

Initial Environmental Examination: Summary

October 2012

Proposed Loan and Administration of Grant Socialist Republic of Viet Nam: Greater Mekong Subregion Flood and Drought Risk Management and Mitigation Project

Prepared by the Ministry of Agriculture and Rural Development, Socialist Republic of Viet Nam
for the Asian Development Bank

CURRENCY EQUIVALENTS

(as of 12 September 2012)

Currency Unit	–	Dong (D)
D1.00	=	\$0.00004805
\$1.00	=	D20,811.00

ABBREVIATIONS

ADB	–	Asian Development Bank
CPO	–	central project office
EMU		environment monitoring unit
GMS	–	Greater Mekong Subregion
GPP	–	grievance point person
ha	–	hectare
IEE	–	initial environmental examination
MARD	--	Ministry of Agriculture and Rural Development
PPMU	--	provincial project management unit

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SUMMARY INITIAL ENVIRONMENTAL EXAMINATION¹

I. INTRODUCTION

1. The Greater Mekong Subregion (GMS) Flood and Drought Risk Management and Mitigation Project (the Project) aims to improve the ability of communities in Viet Nam to prepare for, respond to, and recover from the negative impacts of floods and droughts. The Project in Viet Nam comprises a balanced program of structural and nonstructural measures identified by the country concerned to manage its risks of flood and drought. Project implementation is expected to start in 2013 and is to be completed in 2019.

2. Subprojects in Viet Nam are categorized as an environment category 'B' projects as per ADB categorization procedures. The initial environmental examination (IEE) of the proposed subprojects in Viet Nam was conducted to identify and screen potential adverse impacts on the physical and social environment, to recommend measures to mitigate these impacts, and to provide guidance on appropriate institutional arrangements for environmental monitoring. The IEE was carried out following the environmental policy and guidelines of the ADB (Safeguard Policy Statement, 2009) and the environmental policies and regulations of the Government of Viet Nam.

3. The IEE for the subprojects was undertaken during the project preparation work and is to be updated during the implementation phase. The report also describes the environmental management plan (EMP) proposed for the subprojects. The subprojects include upgrading and rehabilitation of infrastructures such as canal system and dikes to improve flood and drought risk mitigation and mitigation of subproject areas in the two provinces, namely Tien Giang and Dong Thap.

II. DESCRIPTION OF THE PROJECT

4. The outcome of the Project will be improved preparedness to manage and mitigate the impacts of flood and drought events. The reduction of flood and drought risk will enable communities to achieve enhanced livelihood resilience and sustainability through: (i) avoidance of loss of properties and reduced casualties (deaths, injuries and water-borne diseases during and after floods); (ii) increased agricultural productivity and incomes due to the improved management and availability of water; (iii) improved access by upgraded rural roads and canals; and (iv) reduction of economic losses from disruption of business and agricultural activities. Project outputs include: (i) enhanced regional data, information and knowledge base for the management of floods and droughts; (ii) water management infrastructure upgraded; (iii) community capacity for disaster risk management enhanced; and (iv) effective project implementation

5. There are four structural subprojects in Viet Nam which involve improving and upgrading drainage and irrigation canal system, flood control system, salt water intrusion protection system and river bank protection. This report provides an account of the IEE of the four structural subprojects.

6. Ba Rai – Phu An Subproject in Tien Giang Province involves the construction of 27 sluice gates for flood management affected by tidal effects and frequent flooding in an orchard growing area. The objectives are protection of life and properties of 370,000 persons, improving flood water and contaminated water discharge in flood season, and increasing irrigation water reservation in dry season with a beneficiaries' area of 4,540 ha.

¹ Based on the Initial Environmental Examination (Supplementary Appendix 25).

7. Go Cong Salinity Intrusion and Water Management Subproject in Tien Giang Province involves the construction of three new sluice gates of which operations in conjunction with existing structures will prevent salt water intrusion in the paddy growing areas of 11,170 ha, while allowing discharge of waste water from urban areas.

