM, and knowledge partners</p> <p>ADB progress report on WFP; countries' sector reports on ADB water website; reports of APWF, ICHARM, and knowledge partners</p>	<p><b>Assumption</b> Strong enabling environment for water-related disaster management and for water and climate change adaptation, including related policy, supporting legislation, political will, and commitment</p> <p><b>Risk</b> Low priority for water-related disaster management, and for water and climate change adaptation</p>
<p><b>Outcome</b> Better-designed investment projects in flood management</p> <p>Enhanced capacity in target countries for (i) flooding and flood-related disaster risk management and response services, and (ii) climate change adaptation</p> <p>Strengthened knowledge networking among countries in the region</p>	<p>Number of water basin flood management projects identified and formulated</p> <p>Number of successful workshops, training programs, exchange visits, demonstration projects, action research projects, and diagnostic assessments</p> <p>Number of organizations collaborating effectively for knowledge management</p>	<p>TA progress reports; countries' sector reports; ADB website and sector report</p> <p>TA progress reports; websites of APWF, ICHARM, and ADB</p> <p>TA progress report; websites of ICHARM, ADB, and APWF <i>KnowledgeHubs</i></p>	<p><b>Assumptions</b> Technical and institutional capacity for water-related disaster management, and for water and climate change adaptation</p> <p>Interest and capacity for knowledge networking</p> <p><b>Risk</b> Lack of interest, political will, and financing</p>
<p><b>Outputs</b> <b>A. Project Support</b> Flood management investment projects, strategies, and programs</p> <p>Demonstration projects to improve flood forecasting and warning</p> <p>Action research on community-managed flood preparedness</p>	<p>Design inputs for 3 investment projects, and recommendations for improved strategies in 5 countries</p> <p>5 local demonstration projects developed and implemented successfully</p> <p>3 local action research projects completed successfully</p>	<p>TA progress reports; countries' sector reports</p> <p>TA progress reports; countries' sector reports</p> <p>TA progress reports; countries' sector reports</p>	<p><b>Assumptions</b> Interest and willingness of institutions in target countries to participate in TA activities</p> <p>Commitment of target countries (i) to identify and formulate strategies, programs, and projects; and (ii) to share relevant experience, lessons, and models</p>

<b>Design Summary</b>	<b>Performance Targets and/or Indicators</b>	<b>Data Sources and/or Reporting Mechanisms</b>	<b>Assumptions and Risks</b>
<p>and disaster risk management practices</p> <p>Identification of “no regret” investments in flood management to accommodate climate change impact</p> <p>Capacity development activities in water-related disaster management and climate change adaptation</p>	<p>Investments identified in the 3 investment projects and recommendations for improved strategies in 5 countries</p> <p>3 diagnostic assessments of sector agencies in the participating countries</p> <p>3 in-country training workshops in flood management</p>	<p>TA progress reports; countries’ sector reports</p> <p>Reports of diagnostic assessments; TA progress reports</p> <p>Workshop reports</p>	<p>Availability of relevant data and experience</p> <p><b>Risks</b> Lack of qualified and available staff to participate in project support and program quality support activities</p> <p>Inability of stakeholders to participate in consultation workshops</p> <p>Late mobilization of consultants</p>
<p><b>B. Program Quality Support</b></p>			
<p>Workshops, training, and exchange visits</p>	<p>2 regional workshops in flood management and climate change adaptation; regional index for disaster preparedness and flood alert system</p> <p>2 training programs in institutional arrangements for flood management in cities and in river basins</p> <p>1 regional workshop in flood and drought indices for the lower Mekong basin countries</p> <p>At least 3 exchange visits related to flood management</p>	<p>Workshop report; countries’ sector reports</p> <p>Training report</p> <p>Workshop report; countries’ sector reports</p> <p>Training report</p>	
<p>Mapping and stocktaking of initiatives in climate change adaptation</p>	<p>Inventory of initiatives in climate change adaptation effects in flood risk management</p>	<p>TA progress reports; stocktaking report</p>	
<p>Strengthened master’s degree program in disaster management at ICHARM</p>	<p>Modules for policy and institutional aspects</p>	<p>TA progress reports</p>	
<p>Pool of regional</p>	<p>Experts identified and</p>	<p>TA progress reports</p>	

