

# Environmental and Social Monitoring Report

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Semi-Annual Report  
January to June 2017

## Cambodia: Urban Water Supply Project

Prepared by the Ministry of Industry and Handicraft for the Asian Development Bank.

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# I. SAFEGUARD MONITORING REPORT

## 1. Introduction and Project Overview

<b>Project Number and Title:</b>	Loan 3232–CAM: Urban Water Supply Project	
<b>Safeguards Category</b>	Environment	B
	Indigenous Peoples	C
	Involuntary Resettlement	C
<b>Reporting period:</b>	1 January 2017 to 30 June 2017	
<b>Last report date:</b>	1 January 2016 to 30 December 2016	
<b>Key sub-project activities since last report:</b>	Construction works has not commenced.	
<b>Report prepared by:</b>	Ministry of Industry and Handicraft	

## 1. Environmental Performance Monitoring

### a. Summary of Compliance with EMAP Requirements (Environmental Performance)

<b>EMAP Requirements</b>	<b>Compliance Status (Yes, No, Partial)</b>	<b>Comment or Reasons for Non-Compliance</b>	<b>Issues for Further Action</b>
Construction activities has not commenced. Bid documents for contract packages are being prepared.	An updated Environmental Management and Monitoring Plan (EMMP) was prepared to form part of the bid documents.		
Public consultation	Public consultations and key informant interviews were held from May 12 - 14, 2017 regarding the proposed Stung Treng water supply project.		
Orientation of PMU on environment safeguards	An environment safeguards briefing/orientation was held on May 23, 2017 to orient Mr. Than Chansovanna, PMU-Social and Environment Officer on the EMMP policies and requirements.		

b. Issues for Further Action

Issue	Required Action	Responsibility and Timing	Resolution
<b>Old Issues from Previous Reports</b>			
There were no environmental issues from previous monitoring report.	none		
<b>New Issues from This Report</b>			
Preah Bat Sangkat has been identified during due diligence as potential locations with risk of land mines and unexploded ordnance. Considering the risks posed by land mines/UXO during implementation of works, MIH coordinated with relevant authorities to initiate clearance activities.	UXO clearance of the Stung Treng subproject will be necessary prior to start of construction works. The Contractor will only be allowed to commence works on the sites after the appropriate certification is issued by the Cambodia Mine Action Center (CMAC).	MIH  UXO Clearance should be completed before construction works.	
Approval of environmental clearances of each subproject will be necessary prior to start of construction activities in accordance with the Project Administration Manual (PAM).	The requirements of the MOE should be complied with.	MIH	
Preparation of the CEMP	The Contractor will be required to prepare the Construction Environmental Management Plan (CEMP) incorporating comprehensive plan for environmental and social management, mitigation and monitoring, health and safety plan, housing and base camp provision, measures to avoid adverse effects of operation of batching plant, quarry and borrow areas, and disposal sites, solid and hazardous waste handling, first aid stations, and environmental monitoring during construction.	Contractor	

## 2. Involuntary Resettlement Performance Monitoring

### a. Summary of Compliance with RP Requirements

RP Requirements	Compliance status Yes/No/Partial	Comment or Reasons for Compliance, Partial Compliance/Non- Compliance	Issues for Further Action <sup>1</sup>
Establishment of personnel in PMU/PIU	Yes		
Public consultation and socialization process	Public consultations and key informant interviews were undertaken from May 10-14,2017 with covered villages in Stung Treng. (Please see documentation of the Consultation Activity report as Attachment )	Provide information on: <ul style="list-style-type: none"> <li>Public consultation, participation activities carried out</li> <li>Inclusive dates of these activities</li> </ul> To be elaborated on in Item 5	
Land area to be acquired is identified and finalized	No land acquisition is required for this project as it is category C.		
Land acquisition completed	NA		
Establishment of Resettlement Site(s)	NA	Please state: <ul style="list-style-type: none"> <li>Number of AHs to be relocated as per agreed RP</li> <li>Number of AHs already relocated</li> <li>Number of houses built</li> <li>Status of installation of community facilities to be provided as per agreed RP</li> </ul>	
Compensation payments for affected assets is completed	NA	Please state: <ul style="list-style-type: none"> <li>Total Number of Eligible AHs and APs (as per agreed RP)</li> <li>Number of AHs and APs compensated as of this monitoring period</li> <li>Total Budget allocation as per agreed RP</li> <li>Total budget disbursed to AHs as of this monitoring period</li> </ul>	
Transport assistance for relocating affected households	NA	As above	
Additional assistance to vulnerable affected household	NA	Please state: <ul style="list-style-type: none"> <li>Total Number of vulnerable AHs and APs (as per agreed RP)</li> <li>Agreed forms of assistance as per RP</li> </ul>	

<sup>1</sup> To be elaborated further in table 3.b (Issues for Further Action)

		<ul style="list-style-type: none"> <li>Number of AHs and APs assisted as of this monitoring period</li> </ul>	
Income Restoration Program	NA	Please state progress per income restoration feature/activity and actual period of implementation	
Temporary impacts have been addressed (affected properties restored to at least pre-project conditions)	<p>Further validation needed after detailed design.</p> <p>No construction activity yet. Bidding and contract documents are being prepared.</p>	<p>Please state:</p> <ul style="list-style-type: none"> <li>Total Number of AHs affected by temporary impacts as per agreed RP</li> <li>Actual Number of AHs and total area affected by temporary impacts (if this differs from the projected number, such as in cases of unforeseen project impacts)</li> <li>Status of restoring affected property</li> </ul>	
Capacity building activities	No capability building activities undertaken yet.		