8. The Plain of Reeds Irrigation Rehabilitation Subproject in Dong Thap Province will rehabilitate four irrigation canals, increasing their irrigation and flood discharge capacity in the canals to protect property and economic activities in the immediate vicinity benefiting agriculture, public infrastructure, urban and rural property whilst reducing the need to relocate flood affected households. The objectives are to reduce flood water levels during main flood season to protect people's life and their properties; reduce investment costs for infrastructural construction; conserve fresh water resources; provide acid sulfate water drainage for 400,000 ha of natural lands; and improve ecological and environmental conditions.

9. Thuong Thoi Tien Erosion Control Embankment Subproject in Dong Thap Province involves the stabilization of the left bank of the Tien River in the vicinity of Thuong Thoi Tien township. The embankment will stabilize the river bank from further erosion to protect 13,290 people, property and commercial and industrial activities in the township.

III. DESCRIPTION OF THE ENVIRONMENT

10. From Phnom Penh (Cambodia), the Mekong River is divided into two distributaries that flow into Viet Nam: the Mekong (Tien Giang) and the Bassac (Hau Giang). The Viet Nam part of the Mekong River Basin covers an area of 37,165 km² and is called the Cuu Long River Delta². This report focuses on Cuu Long River Delta, in particular the two provinces namely Tien Giang and Dong Thap.

11. All the four subprojects are located in Plain of Reeds, a vast wetland depression of about 13,000 km² encompassing the provinces of Dong Thap and Tien Giang in Viet Nam. Tien Giang has rich mangrove forest and Dong Thap has a dense canal system with many pools and reservoirs. The main sectors in the provinces are agriculture, fishing and industry.

12. The subproject areas have a tropical monsoon climate. Two main seasons can be distinguished: the dry season from November to May, and the rainy season from June to October. The mean annual rainfall is 1,450-1,650 mm; average temperature in the project Area is 23 - 24°C, the difference between the mean monthly minimum and maximum being only about 5°C and mean humidity in the range from 79.0% to 84.0% with annual mean evaporation of 1,200-1,300mm. The soils in the subproject areas are of acid-sulphate type.

13. The subproject areas are mainly flat plains, with average elevation varying from 0.75 to 1.1 m above mean sea level. Every year, floods converge firstly to the Northern districts in the Plain of Reeds, starting in the beginning or mid August and lasting till November. During this time, the rivers have the highest flow and intensity, causing difficulties to agricultural production and life.

14. Tram Chim National Park, which was recently recognized by Ramsar Convention as a wetland of international importance, is the remaining remnant of the natural environment of the Plain of Reeds in Dong Thap Province. The Plain of Reeds Irrigation Rehabilitation Subproject is in close proximity with Tram Chim National Park.

² Cuu Long is the common name of these two rivers' sections, flowing inside Viet Nam, the total length of which is about of 230 km. The Cuu Long River Delta includes 13 provinces/cities: Long An, Tien Giang, Ben Tre, Tra Vinh, Vinh Long, Dong Thap, An Giang, Kien Giang, Can Tho, Hau Giang, Soc Trang, Bac Lieu and Ca Mau

15. Most of the population in the subproject area is employed in the agriculture sector; often in combination with poultry and livestock rearing and aquaculture activities. Agriculture is the dominant contributor to the local economy, and residents rely entirely on agricultural production. However, the economic structure is changing from the agricultural sector to the industrial sector due to industrial development in recent years in the area. For the period of 2008–2009, the economy of Tien Giang and Dong Thap provinces grew at an average annual rate of 10.5%–13.5%. In 2009, the incidences of poor families to the total number of families were 8.1% for Tien Giang, and 5.9% for Dong Thap.

16. Between 90%–95% of the households in the subproject area have access to clean water. Domestic wastewater and wastewater from industries are discharged without treatment to ponds/lakes and canals, causing contamination to surface water bodies. In rural areas of Tien Giang and Dong Thap Provinces, garbage (domestic waste) from 15%–20% of the households is collected and disposed of properly, while 80%–85% of the households burn, bury or dump their garbage in the fields.

IV. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

17. The examination of potential environmental impacts is to identify significant positive or negative environmental impacts associated with the proposed subprojects such as improving and upgrading drainage and irrigation canal system, flood control system, salt water intrusion protection system and river bank protection. The potential negative environmental impacts were identified, and mitigation measures were proposed. The responsibilities for environmental management and monitoring were described and incorporated in the environment management plan (EMP) of the IEE.