Design Summary	Performance Targets and/or Indicators	Data Sources and/or Reporting Mechanisms	Assumptions and Risks
experts  Regional index for water-related disaster preparedness	procedures established for their services  Regional index developed and pilot-tested	TA progress reports	
<p><b>Activities with Milestones</b></p> <p><b>A. Project Support</b></p> <ol style="list-style-type: none"> <li>1. Flood management strategies and programs, and investment projects (third quarter, 2010)</li> <li>2. Demonstration project to improve flood forecasting and warning (second quarter, 2009)</li> <li>3. Action research on community-managed flood preparedness and disaster risk management practices (third quarter, 2009)</li> <li>4. Identification of “no regret” investments to accommodate extreme climate change variation (second quarter, 2010)</li> <li>5. Capacity development activities (fourth quarter, 2009)</li> <li>6. Diagnostic assessments (first quarter, 2010)</li> </ol> <p><b>B. Program Quality Support</b></p> <ol style="list-style-type: none"> <li>1. Exchange visits related to flood management (fourth quarter, 2009)</li> <li>2. Mapping of initiatives in climate change adaptation effects in flood risk management (second quarter, 2009)</li> <li>3. Training workshops in flood risk management for Network of Asian River Basin Organizations and city network (first quarter, 2010)</li> <li>4. Review of ICHARM’s master’s degree program in disaster management (second quarter, 2009)</li> <li>5. Organization of a pool of regional experts to enhance flood management and emergency response services (fourth quarter, 2010)</li> <li>6. Regional index for water-related disaster preparedness (first quarter, 2011)</li> <li>7. Collaboration with regional water knowledge hubs for climate change adaptation (first quarter, 2011)</li> </ol>			<p><b>Inputs</b></p> <p>ADB: \$2 million</p> <ul style="list-style-type: none"> <li>• Consultants: \$1,100,000</li> <li>• Equipment: \$40,000</li> <li>• Training and workshops: \$300,000</li> <li>• Surveys and studies: \$300,000</li> <li>• Miscellaneous administration and support: \$60,000</li> <li>• Contingencies: \$200,000</li> </ul> <p>ICHARM</p> <ul style="list-style-type: none"> <li>• In-kind contributions from staff and office</li> <li>• TA management with ADB</li> </ul> <p>Government and river basin organizations</p> <ul style="list-style-type: none"> <li>• Preparation of investment projects with ADB</li> <li>• Participation in workshops, training, exchange visits, diagnostic assessments, demonstration projects, and action research</li> </ul> <p>Knowledge Partners</p> <ul style="list-style-type: none"> <li>• Collaboration</li> <li>• Advice</li> </ul>

ADB = Asian Development Bank, APWF = Asia-Pacific Water Forum, ICHARM = International Centre for Water Hazard and Risk Management, TA = technical assistance, WFP = Water Financing Program.

**COST ESTIMATES AND FINANCING PLAN**  
(\$'000)

<b>Item</b>	<b>Total Cost</b>
<b>Asian Development Bank Financing<sup>a</sup></b>	
1. Consultants	
a. Remuneration and Per Diem	
i. International Consultants	670.0
ii. National Consultants	180.0
b. International and Local Travel	150.0
c. Reports and Communications	100.0
2. Equipment <sup>b</sup>	40.0
3. Workshops, Training and Seminars, and Conferences <sup>c</sup>	300.0
4. Surveys and Studies	300.0
5. Miscellaneous Administration and Support Costs	60.0
6. Contingencies	200.0
<b>Total</b>	<b>2,000.0</b>

<sup>a</sup> Financed by the Japan Special Fund funded by the Government of Japan.