#### b. Issues for Further Action

Issue	Required Action	Responsibility and Timing	Resolution
<b>Old Issues from Previous report</b>			
List of RP activities not completed (last column of previous table)			
None from previous report.	None		
<b>New Issues from This Report</b>			
<p>Follow-up request for compensation based on previous agreement with Stung Treng PWW for the loss of garden income by two women representing their families during the community consultation in Ba Chong village on May 13,2017. The garden site is a government property but have been long planted with vegetables by the women's families before the government declared it as the proposed intake site and have since been abandoned by the same families after declaration. This has also been discussed with the MIH and are being taken care</p>	<p>Appropriate compensation for the loss of garden income based on the national government resettlement policies and 2009 ADB SPS Guideline should be given to the two women families.</p>	<p>The MIH/PWW should be able to settle this issue before contract agreement or at the latest before construction/civil work activities.</p> <p>PIA Social and Gender/Resettlement/ IP consultant shall further conduct due diligence after detailed design and document the process and resolution of the issue, and determine further action, if needed.</p>	

of. The two families get about \$20-30 per month during rainy season and \$50-70 per month during dry season ,based on their accounts.			

### 3. Indigenous People Performance Monitoring

#### a. Summary of Compliance with IPP Requirements

IPP Requirements	Compliance status Yes/No/Partial	Comment or Reasons for Compliance, Partial Compliance/Non-Compliance	Issues for Further Action <sup>2</sup>
IP component is considered category C based on previous due diligence report.			

#### b. Issues for Further Action

Issue	Required Action	Responsibility and Timing	Resolution
<b>Old Issues from Previous Reports</b>			
There were no IP issues from previous monitoring report .	None		
<b>New Issues from This Report</b>			

### 4. Occupational, Health and Safety (OHS) Performance Monitoring

#### a. OHS for worker

Issue	Required Action	Responsibility and Timing	Resolution
<b>Old Issues from Previous Reports</b>			
There were no OHS issues from previous report.	None		
<b>New Issues from This Report</b>			

<sup>2</sup> To be elaborated further in table 3.b (Issues for Further Action)


b. Public Safety

Issue	Required Action	Responsibility and Timing	Resolution
<b>Old Issues from Previous Reports</b>			
There were no issues from previous report.	none		
<b>New Issues from This Report</b>			

5. Occupational, Health and Safety (OHS) Performance Monitoring

a. OHS for worker

Issue	Required Action	Responsibility and Timing	Resolution
<b>Old Issues from Previous Reports</b>			
There were no OHS issues from previous report.	None		
<b>New Issues from This Report</b>			

b. Public Safety

Issue	Required Action	Responsibility and Timing	Resolution
<b>Old Issues from Previous Reports</b>			
There were no issues from previous report.	none		



<b>New Issues from This Report</b>			

## 6. Information Disclosure and Socialization including Capability Building

- Field visits were held from May 10 – 14, 2017 at the sites of the intake, WTP, clear water storage facilities, transmission and distribution pipelines at Stung Treng to conduct environment and social safeguards due diligence in line with the updating of the IEE/EMP and social safeguards documents. Based on the site visits, meetings with the local authorities and villagers, the proposed water supply project in Stung Treng is confirmed as Category B for environment safeguards based on ADB SPS (2009). The project is located 6km away from the Ramsar site and that there are no environmentally, ecologically sensitive or culturally significant areas that will be traversed by the project.
- In accordance with the Project Administration Manual (PAM) that was approved by ADB, the environmental clearance and UXO clearance should be secured prior to bidding
- Meetings with the Provincial Waterworks Department, Provincial Departments of (i) Water Resources, (ii) Environment, (iii) Land Management, Urban and Construction, (iv) Public Works and Transport were held on May 10 – 14, 2017 to clarify issues on water risks, upstream and downstream water uses, water quality monitoring, presence of protected area and conservation area, environmental regulatory clearance requirements, potential issues on land ownership and right-of-way (ROW). The PMU/PWW need to coordinate with relevant agencies such as:
  - (i) DPWT for survey of ROW, layout of pipe laying and trench excavation works,
  - (ii) A letter of approval from MPWT for the installation of transmission lines at Mekong and Sekong Bridges,
  - (iii) DOE/MOE for securing the environmental clearance of the project; and
  - (iv) CMAC for the UXO clearing at the sites of the WTP, intake, and main transmission lines.
- Public consultations and key informant interviews with village heads, sangkat chiefs, and local government representatives, women’s groups, and local villagers were held on May 12 – 14, 2017. Key informant interviews and focused group discussions were held at Hangkho Ban, Sangkat Sammaki, Kang Dei Sar village, Sangkat Preah Bat, and Hangkho Suon, Sangkat Sammaki. The following issues were raised during the public consultations:
  - The villagers support the water supply project because they believe that it will be beneficial to the people. Benefits mentioned by the people are: : (i) improvement of health, (ii) reduce labor in fetching water from the river or dug wells particularly for women who usually do this task, (iii) reduce incidences of diseases in children, and (iv) convenient and safe, potable water for the people. The people

added that they have been waiting for the project to be implemented for a long time.

