



Report and Recommendation of the President to the Board of Directors

Project Number: 40190
November 2012

Proposed Loan and Administration of Loan and Grant Kingdom of Cambodia: Greater Mekong Subregion Flood and Drought Risk Management and Mitigation Project

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 8 November 2012)

Currency unit		riel/s (KR)
KR1.00	=	\$0.00025
\$1.00	=	KR4,047.95

ABBREVIATIONS

ADB	–	Asian Development Bank
CBDRM	–	community-based disaster risk management
CPMU	–	central project management unit
GMS	–	Greater Mekong Subregion
ha	–	hectare
km	–	kilometer
Lao PDR	–	Lao People's Democratic Republic
LMB	–	Lower Mekong Basin
MOWRAM	–	Ministry of Water Resources and Meteorology
PIU	–	project implementation unit
SCF	–	Strategic Climate Fund

NOTE

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

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PROJECT AT A GLANCE

1. Project Name: Greater Mekong Subregion Flood and Drought Risk Management and Mitigation Project (CAM)		2. Project Number: 40190-013																			
3. Country: Cambodia,Regional		4. Department/Division: Southeast Asia Department/Environment, Natural Resources & Agriculture Division																			
5. Sector Classification:																					
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10. Safeguards Categorization:																					
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I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on (i) a proposed loan, (ii) proposed administration of a loan to be provided by the ADB Strategic Climate Fund,¹ and (iii) proposed administration of a grant to be provided by the ADB Strategic Climate Fund, all to the Kingdom of Cambodia for the Greater Mekong Subregion (GMS) Flood and Drought Risk Management and Mitigation Project.²

2. The regional project is designed to assist three Lower Mekong Basin (LMB) countries: Cambodia, the Lao People's Democratic Republic (Lao PDR) and Viet Nam. This report and recommendation covers the project interventions and proposed financing for Cambodia. The report and recommendation covering project interventions and financing for the Lao PDR and Viet Nam was approved by the Board on 6 November 2012. The two-step processing approach does not compromise the overall integrity of the regional project in general and the regional activities in particular.

3. The project will support the Government of Cambodia as it undertakes structural and nonstructural measures to prepare for and manage disaster risks linked to floods and droughts.³ Project interventions will (i) enhance the regional data, information, and knowledge base for the management of floods and droughts; (ii) upgrade or develop water management infrastructure; and (iii) prepare communities to manage disasters such as floods and droughts, and adapt to climate change. Improved drought management and irrigation water structures in Cambodia will benefit farmers on about 16,000 hectares (ha) of agricultural lands, and at least 10,000 people will benefit from improved flood management.⁴

II. THE PROJECT

A. Rationale⁵

4. The Mekong River stretches from the eastern watershed of the Xizang⁶ Plateau to the Mekong Delta, flowing over 4,909 kilometers (km) through Cambodia, the People's Republic of China, the Lao PDR, Myanmar, Thailand, and Viet Nam with a total basin area of 795,000 square kilometers (km²).⁷ The Lower Mekong Basin (LMB) is home to about 60 million people in Cambodia, the Lao PDR, Thailand, and Viet Nam. The Mekong River, while being one of the 20 largest rivers in the world, stands apart because of the large fluctuations in seasonal discharge—very low flows in the dry season yet extensive flooding in the wet season.⁸ River

¹ Under the Pilot Program for Climate Resilience financed by the Strategic Climate Fund.

² The design and monitoring framework is in Appendix 1.

³ "Structural measures refer to any physical construction to reduce or avoid possible impacts of hazards, which include engineering measures and construction of hazard-resistant and protective structures and infrastructure. Nonstructural measures refer to policies, awareness, knowledge development, public commitment, and methods and operating practices, including participatory mechanisms and the provision of information, which can reduce risk and related impacts." Source: United Nations International Strategy for Disaster Reduction (UNISDR). 2009. *UNISDR Terminology on Disaster Risk Reduction*. Geneva. Available on the UNISDR website at: www.unisdr.org/publications and on Protection Web at: www.protectionweb.net.

⁴ The Asian Development Bank (ADB) provided project preparatory technical assistance. ADB. 2008. *Technical Assistance to the Kingdom of Cambodia, the Lao People's Democratic Republic, Kingdom of Thailand, and Socialist Republic of Viet Nam for Preparing the Greater Mekong Subregion Flood and Drought Risk Management and Mitigation Project*. Manila.

⁵ The rationale covers the three countries of the GMS Flood and Drought Risk Management and Mitigation Project.

⁶ Also known as the Tibet Autonomous Region.

⁷ Mekong River Commission. <http://www.mrcmekong.org/the-mekong-basin/physiography/>

⁸ World Bank. 2007. *Strategy Note on World Bank Regional Support for the Greater Mekong Sub-Region*. <http://siteresources.worldbank.org/INTTHAILAND/Resources/333200-1211794042917/gms-wb-strategy.pdf>

flow is largely unaffected by water control structures and follows the seasonal hydrological cycle.