18. The positive impacts expected from the subprojects include (i) flood control and improved water drainage in flood season; (ii) water supply for irrigation and water for sustainable aquaculture and human use in dry seasons; (iii) bank erosion prevention; (iv) improvement in environmental condition for local people affected by floods and decrease of waterborne diseases caused by inundation; and (v) promotion of development of tourist, cultural, and agricultural sectors in subproject areas due to inland rural transportation and navigation.

19. The negative environmental impacts expected from the realization of the Project in the different subproject phases and the proposed mitigation measures are discussed in the IEE of the subprojects. All identified impacts are of low or moderate level and most adverse impacts are temporary and can be mitigated. Proper Environmental Management and Monitoring during the various project stages is essential.

A. Environmental Impacts during Pre-Construction Phase

20. The most important potential impacts during the pre-construction phase are the loss of residential or agricultural land and relocation. Preparation of the resettlement plans including the entitlement matrices were based on the existing legal framework of the Government of Viet Nam and the provisions of ADB Safeguard Policy Statement (2009). The resettlement plans were prepared with proper consultation and participation of affected households, including both the displaced and the host households. Full compensation and resettlement shall be completed prior to any land acquisition and awarding of contract for construction, respectively.

B. Environmental Impacts during Construction Phase

21. Some temporary adverse environmental effects could occur during the construction phase of the project due to improper management and implementation of mitigation measures. These would include increase of noise and dust level, pollution of surface water from wastewater, disturbance of contaminated soils, disturbance in the buffer zone surrounding the Tram Chim National Park, and effects on traffic and social-economic activities of local people.

1. Physical Environment

a. Air quality/dust and noise

22. There could be an increase in dust, air pollution and noise level from clearing, grubbing and excavation activities and movements of construction equipment. Emissions of air pollutants and noise from operation of construction equipments may have impacts on the people living in the project area. Dust, air pollution and noise can be controlled and mitigated with the application of best construction practices. Emissions of air pollutants including NO_x, CO_x, and hydrocarbons is considered at mild to moderate level because transportation means are mainly by water way, the number of machinery is small, and the construction area is large and is in rural areas. Thus green house gas (GHGs) emissions caused by the Project will be insignificant.

b. Water resources and quality

23. Excavation and filling activities could increase turbidity downstream of the canal or in the adjacent area. In addition, canal water may be polluted by alum due to excavation. This could affect water quality for irrigation and aquaculture. However, these impacts are considered at a low level and can be mitigated by appropriate measures, such as construction of temporary drains and bunds to avoid spread of polluted alum water from filling and excavated alum soil; stockpiling of spoils in flat areas and far from drainage routes; adequate temporary toilet facilities with adequate water supply and strict enforcement of proper sanitation; and temporary disposal system for solid and hazardous waste. Monitoring of waste solid and waste water management need to be carried out as generation of sewage and wastewater and generation of solid wastes if unmanaged could also cause pollution of surface waste. These mitigation measures will be carried out strictly.

c. Flooding and spills

24. Flooding and spills could be caused by inadequate management of building materials, removed topsoil, stockpiles and construction debris. Proper management can avoid these impacts and appropriate mitigation measures should be taken. Deposits of construction waste into nearby water bodies might have detrimental effects to aquatic flora and fauna and should be avoided.

2. Biological Environment

25. The impacts on biological environment are a concern only for the Plain of Reeds Irrigation Rehabilitation Subproject in Dong Thap Province, In particular, effects on the natural habitats in the Tram Chim National Park is a concern, as the canal section to be rehabilitated is parallel to the Park, with the shortest distance between the construction site and the Park being only 500m. Excavation activities could increase the noise level which can affect the habitats of water bird species, especially the Sarus Crane (*Grus Antigone*)³, which visit Tram Chim National

³ A vulnerable species according to the IUCN Red List of Threatened Species.

Park between March and May every year. The mitigation measures to minimize these impacts during the construction phase are to (i) suspend construction activities during the months between March and May, (ii) install fence for canal sections close by the National Park to minimize noise and mitigate impacts on Tram Chim National Park's buffer zone; (iii) avoid establishing construction camps in close proximity of Tram Chim National Park and train workers not to exploit natural resources and hunting; and (iv) consult with the Park's Management Board from the detailed design stage on proper environmental management and monitoring measures to prevent and mitigate potential impacts on the environment.