- Preah Bat Sangkat has been identified as potential location where there is risk of land mines and unexploded ordnance, hence, UXO Clearing will be needed at the sites of the intake, WTP, and transmission main in Sangkar Preah Bat. MIH has coordinated with the relevant authorities to initiate the UXO clearing.
- There are existing complaints/girevance management systems that are in place in villages. The villagers asked for information about the detailed design or before project construction particularly on which side of the road to lay pipes and on the construction schedule.

In Regarding to IR and IP, the consultation meetings with the provincial departments/agencies including covered villages were undertaken from May 10-14,201 particularly, with the PWW, Stung Treng and village Chefs/residents orienting them about the scheduled consultation meetings about the project, its benefits and concerns and issues, if any. (For IR/Social consultation activities, (Please see attached IR consultation Report)

- Stung Treng is confirmed Category C for Involuntary Resettlement. No land acquisition is required and locations of physical facilities are government-owned and government right-of-way.
- The villages are supportive of the project and are eagerly waiting for the project to commence. Except for some concerns on affordability of household connections among the low income groups, (for which they were informed of subsidized connections for the poor) the improved water supply project was seen to benefit all residents in terms of improved health and cleaner environment and surroundings.

## 7. Grievance Redress Mechanism

### Summary:

- Number of new grievances, if any, since last monitoring period: 0
- Number of grievances resolved: not applicable
- Number of outstanding grievances: \_\_\_\_\_

Type of Grievance	Details (Date, person, address, contact details, etc.)	Required Action, Responsibility and Timing	Resolution
<b>Old Issues from Previous Reports</b>			
There were no grievances raised in previous report.			
<b>New Issues from This Report</b>			


## 8. Conclusion

- The project has not commenced any construction activities during the monitoring period (January to June 2017). Detailed design are still being undertaken for the rehabilitation of water treatment plants of seven towns and the Siem Reap distribution system while a design and build scheme was decided for the Stung Water Supply subproject. The updated Environmental Management and Monitoring Plan for Strung Treng subproject was prepared in May 2017 as part of the bid documents for the design and build scheme. The updated IEEs/EMMPs for the rehabilitation of the WTPs of the seven towns will be prepared in July 2017 as part of the bid documents for the contract packages in line with the approved detailed design. There will be no updated EMMP for the procurement of goods of the Siem Reap distribution project.

## 9. Attachments

- Results of environmental and social due diligence on May 10 – 14, 2017
- List of Persons Met and Photographs

## ENVIRONMENTAL AND SOCIAL DUE DILIGENCE REPORT

May 10 – 14, 2017

### 1. NAME OF FIELD WORK TEAM:

NAME	POSITION/ORGANIZATION
<b>PMU Team</b>	
1. Mr. THAN CHANSOVANA	Social Environment, MIH/GDPWS (PMU)
2. Mr. HORN BOREY	Technical Officer, MIH/GDPWS (PMU)
<b>PIA Team</b>	
1. CHIEP Piseth	Deputy Team Leader,
2. CHERRY B. RIVERA	International Environment Specialist,
3. MILDRED ROLLOLAZO	International Social Development, Resettlement & Gender Specialist, PIA
4. BUN SAN	National Environment Specialist,

### 2. PURPOSE OF FIELD WORK:

- To visit the sites of the intake, WTP, clear water storage facilities, transmission and distribution pipelines
- To conduct environment and social safeguards due diligence in line with updating the IEE/EMP and social safeguards documents of Stung Treng water supply project.
- To conduct assessment of the existing environmental and social conditions at the sites of the project components including locations of facilities with proposed changes
- Meet with the PWW about the updating of the IEE/environmental management plan (EMP) and environmental monitoring plan (EMoP)
- Meet with the Provincial Departments of Water Resources to clarify issues on water rights, upstream and downstream water uses
- Meet with the Provincial Department of Environment to discuss water quality monitoring, protected and conservation area, and environmental regulatory clearance requirements.
- Meet with the Provincial Department of Land Management, Urban Planning and Construction and Provincial Department of Public Works and Transport to validate if there are issues on land ownership and right-of-way (ROW)
- Meet with some village heads, women's groups, and villagers to conduct the public consultations and key informant interviews.

### 3. ACTUAL SCHEDULE OF FIELD WORK

Date	Activity	Venue/Time
10 May 2017 (Wednesday)	Land travel from Phnom Penh to Stung Treng province	8:00 – 4:00
	Meeting with Project Implementation Unit team at Provincial Department of Industry and Handicraft to discuss objectives of the fieldwork and other arrangements in relation to the updating of the IEE/EMP, due diligence on resettlement, and the schedule of the consultation meetings with villages, meetings with agencies and the field visits to the project sites.	PWW Office 4:30 – 6:00
11 May 2017	Meeting with the Mayor of Stung Treng town, local authority namely Sangkat Chief, village chief and local	Stung Treng