5. **Climate change.** The anticipated impacts of climate change and sea level rise in the Mekong River Basin indicate that the water-related vulnerability will be exacerbated.⁹ Global and regional climate change scenario analyses indicate that in the LMB, temperatures as well as annual rainfall and runoff will increase and sea level will rise, increasing agriculture and economic losses in the Mekong Delta.¹⁰ Floods and droughts are projected to become more frequent and intense.

6. **Floods.** Annual floods in the LMB are beneficial, nourishing the wetlands and sustaining fisheries and biodiversity.¹¹ Extreme floods, however, cause losses and damage to livelihoods, agriculture, and infrastructure. The average annual direct cost of flooding to agriculture, infrastructure, and buildings in the LMB is \$60 million–\$70 million, while the average annual value of flood benefit is estimated at \$8 billion–\$10 billion (footnote 10). The challenge for flood risk management is to reduce the costs and impacts of flooding while preserving its benefits.

7. Physical exposure to flood risks in the LMB is high and this is translated into economic exposure.¹² Damage in monetary terms is higher in Viet Nam, signifying the level of exposure resulting from higher development (agriculture and infrastructure) than in Cambodia and the Lao PDR. In September 2009, typhoon Ketsana caused damage and losses estimated at \$800 million in Viet Nam, \$131 million in Cambodia, and \$58 million in the Lao PDR.

8. **Droughts.** Droughts, which occur as a result of periods of very low rainfall and river flow, cause disruption to the livelihoods of farmers and food supply chains.¹³ Droughts are considered disasters because they significantly affect poor and vulnerable communities, particularly by increasing household food insecurity.¹⁴ Water shortages, particularly during critical growth stages of crops, significantly reduce yields. Saline water intrusion in estuaries and coastal areas—exacerbated by the low flows, particularly in the delta area of Viet Nam—is another cause of concern that reduces food production.

9. The direct costs of drought in the LMB relate to the impact of agricultural droughts—reduced yields or total loss of crops, especially rice, together with reduced livestock and fishery yields. The 2004–2005 drought was severe for all LMB countries, with losses estimated at \$42 million in the delta and localized food shortages. The extreme low flows in the Mekong River during March–April 2010 harmed dry season crops along the Mekong River as pumping stations were not able to draw water.

⁹ United Nations Environment Programme. 2009. *Vulnerability Assessment of Freshwater Resources to Environment Change: Mekong River Basin*. Nairobi.

¹⁰ Asian Development Bank; GMS Environment Operations Center. 2008. GMS: Climate Makers or Climate Takers? Background paper for the 2nd GMS Development Dialogue: Bangkok, 21 May.

¹¹ The fishery in the LMB is considered among the largest inland fisheries in the world. Its total economic value is estimated to be at least \$3.9 billion annually. Source: Mekong River Commission. 2010. *State of the Basin Report 2010 Summary*. Vientiane.

¹² Economic exposure is estimated by mapping physical exposure onto the distribution of economic output to estimate the gross domestic product at risk. Source: United Nations Economic and Social Commission for Asia and the Pacific and UNISDR. 2010. *Asia-Pacific Disaster Report 2010*. Bangkok.

¹³ Meteorological droughts, defined by low rainfall over the wet season (May–November), reduce yields of rain-fed rice and other crops. The agricultural impacts of hydrological droughts are most severe during the dry season, when below-normal streamflows reduce irrigation and the yield of dry season crops. Hydrological droughts may also occur during the wet season, for example, when below-normal streamflows reduce the volume and extent of flood waters stored in the Tonle Sap Lake in Cambodia and the yield of its fishery.

¹⁴ Indirect costs that are difficult to assess include costs of perpetuating structural poverty, such as stunted growth in early childhood, resulting in lifelong loss of productivity.

10. **Insufficient disaster preparedness.** Countries in the LMB have varying levels of capacity to prepare for and manage flood- and drought-related disasters. Actions are mostly reactive, rather than proactive, and are uncoordinated. Better flood and drought disaster preparedness requires (i) knowledge availability and sharing of potential changes to the spatial and temporal distribution of climate and hydrological variables over the basin as a whole; (ii) capacity for timely flood and drought forecasting and dissemination of warnings to communities at risk; (iii) engagement of at-risk communities in the identification, analysis, treatment, monitoring, and evaluation of disaster risks to reduce their vulnerabilities and enhance their coping capacities; and (iv) improved condition of water control infrastructure.