<sup>b</sup> Computers and printers.

<sup>c</sup> Including travel costs for Asian Development Bank staff acting as resource persons.

Source: Asian Development Bank estimates.

## OUTLINE TERMS OF REFERENCE FOR REGIONAL TECHNICAL ASSISTANCE OUTPUTS

1. The technical assistance (TA) will be carried out over 24 months. The Asian Development Bank (ADB) will be the Executing Agency, and the International Center for Water Hazard and Risk Management (ICHARM) will be the Implementing Agency. ICHARM will implement the TA's two components and will sign an agreement with ADB for that purpose. ICHARM is expected to hire six international consultants (42 person-months) and six national consultants (52 person-months) to provide expertise in water-related disaster management and climate change adaptation and thus help achieve the impact and outcome of the TA. ADB may also hire a TA coordinator for 12 person-months to monitor and coordinate out of ADB headquarters the implementation of the TA activities with ADB's Water Community of Practice and regional departments.
2. All consultants will be hired in accordance with ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time). The outline terms of reference for the consultants are in Appendix 3. Equipment will be procured according to ADB's *Procurement Guidelines* (2007, as amended from time to time).
3. The TA will be implemented over 24 months, from May 2009 to April 2011. ICHARM will submit (i) an inception report at the end of the 3rd month after mobilization; (ii) quarterly progress reports; (iii) an interim report at the end of the 12th month; (iv) a draft final report at the end of the 22nd month; and (v) a final report with the comments from ADB, clients in the participating countries, and other stakeholders invited by ADB. The TA's outputs will be posted on ADB's website.

### A. Component 1: Project Support (in-country)

- 4.. This component will provide a package of advisory services and financial support to the national executing and implementing agencies in the participating countries to assist them in formulating and implementing the following:
  - (i) Flood management investment projects, strategies and programs, including applications of flood hazard mapping.
  - (ii) Demonstration projects to improve flood forecasting and warning through a regional, satellite-supported flood alert system with advanced geophysical data integrating satellite, radar, and ground observations.
  - (iii) Action research on innovative community-managed flood preparedness and disaster risk management practices.
  - (iv) Identification of "no regret" investments in flood management to accommodate climate change impact.
  - (v) Capacity development activities, including training programs.
  - (vi) Diagnostic assessments of executing and implementing organizations in preparation for long-term programs to build capacity and improve governance.
5. In Bangladesh, the TA is expected to give technical support to the following:
  - (i) The preparation of the ADB-funded National Disaster Risk Mitigation Project,<sup>1</sup> drawing on the recommendations of an earlier TA for early-warning systems

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<sup>1</sup> The project preparatory TA is scheduled in 2010 and the TA loan is expected in 2011.

studies,<sup>2</sup> which identified 22 high-priority improvements in the flood forecasting strategy of Bangladesh. The scope of the project will be expanded to incorporate water-related disaster management including storm surges, river erosion management, and improved flood forecasting aspects.

- (ii) The preparation and implementation of the second phase of the national Comprehensive Disaster Management Project, which is supported by a consortium of development partners, including ADB, and coordinated by the United Nations Development Programme (UNDP).
- (iii) Action research comparing innovative community-managed flood preparedness and disaster risk management practices in communities in the Padma Irrigation and Rural Development Project and the Meghna–Dhonagoda Irrigation Project.

6. In India, the TA may support as appropriate the following:

- (i) Technical advice and capacity development assistance to the National Disaster Management Authority in the preparation of the National Flood Mitigation Project.
- (ii) Capacity development of the newly established state disaster management authorities, in advanced systems of flood zoning (flood plain zoning, risk mapping, land use planning), and flood insurance; the application of regional and basin modeling to assess the impact of climate change; the integration of flood management policy, strategy, and planning into broader water management issues; state-level flood forecasting and warning systems, including data and knowledge management, together with twinning arrangements with ICHARM in research and development; and frameworks for the institutional and organizational development aspects of risk management.
- (iii) Facilitation of state level planning, policy and strategy formulation, preparation, and implementation of water disaster risk management programs, where analysis and exchange of international best practices is expected in comprehensive risk mitigation, integrated planning for long-term flood management in river basins, application of nonstructural flood risk management measures, and participatory mechanisms for community-based flood risk management, including capacity building at state level.