(Thursday)	government representatives together with PWW and PMU	Municipal Hall 9:00 – 10:00
	Meeting with Provincial Department of Public Works and Transport	PPWT Office 10:00 – 11:00
	Site visit at intake and WTP sites	11:00 – 12:00
	Meeting with Provincial Department of Environment	DOE Office 1:30 – 3:30
	Meeting with Provincial Department of Planning	DEP Office 4:00 – 5:00
	Meeting with Provincial Department of Land Management	DLM Office 5:00 – 5:30
12 May 2017 (Friday)	Meeting with Provincial Department of Water Resources and Meteorology	DOWRAM Office 8:00 -9:00
	Technical Meeting with PWW	PWW Office 9:00 – 12:00
	Key informant interviews at Hangkho Ban, Sangkat Sammaki	1:30 – 5:00
13 May 2017 (Saturday)	Consultation meeting with village heads and villagers at Kang Dei Sar village, Sangkat Preah Bat	Sangkat Preah Bat Meeting hall 8:00 – 11:00
	Consultation meeting with Hangkho Suon, Sangkat Sammaki	1:30 – 3:00
14 May 2017 (Sunday)	Land travel to Phnom Penh	8:00 – 5:00

#### 4. FINDINGS AND ISSUES

##### A. Initial Meeting with PWW – May 10, 2017

During the meeting with the PWW, major issues that were discussed are related to the schedule of activities that will be undertaken for the site visits and the public consultations with the mayor, village chiefs and villagers. The PWW and the PIA agreed to hold the public consultation meetings as soon as possible to avoid the water supply project from being used as an issue during the upcoming election of local officials. The PWW and PMU were informed by the PIA that key informant interviews can also be conducted if gathering of large group of people is not feasible. This matter will be discussed further during the meeting with the Mayor and village chiefs.

##### B. Meeting with Mayor and Village Chiefs – May 11, 2017

The following were discussed during the meeting:

- a) Message of support from the Mayor - The Mayor supports the project because it will be beneficial to the people. The Mayor of Stung Treng said that there are about 6,000 households and 30,000 people in Stung Treng town. The existing water supply system

which was built in the 1960s cannot supply water to all households. With increasing population, there is only about 30% of households that have sufficient water while another 20% of households have limited water supply. The Mayor requested to connect all households in the town including villages across the river. Some people collect water directly from the river but if piped water supply will be installed, the people will have better access to clean and safe water.

- b) Land ownership at intake site – The land at the proposed intake, with size of 30mx32m. previously belong to the town and was donated to the PWW and Provincial Department of Industry and Handicraft. The land for the WTP, with size of 70mx200m also was belongs to the town and had been donated to the PWW and DIH.
- c) Complaints management – The Mayor said that if there any complaints, the Mayor can facilitate and help resolve any problems. He also promised to facilitate and help the PWW in fast-tracking the implementation of the project. The people need the project and have been waiting for its implementation for a long time.
- d) Water supply to Sesan District and Thalaborivath District – The Mayor asked if the two districts across Mekong River will also be included. The PIA said that the two districts are proposed to be included also in the service area. This will still be determined during detailed design but the capacity of the WTP was increased to 12,000 m<sup>3</sup>/day to serve more areas in Stung Treng province.
- e) Public consultation – The Mayor and Sangkat Chief and village chiefs were advised on the requirements of ADB to conduct public consultation as part of the updating of the IEE/EMP and the due diligence report. The PIA encouraged participation of women during the consultation meetings. The village chiefs gave assurance that they will organize and invite the villagers for the public consultation meetings to be held on May 14, 2017.

### **C. Meeting with Provincial Department of Public Works and Transport – May 11, 2017**

During the meeting with the Director of the Provincial Public Works and Transport (DPWT), the following issues were discussed:

- a) Start of project implementation – The Director expressed support to the project and hope that it could be implemented soon.
- b) Right-of-Way of existing roads and location of water supply pipelines – The ROW of national roads is 30 meters from centerline; for provincial roads is 25 meters from centerline; and for rural roads is 15 meters from centerline. Water pipes can be laid on the road shoulder.
- c) Households encroaching on road shoulder – There are households that are encroaching on the road shoulder. The Contractor, DPWT and MIH/PWW need to first check the alignment of the water pipes and check all encroachments on the road shoulder. This should be done together with the village authority. Prior to pipe laying, the Director advised that the Contractor and the MIH/PWW need to talk with the affected household.

- d) Management of traffic – If sections of roads need to be closed during pipe laying, the Contractor and PWW need to coordinate with the police who will manage the traffic including need for rerouting of traffic.
- e) DPWT Coordination - DPWT needs to be informed by the PWW and Contractor about the layout of pipes including details on depth and schedule of the pipe laying. DPWT will monitor the pipe laying activities. For pipelines that will be laid 1 meter below the road surface, approval of the DPWT will be needed.
- f) Unexploded ordnance – The Director confirmed that the roads within the city are already cleared from UXO because these were already demined during the road construction. However, the locations of the WTP and intake would need UXO clearance from the Cambodia Mine Action Center (CMAC).
- g) Women's role during construction – Women during construction are assigned to undertake water spraying and cleaning of roads.
- h) Condition of bridges – The large bridges across Mekong River and Sekong River are managed by the Ministry of Public Works and Transport (MPWT) while the small bridges are managed by the DPWT. There was a question for DPWT director that if the office can provide the geotechnical condition of the bridges since this would help the project to understand underground condition of the intake station. He responded that the geotechnical investigation report is kept at the MPWT.