11. **Solutions and opportunities.** Improving the disaster preparedness of countries and communities to manage and mitigate the potential impacts of extreme floods and droughts requires structural and nonstructural initiatives. In terms of nonstructural measures, institutional and technical capacity building activities can strengthen regional information and knowledge generation and sharing with regard to water resources management in general and flood and drought management in particular. Community-based disaster risk management (CBDRM) can equip communities, especially women, to access information on disaster risks and enhance their preparedness.¹⁵ Two-way channels for information sharing between local communities, river basin management systems, national early warning centers, and disaster forecasting centers are necessary. Structural measures include rehabilitation of flood control embankments, water control structures, and irrigation and drainage structures.

12. **Regional initiatives.** The project is one of the flagship programs of the 2002 GMS Economic Cooperation Program Strategic Framework and the 2008 Vientiane Plan of Action. At the regional level, the Mekong River Commission provides a framework for sustainable development of the LMB.¹⁶ The Mekong River Commission secretariat plays an important role in supporting national agencies and nongovernment organizations with technical services on regional and transboundary issues. ADB and development partners are also supporting natural resource management and climate change adaptation through subregional initiatives including the GMS Core Environment Program and its Biodiversity Conservation Initiative, and the GMS Core Agriculture Support Program.¹⁷

13. **Relevance to national priorities.** The project is aligned with the relevant policies, strategies, and programs such as (i) the Lao PDR Disaster Management Action Frameworks, 2003–2020; (ii) Viet Nam's National Strategy for Natural Disaster Prevention, Response and Mitigation approved by the Prime Minister in 2007 (Decision No. 172/2007); National Targeted Program to Respond to Climate Change; Strategic Direction of Water Resources Development (to 2020 and toward 2050), and the Mekong Delta Master Plan; and (iii) the Ministry of Water Resources and Meteorology of Cambodia's Rectangular Strategy and the National Water Resources Policy for Cambodia.¹⁸

¹⁵ CBDRM is a process in which at-risk communities are actively engaged in the identification, analysis, treatment, and monitoring and evaluation of disaster risks in order to reduce their vulnerabilities and enhance their capacities. CBDRM seeks to strengthen community resilience to disaster-related shocks.

¹⁶ The Mekong River Commission was formed on 5 April 1995 by an agreement between the governments of Cambodia, the Lao PDR, Thailand, and Viet Nam. The Mekong River Commission secretariat is based in Vientiane, Lao PDR.

¹⁷ The GMS initiatives are supported by several development partners, such as the Government of Finland (Core Environment Program Biodiversity Corridors Initiative pilot and second phases) and the Government of Sweden (Implementing the Core Agriculture Support Program Phase 2).

¹⁸ Approved by the Council of Ministers on 16 January 2004.

14. **ADB support.** The project is aligned with ADB's Water Operational Plan, 2011–2020, which identifies flood and drought mitigation (as part of disaster risk management) as one of the two urgent challenges to be addressed in the integrated water resource management process.¹⁹ The project is also aligned with the ADB's Disaster and Emergency Assistance Policy (2004) as it will support the governments and local communities in identifying and managing risks from natural hazards. The project benefits from lessons from past ADB assistance on irrigation development and flood management in the region.²⁰

B. Impact and Outcome

15. The impact will be reduced economic losses resulting from floods and droughts. The outcome will be improved capacity and preparedness to manage and mitigate the impacts of flood and drought events.²¹

C. Outputs

16. The project in Cambodia will have four key outputs.

17. **Output 1: Enhanced regional data, information, and knowledge base for the management of floods and droughts.** The project will support (i) the development of design criteria for flood and drought risk mitigation schemes and water control infrastructure in the Mekong Delta and elsewhere, (ii) the assessment of cross-border flood management options in Viet Nam and Cambodia, and (iii) the strengthening of the National Flood Forecasting Center.

18. **Output 2: Upgraded water management infrastructure.** The Damnak Chheukrom irrigation system rehabilitation subproject for improved drought management and increased flood protection of Pursat town includes:²²

- (i) an upstream controlled and supply-managed irrigation scheme to provide (a) wet season supplementary irrigation for 16,100 ha of net command area in Pursat Province, and (b) full irrigation to a smaller net command area during the dry season;²³
- (ii) a new headworks structure that will withdraw irrigation water from the Pursat River to the command area and facilitate peak flood diversion using the scheme's main canal, comprising (a) a new barrage located on the Pursat River about 40 km upstream of Pursat town that is designed to safely convey the 50-year flood under anticipated climate change conditions, and (b) an intake structure that can control river withdrawals for both command and flood diversion flows;
- (iii) a 30 km main canal that will convey the peak flood diversion discharge of 40 cubic meters per second from the Pursat River to the Svay Donkeo River, which comprises (a) rehabilitation of a 14 km reach of an existing nonfunctioning main canal, and (b) further construction of 16 km of new main canal;

¹⁹ ADB. 2011. *Water Operational Plan, 2011–2020*. Manila.

²⁰ ADB. 2003. *Technical Assistance for Support for the Mekong River Commission Flood Management and Mitigation Program*. Manila (TA 6149-REG); ADB. 2005. *Technical Assistance to the Kingdom of Cambodia for Community Self-Reliance and Flood Risk Reduction*. Manila (TA 4574-CAM).