7. In Indonesia, the TA is expected to support the following:

- (i) Planning, technical advice, and capacity-building assistance in improving flood management strategy and implementation in the Bengawan Solo river basin, which is shared by the Central and East Java provinces, to help the river basin organization prepare a road map for a long-term investment program in integrated water resources management (IWRM), in collaboration with ADB and the Network of Asian River Basin Organizations.
- (ii) A demonstration project to improve flood forecasting and warning through a regional, satellite-supported flood alert system with advanced geophysical data integrating satellite, radar, and ground observations.
- (iii) Action research, technical advice, and capacity-building support for improving and expanding community-managed structural and nonstructural flood management interventions in the Jratunseluna river basin territory in Central Java province.
- (iv) A diagnostic assessment of executing and implementing organizations in preparation for long-term programs to build capacity and improve governance for

<sup>2</sup> ADB. 2005. *Technical Assistance to The People's Republic of Bangladesh for the Early Warning Systems Study*. Manila (TA 4562-BAN, approved on 20 January 2005 for \$250,000).

water-related disaster risk management in the Bengawan Solo river basin and the Jratunseluna river basin territory.

8. The TA is expected to support the Mekong River Commission Secretariat in developing flood and drought vulnerability indices for the lower Mekong basin, which have been identified as a priority requirement for preparing investment projects. The support will strengthen the technical foundations for implementing the regional TA for flood and drought risk management and mitigation in the Greater Mekong Subregion<sup>3</sup>, which will help the countries in the lower Mekong develop investment projects and improve the ability of communities to prepare for, respond to, and recover from the negative impact of floods and droughts. However, the scope of that regional TA excludes the development of flood and drought vulnerability indices. The TA is expected to help with the following:

- (i) Defining flood vulnerability indices relevant to future flood management at the community level (the impact of floods on health, food security, livelihoods, poverty, education, and others), and relating them statistically to the underlying socioeconomic factors.
- (ii) Developing a methodology for mapping these indices on a geographic information system (GIS) basis and pilot-testing the mapping.
- (iii) Defining and measuring the factors that affect the various flood vulnerability indices, through supplementary community surveys (at the family level) of flood and drought impact in flood-prone villages where the basic socioeconomic profile has previously been determined by community surveys of other agencies (typically nongovernment organizations).
- (iv) Extrapolating the indices across the flood-prone areas by relating the indices and their underlying factors to national socioeconomic statistics.

## **B. Component 2: Program Quality Support (regional)**

9. This component will help improve knowledge networking and regional cooperation among interested developing member countries and development partners in the Asia and Pacific region through technical assistance for the following activities:

- (i) Workshops and exchange visits among professionals to share experiences in flood management.
- (ii) The incorporation of climate change adaptation effects into flood risk management.
- (iii) Training to develop the capacity of river basin organizations in flood risk management for the Network of Asian River Basin Organizations.
- (iv) Training to incorporate flood risk management in cities, through existing city networks like CityNet.
- (v) The development of policy and institutional training elements for ICHARM's master's degree program in disaster management, with a link to local action research in the participating countries.
- (vi) The organization of a pool of regional experts to improve flood management and emergency response services.
- (vii) The development of a regional index for in-country water-related disaster preparedness with a view to introducing performance benchmarking and improvement through project investments and capacity development.
- (viii) A comparative study of institutional arrangements for flood risk management in the region.

<sup>3</sup> ADB. 2008. *Technical Assistance for Preparing the Greater Mekong Subregion Flood and Drought Risk Management and Mitigation Project*. Manila (TA 6456-REG, \$2,500,000).