#### **D. Meeting with Provincial Department of Environment – May 11, 2017**

During the meeting with the Provincial Department of Environment (DOE), the following issues were discussed:

- a) Water quality data – The DOE monitors the water quality of the Mekong River, Sekong River, and Srepok River, twice a year. The primary purpose of the monitoring is to check the water quality in relation to the operation of the Lower Sesan 2 hydropower plant project. The water quality data are with the Ministry of Environment in Phnom Penh but the Director promised to send the data to the PWW, PMU, and PIA.
- b) Ramsar site – The Director said that the town center is located approximately 6 km away from the buffer zone of the Ramsar site.
- c) Environmental clearance requirements – The Director said that if the project is less than 2 million investment cost, the environmental clearance is processed at the DOE and if investment cost is above 2 million USD, a full Environmental Impact Assessment (EIA) is needed to be reviewed by the Ministry of Environment (MOE). Small projects are required to submit the Commitment on Environmental Protection. The water supply project will be treated as an entire system project. The MOE review process takes less than 6 months. The Director advised to submit the copy of the IEE to the DOE to determine whether there is a need to prepare a full EIA for review by the MOE.
- d) Environmental issues in Stung Treng for project consideration – The following are environmental issues that occur in Stung Treng according to DOE:
  - The area experiences the effects of climate change with extreme dry weather and extreme rainfall events. During the dry season, there are instances wherein the river

has algal bloom. Because of climate change, rice planting is sometimes reduced to 3 months planting.

- The municipality has a solid waste dump site but no sanitary landfill. The open dump is about 140 hectares and is about 15 – 20 km away from the town center. The province has one truck which collects garbage in the town center. People resort to burning or burying of wastes.
- In terms of liquid wastes, there is no centralized sewerage system at Stung Treng. There is a PRAKAS that imposes fines to people dumping liquid wastes directly into the river. Hotels and guesthouses are required to put up septic tanks.

#### **E. Meeting with the Provincial Department of Planning – May 11, 2017**

During the meeting with the Provincial Department of Planning, the following issues were discussed:

- a) Socio-demographic data – There is socio-demographic data every year up to 2016.
- b) Gross domestic product (GDP) – Cambodia has a GDP of 850 based from the national data.
- c) Identification of poor households – There is still no poor identification in Stung Treng but criteria has been developed. A committee has been established to evaluate which household can qualify for subsidy. Poverty level in the villages is high.

#### **F. Meeting with Provincial Department of Land Management (DLM) – May 11, 2017**

The following issues were discussed:

- a) Land use map – The province is still in the process of preparing the land use map.
- b) Land certificates – The Department of Land Management will issue over 4,000 land certificates by the end of June. The land certificates include the PWW land to be occupied by the intake and WTP.
- c) Land uses in Stung Treng – The biggest land use allocation in the province is primarily agricultural land, followed by residential land.

#### **G. Meeting with Provincial Department of Water Resources and Meteorology – May 12, 2017**

The following issues were discussed:

- a) Water Rights – The Deputy Director fully supports the proposed water supply project. He added that the quantity of water at Mekong River should not be a problem if water is going to be used for water supply.
- b) Mekong River Commission – The MOWRAM attends meetings of the MRC. According to the Deputy Director, water supply is not an issue to the MRC. The concern of the MRC is more on the hydropower dams that use and divert water from the Mekong River.
- c) Monitoring – The MOWRAM monitors river flowrate (twice per year) while the Department of Water Resources and Meteorology monitors water level from gauging



stations in bridges on a daily basis. Other parameters being monitored by the provincial department are rainfall, temperature, humidity, and wind direction. DOWRAM promised to provide the project with data.

#### **H. Technical Meeting with PWW – May 12, 2017**

The project components and layout were presented to the PWW by the PIA Technical Team. The following were the issues discussed during the meeting:

- a) Trench excavation – The transmission main will be laid about 1.2 meter from the existing road surface while width is about 1 meter.
- b) Office at WTP – At the WTP site, the MIH has requested the provision of an office for administration and billing services. The chemical storage for lime, alum and chlorine will be at the rear section of the land. A secondary gate or security restrictions was proposed to ensure water safety.
- c) Sludge – Sludge management will be by selling as fertilizer to farmers. The PWW was advised that sludge contains alum, lime and other chemicals that needs to be tested to make sure that it is stable before it can be used for agricultural crops as fertilizers. Another option that is being explored by the PWW is the collection of the sludge by a Government-registered hauler. However, the latter option will entail cost on the part of PWW because of payment to be made to the sludge hauler. The use of sludge for fertilizer is the preferred option but sludge testing will be included in the monitoring plan. The PWW requested that staff needed for operating the water supply system be clearly defined and that the monitoring plan should also outline the cost that will be shouldered by contractor during construction and the costs during commissioning and operational phase.
- d) PAC or Alum? – The PWW asked which of the two coagulants are better. The PIA said that PAC is better in terms of shorter reaction time and lower sludge generation but the cost is higher than alum. The alum has lower cost but generates more sludge than PAC.
- e) Intake – The PWW was informed about the results of the hydrograph of riverbed conducted at the intake site at Mekong River. The proposal is to install a 30-meter shaft to the river and powerhouse at the intake with 2 working pumps and 1 standby pump. Filter screens will be provided at the intake to prevent entry of sediments. From the intake, there are two options on where to lay the raw water pipe to the WTP, i.e. (i) at the left side where it will cross two national roads and with houses and the military academy along the road and (ii) at the right side which will cross the two national roads and the provincial (PR54) leading to the WTP and which has few houses and structures.