²¹ The proposed support to the Lao PDR and Viet Nam will have the same project impact and outcome.

²² The proposed support to the Lao PDR and Viet Nam under this output includes two subprojects in the Lao PDR (Vientiane capital flood protection subproject and Vientiane capital irrigation development subproject) and four subprojects in Viet Nam (upgrading the main canal system to drain and irrigate Plain of Reeds area, Thuong Thoi Tien bank protection, control and mitigation of flood risk for the Ba Rai–Phu An area, and upgrading the salinity intrusion system for the Go Cong area).

²³ Approximately 50% of the wet season net command area.

- (iv) four new main canal cross-regulator structures to control flows and water levels in the main canal for diversion of command flows into the secondary canals, while allowing conveyance of the peak flood discharge of 40 cubic meters per second;
- (v) a new outlet structure near the Svay Donkeo River; and
- (vi) four new secondary canals with a total length of 51.5 km, including check structures and outlets to the tertiary system, new tertiary and distribution canals and new drainage systems, canal cross-drainage and overflow structures along the main canal, and new road bridges along the main and secondary canals.

19. **Output 3: Enhanced capacity for community-based disaster risk management.** CBDRM activities will be implemented to ensure that communities are able to obtain the full benefit from upgraded water control infrastructure and improved flood warnings. Community-driven flood and drought risk reduction measures will be implemented based on participatory local flood and drought risk assessment and analysis, and disaster risk reduction and management plans.²⁴ Farmer water user committees will receive training and support to effectively undertake their role as managers of the tertiary and distribution irrigation system; and they will be supported in climate adaptation measures to diversify their crops and reduce crop irrigation requirements for dry and early wet season crops.

20. **Output 4: Effective project implementation.** The project will provide support to the executing agency and implementing agencies in the form of improved office facilities, technical and office equipment, capacity development of the staff, and consulting services for detailed design and construction supervision and implementation support.

21. **Increased climate resilience.** The outputs are designed to increase climate resilience in Cambodia in general and in the project area of Pursat Province in particular.²⁵ As climate change predictions indicate larger peak water flows, the design structural subproject has been improved to ensure that the subproject is more climate resilient. Besides structural measures, climate resilience will be increased through accompanying nonstructural measures. The ADB SCF grant will finance the costs of nonstructural measures to strengthen the capacity of the government and affected communities to reduce the risks associated with climate extremes, i.e., floods and droughts. The key measures are (i) setting up an effective early flood and drought warning system by providing real-time data through improved communication among the Department of Meteorology, the Provincial Department of Water Resources and Meteorology (PDWRAM), the Provincial Committee for Disaster Management, and the farmer water user committees; (ii) improving hydraulic design standards in the Mekong Delta; (iii) providing technical assistance to build community capacity to better manage and mitigate risks associated with increasing climate extremes, including the use of early warning systems to augment coping strategies and mechanisms of communities and promote community-based disaster risk reduction and management; and (iv) promoting adaptation measures.

D. Investment and Financing Plans

22. The project is estimated to cost \$47.75 million (Table 1).

²⁴ The proposed support to the Lao PDR and Viet Nam includes similar CBDRM activities.

²⁵ Increased Climate Resilience (accessible from the list of linked documents in Appendix 2).

Table 1: Project Investment Plan
(\$ million)

Item	Amount ^a
A. Base Costs^b	
1. Regional data and knowledge for the management of floods and droughts enhanced	2.54
2. Water management infrastructure upgraded	33.75
3. Capacity for community-based disaster risk management enhanced	1.05
4. Effective project implementation	3.56
Subtotal (A)	40.90
B. Contingencies^c	5.94
C. Financing Charges During Implementation^d	0.92
Total (A+B+C)	47.75

Note: Numbers may not sum precisely because of rounding.

^a Includes taxes and duties of \$3.55 million to be financed by the Asian Development Bank (ADB) loan and the ADB Strategic Climate Fund loan and grant.

^b Updated to June 2012 prices.

^c Physical contingencies at 10% for most expenditure categories. Price contingencies computed using ADB cost escalation factors.

^d Includes Asian Development Fund interest at 1% per annum and the ADB Strategic Climate Fund service charge at 0.1% during implementation.

Source: ADB estimates.

23. The Government of Cambodia has requested a loan in various currencies equivalent to SDR22,665,000 from ADB's Special Funds resources to help finance the project. The loan will have a 32-year term, including a grace period of 8 years, an interest rate of 1.0% per annum during the grace period and 1.5% per annum thereafter, and such other terms and conditions set forth in the draft loan agreement. The loan will finance works, equipment, vehicles, implementation and supervision costs, and operations and maintenance during implementation.