3. Socioeconomic Environment

26. Noises from construction activities and traffic jams caused by transportation of construction materials, and increase in number of accidents caused by trucks are potential adverse impacts. However, the subproject sites are not situated in densely populated areas, and building materials such as sand and macadam will be transported by waterway. Distance from the site to sand quarries is about 20 km–40 km, and to macadam quarries is about 100 km–200 km. Development of 27 sluices for flood control for subproject of Ba Rai - Phu An orchard and three sluices for subproject of Go Cong will cause interruption of domestic use of water for local peoples living along the canal and interruption of waterway during the construction phase. With a proper Transport Management Plan and environmental management and monitoring, these impacts can be prevented and mitigated.

C. Environmental Impacts during Operation and Maintenance Phase

27. Several potential impacts have been identified for the operation and maintenance phase. The first potential impact is the deterioration of downstream water quality for human consumption due to the increased use of pesticides and chemical fertilizers. Irrigation development is expected to result in an increase of farmers' incomes, and consequently, in increased use of pesticides and chemical fertilizers. These effects may occur for all subprojects, except subproject of flood control system in Ba Rai – Phu An because fertilizers and pesticides are not used for orchards in these areas. However, such problems could be mitigated through water quality monitoring. To mitigate potential impacts, farmers will be trained on the (i) selection, safe use, and handling of pesticides; (ii) integrated pest management (IPM); and (iii) avoidance of plant protection chemicals which are in lists of prohibited or restricted use of chemical compounds.

28. The second potential impact from the Go-Cong Salinity Intrusion and Water Management Subproject is the obstruction or change in the movement of fish species due to the operation of the sluices. It would result in reduction of fish diversity and population in the Tien River in the end of rainy season due to closure of the sluice gate. This impact could be partly reduced by proper operation of the sluice gates with coordination between the irrigation company and the fishery/aquaculture center to accommodate fish migration and spawning as part of their life cycle.

29. The third potential impact during the operation and maintenance phase is the alteration in hydrology due to the Plain of Reeds Irrigation Rehabilitation Subproject. Hydrology is fundamental to the ecosystem of the Tram Chim National Park. It is therefore essential that the Irrigation Department consult and coordinate with the Park's Management Board to agree on the operation of the sluice gates of the canals so as to maintain the hydrological cycle that supports the Park's ecosystem. Subproject implementation will be managed and monitored to ensure appropriate release of the water flows (both in terms of quantity and timing) from the canal as agreed upon by the Irrigation Department and the Park's Management Board. The Ministry of Agriculture and Rural Development (MARD) and the Dong Thap Provincial People's

Committee will ensure that, prior to operation of the Thong Nhat Canal following completion of the Subproject Works, the Department of Agriculture and Rural Development (DARD) in Dong Thap province and the Management Board of the Tram Chim National Park enter into an agreement on (a) the timing and quantity of water to be released at the four water gates into the National Park; and (b) arrangements for monitoring the same.

D. Cumulative Impacts

30. The subprojects are planned in conformity with the Mekong Delta Water Resources Master Plan and 2020 Vision Document of the Government; therefore they are expected to contribute to the overall development of the Mekong Delta Water Resources, regional economy and livelihood particularly in the Plain of Reeds.

31. As the Plain of Reeds Irrigation Rehabilitation Subproject is designed to compliment Provincial Government's ongoing projects, the proposed investment by ADB will help to accelerate the completion of the regional development plan.

32. Water supply for irrigation under two subprojects i.e. flood control system for Ba Rai – Phu An protecting orchard area and upgrading of salt water intrusion protection system in Go Cong area in Tien Giang Province will not affect other water users. As such, cumulative effects caused by the project with reference to other existing or planned projects in vicinity of the project area are likely to be insignificant.

V. INFORMATION DISCLOSURE, CONSULTATION, AND PARTICIPATION

33. The Public Consultation Meetings were held in Subproject Commune People's Committees from 20 to 25 September 2010. Participants were representatives from the Central Project Office (CPO), Project Management Units (PMUs), subproject Commune People's Committees, and subproject District's Environmental Management Division, the Women's Union, the Farmers' Union at district and commune levels, and representatives from affected households in sub-project Communes with more than 35% women representation. The objectives were to introduce the sub-project procedures for environmental assessment and follow up activities. Comments received from participants were taken into account in the development of the EMP. Future public consultations will be held during the detailed design, the construction, and operation and maintenance stages.