#### **I. Key informant interviews at Sangkat Sammaki**

Hankho Ban is a village in Sangkat Sammaki that is located across the Sekong River. The project proposes to supply water to this village through water lines at Sekong Bridge, wherein one line goes to the pagoda area and other lines to the Hankho Ban village. Villagers were interviewed and they disclosed the following:

- a) Water supply

- i. The villagers currently take water from the Sekong River by laying pipes and pumping. During the rainy season, the river water is pumped by households once a month and during the dry season, water is pumped weekly or every 10 days. It is the husband or male member of the household that pumps water from the river. They spend about 1 kwh for motor pump to fill two jars or about R950/kwh for the electricity.
  - ii. During the rainy season, the people collect rain water which they also use for drinking, washing, and other households needs.
  - iii. For cooking and drinking, the villagers have three options: (i) buy water from delivery truck, (ii) boil the river water and after boiling, filter the water to remove the sediments, (iii) use stored rainwater.
  - iv. The houses in the village have large jars where they store water. Each jar has a capacity of about 500 liters.
  - v. During the dry season, people sometimes buy water from water delivery peddlers at a price of R30,000 for 3 big jars.
- b) Diseases – The villagers said that children usually get sick during the dry season which they attribute to the hot weather. Common diseases are stomach ache, intestinal tract infection, and diarrhea. The villagers said that people experience these diseases every year particularly children and the elderly. The villagers go to the health center in Stung Treng town for consultation and at the Stung Treng Referral Hospital. Medical consultation fee ranges from US\$10 – 20 and at times they need to sell their chickens to pay for medication.
- c) Flooding – The most recent flooding occurred two years ago. Before that, they experience flooding almost every year. Flood levels reach 1 meter deep or sometimes knee-deep. Flood waters take long time to subside, usually lasting for one month. During flood events, the people just stay at their houses and use rain water for drinking. The river water during the rainy season is murky with sediments coming from upstream.
- d) Perception on the project – The villagers said that they are willing to connect to the proposed water supply project and that they are very happy that the project will be implemented soon. They added that their lives will be more convenient if there is piped water connection.

**J. Consultation meeting with villages heads and villagers at Kang Dei Sar village, Sangkat Preah Bat – May 13, 2017**

Sangkat Preah Bat has three villages, namely: (i) Kang Dei Sar, (ii) Kang Meamay, and (iii) Bachong. The Kang Dei Sar village is host to the proposed intake and the WTP. The Sangkat Chief is assisted by a Board of Adviser, the Sangkat Council for legislation and implementation, and committees for women and children, planning and budget.

- a) Support to the project - The Sangkat Chief said, they believe that the project will be beneficial to the Sangkat because it will provide safe water to households. The people have been waiting for this project to be implemented.
- b) Previous occupants of property at intake

- i. There were two previous occupants of the property to be occupied by the intake, namely, (i) Song Ponnary, female, 66 years old and (ii) Tun Vuthy, female, 67 years old. Both claimed that they used to plant vegetables and other crops in the property which they sell to the market. During the rainy season, they can earn US\$20 – 30 while in the dry season they can earn US\$70 from planting vegetables. They live just across the road and one owns a store along the road.
  - ii. The previous land occupants added that they are not against the project and are aware that the land belongs to Government.
  - iii. The claimants said that they are already old and would like to know if the project can provide them some compensation, similar to the road project where compensation was given to affected households.
  - iv. The PWW Director explained that they met with the previous occupants together with the Sangkat chief and Mayor. An agreement was signed afterwards wherein the two claimants agreed that part of their properties will be used for the intake. The PWW Director added that during the meeting with the Mayor, the issue of compensation for loss of income was also discussed. The PWW offered to provide free water supply connection to the previous land occupants using own funds from PWW. The PWW and the previous land occupants agreed to discuss the issue of compensation further separately.
- c) River easement – People became aware only that the river easement cannot be occupied when the cadastral survey was done sometime in 2014. Vegetables and other fast growing plants such as banana are allowed in Government property but not mangoes, coconut and other similar trees.
- d) Source of income of households in the community – About 85% of the people earn their living through agriculture, i.e. planting rice, fruit trees, and vegetables. Other households source their income as Government officials, private sector employees or construction workers. People also undertake fishing to supplement the income from agriculture as well as for household consumption. People also undertake fish drying and fish paste making which they sell in the market. There are 60 families identified as poor in the village, whose income do not exceed US\$1,000/year.
- e) Expense for water – The households in the village have just been recently connected to piped water supply from the PWW. Households get water from dug wells for bathing and washing and use the piped water supply for drinking. Cost for water is about R30,000 for 21 m<sup>3</sup>/month. Water expense is about R1,500 per m<sup>3</sup>. Villagers also buy bottled water which costs R5,000 for a 20-liter bottle.
- f) River water – The villagers living near the river use the river water for washing and also for drinking after boiling the water. Those that are not close to the river have dug wells. The water quality of the river is turbid in the wet season and a little clearer in the dry season.
- g) Flooding – The highest flood level that occurred in the Sangkat is about 1 meter high at the national road. There is a gauging station at the bridge and if the level shows 10 meters, the people are aware that this is emergency level already and that they need to evacuate. During the last 10 years, there was no big flood that occurred. The biggest flooding occurred in 1978 and 1984.