24. The ADB Strategic Climate Fund (SCF) will finance incremental costs to increase climate resilience of the project, including works, activities for the National Flood Forecasting Center, CBDRM, studies, consulting services, the service charge, and contingency through a \$4.0 million loan and a \$5.8 million grant.²⁶

25. Interest of the Asian Development Fund loan and the service charge of the ADB SCF loan during implementation will be capitalized. The repayment period of the ADB SCF loan will be 40 years, including a grace period of 10 years, with a service charge of 0.1% per annum on the disbursed and outstanding amount. ADB will administer the ADB SCF loan and grant. The government will finance \$2.95 million for land acquisition and resettlement.

26. ADB's total financing of the project in Cambodia will be \$35.0 million, or 73% of project cost.²⁷ The financing plan is in Table 2. The ADB loan will finance taxes and duties (\$3.55 million).²⁸ Land acquisition and resettlement expenditures will be entirely financed by the government.

²⁶ Under the Pilot Program for Climate Resilience financed by the ADB SCF.

²⁷ Transportation and insurance costs may be financed by the ADB loan, in accordance with ADB. 2008. Cost Sharing and Eligibility of Expenditures for ADB financing. *Operations Manual*. OM H3. Manila.

²⁸ The following principles were followed in determining the amount of taxes and duties to be financed by ADB: (i) the amount does not represent an excessive share of the project; (ii) the taxes and duties apply only to ADB-financed expenditures; (iii) the amount is within the thresholds identified during CPS preparation process; and (iv) financing of taxes and duties is material and relevant to the success of the project.

Table 2: Financing Plan

Source	Amount (\$ million)	Share of Total (%)
Asian Development Fund (loan)	35.00	73
ADB Strategic Climate Fund (loan) ^a	4.00	8
ADB Strategic Climate Fund (grant) ^a	5.80	12
Government of Cambodia	2.95	6
Total	47.75	100

ADB = Asian Development Bank.

^a Under the Pilot Program for Climate Resilience financed by the Strategic Climate Fund. The ADB Strategic Climate Fund is administered by ADB.

Source: ADB estimates.

E. Implementation Arrangements

27. The Ministry of Water Resources and Meteorology (MOWRAM) will be the executing agency and will delegate responsibility to its General Directorate of Technical Affairs, which will set up a central project management unit (CPMU) in Phnom Penh. A project implementation unit (PIU) will be established at the PDWRAM in Pursat Province. Another PIU will be based in the Department of Hydrology and River Works to oversee the implementation of output 1.

28. The implementation arrangements are summarized in Table 3 and described in detail in the project administration manual.²⁹

Table 3: Implementation Arrangements

Aspects	Arrangements		
Implementation period	March 2013–March 2019 (6 years)		
Management			
(i) Oversight body	Project steering committee Minister of Water Resources and Meteorology (chair) Representatives of the Ministry of Economy and Finance, General Directorate of the Ministry of Agriculture, Fisheries and Forestry, General Directorate of Technical Affairs, Ministry of Environment, National Committee for Disaster Management, Cambodia National Mekong Committee, Governor of Pursat Province (members)		
(ii) Executing agency	Ministry of Water Resources and Meteorology		
(iii) Key implementing agencies	Provincial Department of Water Resources and Meteorology of Pursat province; Department of Hydrology and River Works		
(iv) Implementation unit	Central project management unit (19 staff) and two project implementation units (13 staff) in Phnom Penh and Pursat.		
Procurement	International competitive bidding	multiple contracts	\$25.7 million
	National competitive bidding	multiple contracts	\$4.74 million
	Shopping	multiple contracts	\$0.05 million
Consulting services	Quality- and cost-based selection (80:20)	173 person-months	\$2.19 million
	Quality-based selection		\$3.72 million
	Consultants' qualifications selection		\$0.66 million
Advance contracting	Recruitment of the project implementation consultants.		
Disbursement	The ADB loan and SCF loan and SCF grant proceeds will be disbursed in accordance with ADB's <i>Loan Disbursement Handbook</i> (2012, as amended from time to time) and detailed arrangements agreed upon by the government and ADB.		

ADB = Asian Development Bank, SCF = Strategic Climate Fund.

Source: ADB estimates.

²⁹ Project Administration Manual (accessible from the list of linked documents in Appendix 2).

III. DUE DILIGENCE

A. Technical

29. The structural subproject involves the rehabilitation and upgrading of the existing water control infrastructure and construction of new structures such as the headworks structure. The PDWRAM has the capacity to supervise and coordinate the construction of such infrastructure. The design capacities of flood control gates, drainage pumps, and irrigation canals are based on international norms, hydrological and hydraulic analyses, and hydrographic and topographical surveys of the project area, and are suited to local conditions.