34. Main activities were (i) disseminating information; (ii) presenting subprojects' objectives, locations, designs and cost estimates, potential environmental impacts caused by each subproject and proposed mitigation measures, and 'Environmental Management Plan and Environmental Monitoring Program; (iii) discussing the opinions, perceptions, and preferences of the beneficiaries; (iv) discussing the potential loss of their land for subproject implementing; (v) identifying contentious issues related to project environmental impacts on the community; (vi) factoring the beneficiaries' opinions into design alternatives; (vii) identifying levels and scope of community participation in project implementation, particularly O&M; and (viii) reaching an understanding of the overall development goals and benefits of the subproject for preparation and presentation in the final project report.

VI. GRIEVANCE REDRESS MECHANISM

35. The grievance redress mechanism is meant for people seeking satisfactory resolution of their complaints on the environmental performance of the subproject. The mechanism will ensure that: (i) the basic rights and interests of every person affected by poor environmental performance of the subproject are protected; and (ii) their concerns arising from the poor

environmental performance of the subproject during the phases of pre-construction, construction and operation activities are effectively and timely addressed.

36. Any person who has complaint regarding the environmental performance of the subproject during pre-construction, construction and operation phases shall have access to the grievance redress mechanism described in the subsequent section. The CPO and the Environmental Management Unit (EMU) of each of the PMUs will nominate and train a staff member to be a Grievance Point Person (GPP) for environment-related issues.

37. The CPO and PMUs through their GPPs shall ensure that:

- (i) the grievance redress mechanism and the contact details of the GPPs are publicly disclosed, and posted in the offices of the affected communes and in strategic places of the subproject's area of influence;
- (ii) the grievance redress mechanism is accessible to all affected villages/communes;
- (iii) the public, especially the residents and passers-by in the vicinities of influence of the subproject, are aware of their rights to access, and shall have access to, the mechanism free of administrative and legal charges; and
- (iv) a registry of grievances received is maintained for reporting to ADB and higher Government authorities on associated follow-up, resolution or non-resolution of issues.

38. Households or groups of households wishing to complain about the effects of construction works on their property, production system, economic well-being, spiritual life, quality of surface and ground water, quality of air, health, safety, welfare, or any other assets of their lives shall make their complaint using the standard complaint form provided by the GPPs.

39. The Grievance Investigation and Resolution process is outlined below:

- (i) Step 1: Complaint form will be sent by APs, Affected households (AHs) or groups of households to the GPP of the relevant EMU.
- (ii) Step 2: If the complaint is judged as valid, within 15 days from the date the complaint is received, the relevant EMU will organize meetings with the relevant agencies/contractors/sub contractors to discuss how to resolve the matter. All meetings will be recorded and copies of the minutes of meetings will be provided to APs/AHs.
- (iii) Step 3: The relevant EMU shall take such mitigation measures as agreed in meetings from step 2 within 15 days, or some other period acceptable to the parties referred to in step 2.
- (iv) Step 4: When the complaint is resolved, the complaint form needs to be signed by Complainer/ head of Household, the EMU and annotated at each stage of process by the relevant EMU with copies to be sent to CPO.
- (v) Step 5: If no understanding or amicable solution is reached, or if no response is received from the EMU within 15 days after the registration of complaint, the APs/ AHs can appeal to the CPO through their GPP. The APs/AHs must lodge the complaint within 30 days of registering the original complaint. The CPO will provide a decision within one month of receiving the appeal.
- (vi) Step 6: When the complaint is resolved, the complaint form needs to be signed by Complainer/ head of Household, the EMU, the CPO, and annotated at each stage of process by the GPP of the CPO with copies to be sent to ADB.

- (vii) Step 7: If the AP is still not satisfied with the decision of the CPO or in the absence of any response within the stipulated time, the AP as a last resort may submit his/her case to the court, in which decision is final.