- h) Health – The participants during the meeting said that people experience diarrhea, when they do not properly boil the water and do not have proper toilets. Other common diseases in the commune are stomach ache, intestinal infection, diabetes, and high blood pressure. The commune is not very far from the town center and people have ready access to health services in Stung Treng town. There is also a health center in the commune. The commune also has health volunteers, called Village Health Support Group, who provide support to the people during vaccinations and other medical services. The volunteers were supported with per diem and transportation for assisting villagers.
- i) WTP Site – The land for the proposed WTP used to be the site planned for the Sangkat council office. The Sangkat accepted another place for the office instead. The aggregates quarry at the back of the property is private land which sometimes still operate but not very often because the quarry is almost finish.
- j) Unexploded ordnance – The Sangkat chief and the villagers said that there was B52 bombing in the 1960s in the area and suggested to demine first prior to construction. The chief advised to demine the intake area, WTP, and transmission main because cluster of bombs was dropped in the sangkat area in the 1960s.
- k) Perceived benefits of the project – The participants mentioned the following benefits of the proposed project: (i) improvement of health, (ii) reduce labor in fetching water from the river or dug wells particularly for women who usually do this task, (iii) reduce incidences of diseases in children, and (iv) convenient and safe, potable water for the people. The river is more than 100 meter away from houses. Some households now install pipes and pumps to draw water from the river. Several households share the expanses for pumping water.
- l) Social issues - The concerns that occur in Sangkat are health and sanitation, vaccinations, family violence, child trafficking, migrant workers, and health of women and children.

#### **K. Consultation meeting with villagers at Hangkho Soun village, Sangkat Sammaki – May 13, 2017**

Hangkho Soun village in Sangkat Sammaki is a village in an island across the Sekong River. The village is planned to be connected to piped water supply from the project through water distribution lines that will run through the Sekong Bridge. The following are the issues raised by the villagers who attended the public consultation meeting:

- a) Water supply
  - i. A non-government organization (Christian group) provided the village with filtration units consisting of layers of sand. Villagers need to pay US\$3 to get a filtration unit. Now a few households are using the filtration units when the bridge connecting to Stung Treng town was built which allowed them access to water delivery trucks. The NGO also provided the villagers with dug wells particularly for households located far from the river. They were also able to get training from the NGO about hygiene and sanitation.
  - ii. Houses near the river pump water from the river while those that are far from the river use water ponds to store water.

- iii. Households have water storage jars. Most people boil water before drinking. With electricity connection, some households now have refrigerators and are able to have cold water.
  
- b) Awareness and benefits of the project – The villagers said that they have attended several meetings in the past about the proposed water supply project and have been waiting for the project for so long. Some households started to dig ponds when the water supply project did not come. People are willing to connect to the project because they know that water will be clean and that it will be more convenient for them. Elderly people have difficulty fetching water from the river, hence, the proposed water supply project is very much needed.
  
- c) Health– Common illness experienced in the village are flu, malaria, and arthritis. They noted that when mango starts to ripen, people start to experience diarrhea and sore eyes. The village has a health center.
  
- d) Employment – Women grow vegetables while men are engaged in fishing. About 70% of the people in the village are engaged in farming; 1 – 2% are civil servants; and 1 – 2% are workers. Young people work as house helpers, waiters, or sell vegetables and fish in the market. The elderly stay in the village. The CGA NGO taught them to divide the area into blocks for planting different crops. The NGO also provided them with seeds for planting. On a daily basis, the villagers sell vegetables at around 2AM in the wholesale trading market in Stung Treng and then they come back around 7:30AM. Vegetables that they plant/sell are gourd, cucumber, morning glory, herbs, rice, pumpkin, and several more, depending on the season.
  
- e) Household income – A household with 2 – 3 people working can earn US\$100 per month if working in hotel or restaurant and about US\$150 per month if selling in the market.
  
- f) Household expenses – Expenses incurred by the households are for electricity, water delivery and food. For electricity, some households spend US\$2/month for use of lamp and television while other households spend less than US\$50/month for electricity for those with more appliances including pumps to irrigate vegetable garden.
  
- g) Poverty – The Hangkho Soun village has 300 households, of which 21 households are considered under P1 and 70 households are under P2. P1 households are orphaned children, handicapped, and the elderly with no one to take care. The P2 households are those without house or those whose entitlements ended because of school scholarship provided by the NGO.
  
- h) Application of fertilizers and pesticides – When the villagers were asked if they apply chemical fertilizers and pesticides in the vegetables/crops that they plant, they replied that they use organic compost from cow manure and chicken manure. They said that they do not have enough money to buy the chemical fertilizers and pesticides.
  
- i) Irrigation- Rainfed irrigation is the means used by the villagers to irrigate their crops.
  
- j) Flooding – The Hangkho Soun village near Sekong River does not experience severe flooding but the villages in the island facing Mekong River get flooded at about 1 – 2 meters from the existing road level.

- k) Unexploded ordnance – The villagers said that UXO may still be present in the area. They suggested the demining of some areas that the project will excavate but they said that areas along the road have already been demined.
- l) Complaints management – In cases of complaints, they have a village guard to manage complaints and problems of villagers including domestic violence. Regarding the project implementation, in case there are complaints during construction, the villager will call the attention of the Project Implementation Unit (PIU) to remedy the complaint. The villagers asked that once the detailed design is completed or before project construction, they should be informed on where to lay pipes and also on the construction schedule.
- m) HIV/AIDS – The villagers said that the people already attended seminars on how the HIV virus is transmitted. They have no information on a villager that has been exposed to HIV/AIDS. There are no migrants in the villager. On the other hand, it is the villagers going to Siem Reap or Phnom Penh for work.