B. Economic and Financial

30. Economic benefits have been quantified from incremental agricultural output and from reduced flood damage to commercial activities and public infrastructure, as well as reduced need for relocation of families around Pursat township.³⁰ The economic analysis compares the identified net incremental benefits attributed to the investment with the costs for developing the irrigation system. The economic internal rate of return for the subproject is 12.1%.³¹

C. Governance

31. All procurement to be financed by the ADB loan and the ADB SCF loan and grant will be carried out in accordance with ADB's Procurement Guidelines (2010, as amended from time to time). Project implementation, procurement, and financial management will be aligned with the governments' standard operating procedures. MOWRAM has given assurance that all accounts administered by the CPMU and PIUs will be consolidated and audited annually by auditors acceptable to ADB. A financial management assessment concluded that the existing organizational structures of executing and implementing agencies are generally suitable for the implementation of the project and fund flow arrangements are clear. There are shortfalls such as the lack of experience with ADB project management; however, this will be addressed through training. The project will strengthen the capacities of the CPMU and PIU staff in financial management procedures to allow the efficient operation of advance accounts and the reporting of financial performance to the government and ADB. The project will establish or use existing ministerial websites to (i) disclose implementation progress and bid notifications and their results, and (ii) provide a grievance mechanism against any corrupt practice.

32. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government. The specific policy requirements and supplementary measures are described in the project administration manual (footnote 29).

D. Poverty and Social

33. **Benefits.** The mitigation and improved management of the risks related to floods and droughts will enable communities to benefit substantially from (i) avoiding loss of property and reducing casualties, (ii) increasing agricultural productivity and incomes through the improved

³⁰ This has been estimated based on data provided by the National Committee for Disaster Management based on the 2000 and 2011 floods and extrapolating the extent of damage to higher and lower frequency return periods of flood.

³¹ Economic and Financial Analysis (accessible from the list of linked documents in Appendix 2).

management and availability of water, and (iii) reducing economic losses from disruption of livelihoods.³²

34. **Gender impact (effective gender mainstreaming).** The key gender impacts of the project include increased women's engagement in (i) management of data and information on floods and droughts, (ii) local disaster risk management activities, and (iii) employment generated through civil works and other project-related activities. The gender action plan contains gender design features to ensure that (i) at least 40% of trainees will be women in all training on disaster risk assessment and analysis, prioritization, and implementation of locally appropriate risk management measures; (ii) at least 40% of participants in all public consultations for the development of safer village and commune plans will be women; (iii) at least 30% of community facilitators of the public consultation will be women; (iv) at least 30% of the implementers of the CBDRM measures will be women; (v) at least 30% of commune CBDRM coordination committee members will be women; (vi) contractors prioritize the use of local unskilled labor for civil works, at least 30% of unskilled laborers will be women, and equal pay for equal work is adhered to; (vii) at least 30% of project staff will be women; and (viii) gender-related performance indicators are included in the project monitoring and evaluation framework.³³

E. Safeguards

35. **Environment (category B).** The government will ensure that the subproject is implemented in strict conformity with relevant laws and regulations, ADB's Safeguard Policy Statement (2009), and all measures and requirements set forth in the initial environmental examination and environmental management plan that have been prepared and endorsed by the government. The initial environmental examination will be posted on ADB's website upon Board approval of the project.³⁴ All identified adverse impacts resulting from the location, design, construction, and operation of the water management infrastructure are expected to be small to moderate and can be mitigated. Further updating of the environmental management plan will be undertaken before the commencement of site-specific construction activities.

36. **Involuntary resettlement (category A).** About 792 households (3,960 people) will be affected, including about 384 households (1,920 people) severely affected by potentially losing more than 10% of their productive land and/or productive assets. The total land take is estimated at 277.51 ha. A resettlement plan has been endorsed by the government and disclosed on ADB's website.³⁵ Resettlement planning and implementation are designed to ensure that the affected persons will be no worse off as a result of the project. The government has shown a commitment to managing social risks, but institutional capacity building is still necessary and is included in the project.

37. **Indigenous peoples (category C).** No indigenous people maintaining distinct cultural identities or separate cultural traditions were found to reside in the project area.

F. Risks and Mitigating Measures

38. Major risks and mitigating measures are summarized in Table 4 and described in detail in the risk assessment and risk management plan.³⁶

³² Summary Poverty Reduction and Social Strategy (accessible from the list of linked documents in Appendix 2).

³³ Gender Action Plan (accessible from the list of linked documents in Appendix 2).

³⁴ Initial Environmental Examination (accessible from the list of linked documents in Appendix 2).

³⁵ Resettlement Plan (accessible from the list of linked documents in Appendix 2).