VII. ENVIRONMENTAL MANAGEMENT PLAN

A. Institutional Requirements and Responsibilities

40. The Ministry of Agriculture and Rural Development (MARD) is the executing agency for the Project. MARD will delegate the responsibility for overall project coordination and management to its Central Project Office (CPO). Two Provincial Project Management Units (PPMUs) will be established to manage and monitor all day-to-day implementation activities of the subprojects. The executing agency of the project is responsible for compliance with the ADB and Viet Nam national environmental safeguard requirements. They will oversee the project activities as they are implemented through PPMUs. Villages, communes and district level local authorities will be involved in Project implementation. MARD will coordinate with the Ministry of Natural Resources and Environment (MONRE) to ensure that the national environmental safeguard requirements are met.

41. The main contractor, sub-contractors, Environmental Management Unit (EMU)/PMU, and the communities share the responsibility of environmental monitoring during project implementation. The EMPs will be the guiding document for environmental management and monitoring during execution of the subprojects. They will guide the EMU/PMU in determining whether the recommended mitigation measures prior to construction, and during construction and operation, are being implemented effectively. Environmental monitoring results will be documented and reviewed to ensure that signs of adverse impacts are detected at an early stage and that actions for mitigation of impacts are taken. Monitoring results have to be reported monthly by the EMU and to be submitted to the Head of the relevant PPMU, who in turn will submit them to DONRE and CPO for approval. The CPO will submit the consolidated environmental monitoring reports to ADB on a quarterly and annual basis. The format for the monthly, quarterly and annual environmental monitoring reports will be developed during the Detailed Design Phase and may have to be refined during implementation of the Project.

42. Costs for Environmental Monitoring of resettlement, water quality, air quality and noise: The costs for implementation and monitoring of the Resettlement Plans (RP) during the Pre-Construction/Design Phase – based on the implementation schedule of the RP – are included in the disclosed Resettlement Plans. Monitoring of surface water and, air quality (TSP) and noise, during the pre-Construction, construction and operation phases, to be carried out by the EMU/PMU, adds up to an average amount of \$108,560 per subproject. For the whole GMS Project in Viet Nam the costs for Environmental Monitoring are estimated at four times \$108,560 or \$434,240.

VIII. CONCLUSION AND RECOMMENDATION

43. The implementation of the GMS Project in Viet Nam will have strong positive impacts on the irrigation and drainage scheme in Tien Giang and Dong Thap Provinces including (i) flood control and inundation water drainage during the flood season; (ii) irrigation water supply for agricultural production and for sustainable aquaculture; (iii) prevention of bank erosion to protect communities living along the river; (iv) improving the environment and hygienic conditions for local people affected by flood in Tien Giang and Dong Thap Provinces; (v) decrease in waterborne diseases caused by floods; (vi) development of inland rural and navigation transportation; (vii) and promotion of development of tourist, cultural, and agricultural sectors in the subproject areas.

44. The screening process and analysis of potential environmental impacts revealed some adverse effects from the proposed subproject activities. However, all the identified adverse impacts appear to be small or moderate and many are temporary in nature, therefore unlikely to result in any direct significant adverse environmental impacts. Expected adverse impacts during O&M phase include deterioration of downstream water quality due to the increased use of pesticides and chemical fertilizers for the four canals in the Plain of Reeds in Dong Thap Province, obstruction or change in movement of fish species due to operation of sluices in Tien Giang Province, and alteration of the hydrology to Tram Chim National Park. These impacts can be mitigated through implementing water quality monitoring, training farmers on Integrated Pesticide Management; and appropriate operation of sluices in Tien Giang, and collaboration between the Irrigation Department and Tram Chim National Park Management Board to ensure the proper operation of the water control gates to the Park. Other than that, no real significant environmental impacts are expected except temporary ones mainly during construction which can be mitigated through sound engineering practices and specific measures to be detailed in the EMPs and framed as contractual obligations of the contractors. Detailed EMPs will be updated during the design phase.

45. From the proposed subprojects for the GMS Project in Viet Nam, only small and moderate adverse environmental impacts are expected. These adverse impacts can be resolved by proper design, specific mitigation measures, and by adequate attention to the environment during operation and maintenance. For these reasons, the IEE for the Project in Viet Nam is sufficient according to the ADB Safeguard Policy Statement (2009).