## 5. CONCLUSIONS AND RECOMMENDATIONS

- a) Based on the site visits, meetings with the local authorities and villagers, the proposed water supply project in Stung Treng is confirmed as **Category B for environment** safeguards based on ADB SPS (2009). The project is located 6km away from the Ramsar site and that there are no environmentally, ecologically sensitive or culturally significant areas that will be traversed by the project.
- b) The villagers and local authorities support the proposed water supply project and have been waiting for the project for a long time. Benefits that they mentioned are: (i) convenience in getting water from piped connections rather than fetching water from the river or dug wells; (ii) having safe and potable water; (iii) improvement of health and sanitation resulting to less incidences of diseases.
- c) Mitigation measures can be designed to manage any adverse impacts of the project through an updated Initial Environmental Examination (IEE) with environmental management plan (EMP) and environmental monitoring plan (EMoP). The updated IEE with EMP and EMoP will include measures to address the following issues that were identified during this field work:
- Conduct of baseline water quality sampling at the intake site as part of detailed design and of the treated water during the operational phase. Parameters to be tested are those outlined in the Drinking Water Quality Standards.
  - Conduct of UXO clearing at the sites of the intake, WTP, and transmission main in Sangkat Preah Bat.
  - Proper disposal and management of sludge that will include the testing of sludge quality to ensure that it is appropriate for land application as fertilizer.
  - Protection of community health and safety during project construction.
  - Notify villagers prior to pipe laying particularly for those whose properties and structures will be affected.
  - Require the contractor to prepare site-specific construction management plan.

An updated EMP/EMoP will be prepared as part of the tender documents.

- d) In accordance with the Project Administration Manual (PAM) that was approved by ADB, the environmental clearance and UXO clearance should be secured prior to bidding.
- e) The PMU/PWW need to coordinate with relevant agencies such as:
  - (i) DPWT for survey of ROW, layout of pipe laying and trench excavation works,
  - (ii) A letter of approval from MPWT for the installation of transmission lines at Mekong and Sekong Bridges,
  - (iii) DOE/MOE for securing the environmental clearance of the project; and
  - (iii) CMAC for the UXO clearing at the sites of the WTP, intake, and main transmission lines.

Attachment 1  
**LIST OF PERSONS MET**

NAME	POSITION/ORGANIZATION
<b>PWW</b>	
1. Mr. Nin Soksdey	Director of Provincial Department of IH, Stueng Treng
2. Ms. Chong Chansavon	Chief of PWW, Stueng Treng
3. Mr. Om Narith	Water Production
<b>Stung Treng City</b>	
1. Mr. Bun Nary	Governor of City Hall
2. Song Hi	Vice-Governor of City Hall
3. Sok Chansamoeurn	Chief of Administration
<b>Sangkat/commune</b>	
1. Mr. Puy Buntha	2nd Vice Chief of Sangkat
2. Ms. Vy Kamsanit	Sangkat Council of Preah Bat
3. Ms. Khav Chantry	Sangkat Council of Stueng Treng
4. Ms. Vorn Bunly	Sangkat Chief of Samki
5. Mr. Seth Kim Teng	Sangkat Chief of Preah Bat
6. Mr. Tob Ne	Vice Chief of Preah Bat
<b>Villages</b>	
1. Mr. But Siboly	Vice Chief of Kang Meamay village
2. Mr. Chea Sophon	Vice Chief of Bachong village
3. Ms. Lot Teav	Village Chief of Hang Kho Suon village
4. Ms. Tun Vuthy	Villager, Kang Dei Sar, Preah Bat
5. Ms. Song Ponnary	Villager, Kang Dei Sar, Preah Bat
6.	Villager, Hangkho Ban, Sammaki
7.	Villager, Hangkho Ban, Sammaki
<b>Provincial Agencies/ Provincial Departments</b>	
1. Mr. Tep Dylly	Deputy Director of PDLM
2. Mr. Ly Socheth	Chief of Cadastral Office
3. Mr. Puy Chandara	Deputy Director of PDWRAM
4. Mr. Chea Sambath	Deputy Director of PDP
5. Mr. Sar Kimnath	Deputy Director of PDPWT
6. Mr. Eng Pirong	Director of PDE



Attachment 2  
**PHOTOGRAPHS**



Meeting with Mayor, local officials, and villages chiefs of Stung Streng Municipality



Meeting with Department of Public Works and Transport



Meeting with Department of Environment



Meeting with Department of Planning



Meeting with Department of Land Management



Meeting with Department of Water Resources and Meteorology



Consultation meeting at Kang Dei Sar village, Preah Bat Sangkat



Consulting meeting at Hangkho Soun Village, Sammaki Sangkat



Location of proposed intake in Kang Dei Sar village, Preah Bat Sangkat



Site of proposed WTP in Kang Dei Sar village, Preah Bat Sangkat



PR54 where the raw water transmission line will be laid on the road shoulder leading to the WTP.



Sekong Bridge where the distribution main leading to Sammaki commune will be aligned.