³⁶ Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

Table 4: Summary of Risks and Mitigating Measures

Risks	Mitigating Measures
Frequency and severity of flood and drought events exceed capacity of infrastructure due to climate change	Designs will be robust, and will include adaptation for predicted climate change impacts and quality control to reduce vulnerability of infrastructure.
Insufficient government interagency coordination leads to incohesive implementation of structural and nonstructural measures.	Project implementation consultants will raise awareness on the links between the structural and nonstructural measures. Studies on hydraulic design standards will demonstrate these links and can be used to advocate for better coordination.
Regional coordination of disaster risk management is inadequate.	The National Flood Forecasting Center will adopt Mekong River Commission data exchange procedures.
Mobilization of community support is ineffective.	Community-based disaster risk management specialists and selected nongovernment organizations will work with existing institutions, community groups, and local government to engage the community.

Source: Asian Development Bank.

IV. ASSURANCES

39. The government and MOWRAM have assured ADB that implementation of the project shall conform to all applicable ADB policies including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, and disbursement as described in detail in the project administration manual. The government has agreed with ADB on certain covenants for the project, which are set forth in the loan and grant agreements.³⁷

V. RECOMMENDATION

40. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Asian Development Bank (ADB) and, acting in the absence of the President, under the provisions of Article 35.1 of the Articles of Agreement of ADB, I recommend that the Board approve:

- (i) the loan in various currencies equivalent to SDR22,665,000 to the Kingdom of Cambodia for the Greater Mekong Subregion Flood and Drought Risk Management and Mitigation Project, from ADB's Special Funds resources, with an interest charge at the rate of 1.0% per annum during the grace period and 1.5% per annum thereafter; for a term of 32 years, including a grace period of 8 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan agreement presented to the Board;
- (ii) the administration by ADB of the grant not exceeding the equivalent of \$5,800,000 to the Kingdom of Cambodia for the Greater Mekong Subregion Flood and Drought Risk Management and Mitigation Project, to be provided by the ADB Strategic Climate Fund; and
- (iii) the administration by ADB of the loan not exceeding the equivalent of \$4,000,000 to the Kingdom of Cambodia for the Greater Mekong Subregion Flood and Drought Risk Management and Mitigation Project, to be provided by the ADB Strategic Climate Fund.

Bindu Lohani
Vice President

21 November 2012

³⁷ Loan Agreements; Grant Agreement (accessible from the list of linked documents in Appendix 2).

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
Impact Reduced economic losses resulting from floods and droughts	By 2020, average annual economic losses reduced by 50% in project areas (2011 baseline [Pursat flood damage]: \$13.4 million)	NCDM statistics	Assumption O&M budgets sufficient to maintain infrastructure Risk Frequency and severity of flood and drought events exceed capacity of infrastructure due to climate change
Outcome Improved capacity and preparedness to manage and mitigate the impacts of flood and drought events	NFFC issuing flood warnings to NCDM and linked to MRC regional flood management and mitigation center by 2015 At least 6 gender-sensitive commune disaster risk management plans implemented 16,100 ha of upgraded irrigation and drainage operational (2011 baseline: 0 ha dry season paddy) Increased flood protection for 10,000 people (2011 baseline [Pursat flood]: 1,991 households displaced or approximately 9,955 people)	Project monitoring reports MRC reports NCDM reports MOWRAM reports NCDM reports	Assumptions MRC Regional Flood Forecasting Center continues to operate and provide daily regional flood forecasts Regional cooperation through MRC remains effective
Outputs 1. Enhanced regional data, information, and knowledge base for the management of floods and droughts	All NFFC staff trained and operational by Q2 2016 NFFC forecasting model calibrated and operational by 2017 (2011 baseline: NFFC is not operational) Design criteria for flood and drought mitigation schemes in the Mekong Delta developed and disseminated by mid-2014 Transboundary (Cambodia–Viet Nam) flood management options endorsed by both governments by 2015	MRC and national flood management organization reporting Design criteria as agreed by the governments of Cambodia and Viet Nam	Assumption MRC procedures for data exchange are fully implemented
2. Upgraded water management infrastructure	At least 30% of workdays are provided by women on an equal pay for equal work basis O&M plans for each unit of upgraded infrastructure adopted	Project monitoring and evaluation system ADB supervision mission reports Midterm review report MOWRAM's quarterly and annual progress reports Consultant's progress reports	Assumptions Construction is not delayed by extreme climate events (floods) Government policies remain conducive to enhanced paddy rice production

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks																																								
3. Enhanced capacity for community-based disaster risk management	6 communes have disaster risk management plans and organizations to coordinate response by end of 2018 At least 200 women are trained on CBDRM and at least 30% of CBDRM committee members are female	Commune and provincial minutes of local government meetings confirming acceptance of the plans Project monitoring and evaluation system, gender action plan monitoring.	Assumption Cooperation with NCDM in project communities is managed effectively																																								
4. Effective project implementation	Project implementation is completed within 6 years (by March 2019) and all accounts are closed within 6.5 years (by September 2019)	MOWRAM's project completion reports																																									
Activities with Milestones 1. Enhanced regional data, information, and knowledge base for the management of floods and droughts. 1.1 Equip NFFC by end of 2014. 1.2 Appoint NFFC staff by mid-2013. 1.3 Install software and calibration for selected basins by 2015. 1.4 Calibrate and test forecasts in flood season 2015–2016. 1.5 Update national design standards for hydraulic infrastructure by 2015. 2. Upgraded water management infrastructure. 2.1 Prepare detailed engineering design by end of Q3 2013. 2.2 Prepare resettlement plan and implement relocations according to plan by end Q4 2013 for primary canal, Q2 2014 for secondary canals, and Q3 2014 for tertiary canals. 2.3 Call for bids by end of Q3 2013 for primary canal, Q4 2013 for secondary canals, and Q2 2014 for tertiary canals. 2.4 Contract for construction works by Q1 2014 for primary canal, Q3 2014 for secondary canals, and Q4 2014 for tertiary canals. 2.5 Undertake construction works by Q1 2014. 2.6 Commission structures and undertake acceptance trials by mid-2018. 3. Enhanced capacity for community-based disaster risk management 3.1 Establish farmer water user committees at Damnak Cheukrom irrigation system by 2014. 3.2 Implement training for children, women, and men in all project villages, including preparation of agricultural management plans, irrigation O&M plans and training for operation of water control structures by 2015. 4. Effective project implementation 4.1 Appoint implementation management consultants by Q2 2013. 4.2 Establish two project implementation units by Q2 2013. 4.3 Establish national project performance monitoring and evaluation mechanisms by Q3 2013. 4.4 Complete central project management unit staff capacity building by Q3 2014.		Inputs Asian Development Fund loan: \$35.00 million <table><tr><th>Item</th><th>Amount (\$ million)</th></tr><tr><td>Works</td><td>26.73</td></tr><tr><td>Equipment and vehicles</td><td>0.37</td></tr><tr><td>Consulting services</td><td>0.87</td></tr><tr><td>Implementation and supervision</td><td>1.09</td></tr><tr><td>Operation and maintenance</td><td>0.42</td></tr><tr><td>Interest</td><td>0.91</td></tr><tr><td>Unallocated</td><td>4.61</td></tr></table> ADB SCF loan: \$4.00 million <table><tr><th>Item</th><th>Amount (\$ million)</th></tr><tr><td>Works</td><td>3.59</td></tr><tr><td>Service charge</td><td>0.01</td></tr><tr><td>Unallocated</td><td>0.40</td></tr></table> ADB SCF grant: \$5.80 million <table><tr><th>Item</th><th>Amount (\$ million)</th></tr><tr><td>Works, vehicles, equipment and office operations for NFFC</td><td>0.76</td></tr><tr><td>Consulting services</td><td>1.23</td></tr><tr><td>National training</td><td>0.40</td></tr><tr><td>Service contracts</td><td>2.86</td></tr><tr><td>Unallocated</td><td>0.55</td></tr></table> Government: \$2.95 million <table><tr><th>Item</th><th>Amount (\$ million)</th></tr><tr><td>Land acquisition and resettlement</td><td>2.95</td></tr></table>		Item	Amount (\$ million)	Works	26.73	Equipment and vehicles	0.37	Consulting services	0.87	Implementation and supervision	1.09	Operation and maintenance	0.42	Interest	0.91	Unallocated	4.61	Item	Amount (\$ million)	Works	3.59	Service charge	0.01	Unallocated	0.40	Item	Amount (\$ million)	Works, vehicles, equipment and office operations for NFFC	0.76	Consulting services	1.23	National training	0.40	Service contracts	2.86	Unallocated	0.55	Item	Amount (\$ million)	Land acquisition and resettlement	2.95
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ADB = Asian Development Bank, CBDRM = community-based disaster risk management, ha = hectare, MOWRAM = Ministry of Water Resources and Meteorology, MRC = Mekong River Commission, NCDM = National Committee for Disaster Management, NFFC = National Flood Forecasting Center, O&M = operation and maintenance, Q = quarter, SCF = Strategic Climate Fund.

Source: ADB estimates.

LIST OF LINKED DOCUMENTS

<http://www.adb.org/Documents/RRPs/?id=40190-013-3>

1. Loan Agreement: Asian Development Fund
2. Loan Agreement: ADB Strategic Climate Fund
3. Grant Agreement: ADB Strategic Climate Fund
4. Sector Assessment (Summary): Agriculture, Natural Resources, and Environment
5. Project Administration Manual
6. Contribution to the ADB Results Framework
7. Development Coordination
8. Economic and Financial Analysis
9. Country Economic Indicators
10. Summary Poverty Reduction and Social Strategy
11. Gender Action Plan
12. Initial Environmental Examination: Summary
13. Resettlement Plan: Damnak Choeukrom Irrigation Project in Pursat Province
14. Risk Assessment and Risk Management Plan

Supplementary Documents

15. Initial Environmental Examination Report
16. Output: Increased Climate Resilience