

ANNEX 19
INITIAL ENVIRONMENTAL
EXAMINATION (IEE)

ANNEX 19-1 Screening

Item	Description	Evaluation Result	Remark (Basis)
I. Sociology			
1	Resettlement	Moving due to ownership transfer or right of residence due to land acquisition for the facilities.	It will be necessary in Thangone WTP. Land for Thangone Water Treatment Plant (WTP) is now under investigation. Expanded production facilities of Kaolieo WTP is to be located within the existing site.
2	Economic Activities	Loss of production capacity of agriculture at the land and change of economic activity.	Same as the above 1. Same as the above 1.
3	Transportation & Infrastructure	Effect to present traffic, schools, and hospitals by traffic jam, accident, etc.	It will exist. Installation of main pipes will cause traffic jam, but temporary impact.
4	Separation of local society	Setting a right of way divides local society	No separation will happen. No facilities will divide local society. Pipes will be buried under ground.
5	Ruins of ancient & Cultural property	Damage to and disvalue of temples, buried cultural properties	Unknown. There are many temples in the city. All of pipe mains will be buried within a right of way, however, excavation for installation might expose cultural properties.

Item		Description	Evaluation Result	Remark (Basis)
6	Water right & Common right	Obstruction to fishery right, water right, and common right	Unknown	Confirmation of water right in Nam Ngum River for Thangone WTP has not been completed. Regarding water right for expansion of Kaolieo WTP intake flow is negligible if compared with Mekong River discharge flow.
7	Sanitary	Garbage, growth of vermin, deterioration of public health	It will exist.	Water supply will improve, however, increase of discharge water from water supply will deteriorate drainage system.
8	Disposal	Disposed materials / soil from construction, sludge, and garbage	It will exist.	Sludge from the existing is disposed to Mekong River. Sludge from Thangone WTP will be treated at the site and disposed. Solid disposal from WTP in construction and operation will affect the existing solid disposal system.
9	Disaster (risk)	Increase occurrence of subsidence, cave-in, accident	It will no exist.	Construction of expanding facilities will not require large scale of land development.
II. Nature				
10	Topography & Geology	Modification of worthy topographical and geological properties due to excavation, embankment, etc.	Nonexistence	Construction of expanding facilities will not require large scale of land development.

Item	Description	Evaluation Result	Remark (Basis)
11	Erosion	Erosion caused by land development, deforestation	Same as above 10
12	Ground water	Shortage of ground water and water pollution caused by drainage or seeped water from construction.	Nonexistence
13	Lakes & marshes & River	Change of flow and elevation of river bed due to construction works, reclamation and drainage	It will exist.
14	Coast & Area of sea	Erosion and sedimentation due to reclamation or change of sea condition	No existence
15	Fauna & Flora	Obstruction to breeding and extinction due to change of conditions for inhabiting	Unknown
16	Climate	Change of temperature and wind due to large scale construction or buildings	Nonexistence

Item	Description	Evaluation Result	Remark (Basis)
17	Landscape Change of topography by land development and obstruction to harmony of buildings and view	It will exist.	Raw water intake structures at Kaolieo and Thangone WTP will be constructed at Mekong River and Nam Ngum River respectively. The both will affect the landscape of the rivers.
III. Pollution			
18	Air pollution Air pollution by emission from vehicles and harmful gas from factories	It will exist.	Construction equipment will emit noxious fumes. Wind will blow dust from exposed soil by earth works for construction.
19	Water pollution Water pollution from sludge and waste water discharged from WTP.	It will exist.	The two existing plants, Kaolieo and Chinaimo, dispose extracted sludge to Mekong River. The effect of sludge disposing will be negligible if compared with river discharge flow of the river. Contrary to Mekong River, discharging sludge to Nam Ngum River from Thangone WTP will affect to water quality since flow rate and turbidity of the river are rather small. In addition, there are many pumps set in the river to lift water to irrigation and domestic use.
20	Soil pollution Pollution caused by drain water and spill, and diffusion of toxic substance	It will exist.	If water seep from bottom of sludge treatment plant to be constructed in Thangone WTP will pollute soil.

Item	Description	Evaluation Result	Remark (Basis)
21	Noise & Vibration	Noise and vibration from moving vehicles and operation of WTP	It will exist. Noise and vibration will be generated from construction equipment during construction and operation of pumps and other equipment in WTP.
22	Subsidence	Subsidence caused by deformation of ground or ground water table lowering	Nonexistence No ground water exploitation other than the existing Thadeua WTP.
23	Bad smell	Generation of exhaust gas and bad smell substance	It will exist. Exhaust gas from heavy equipment during construction and sludge treatment facilities in operation of WTP will appear.
Evaluation result whether necessity of conducting EIA or not.		Yes necessary	The project will cause negative impact to the environment.

ANNEX 19-2 Scooping

Items		Evaluation	
		Result	Remarks (basis)
I. Sociology			
1	Resettlement	C	Land for Thangone Water Treatment Plant (WTP) is now under investigation. Selection of land to avoid resettlement is possible.
2	Economic Activities	C	Same as the above 1.
3	Transportation & Infrastructure	B	Installation of main pipes will cause traffic jam, but temporary impact.
4	Separation of local society	D	No facilities will divide local society.
5	Ruins of ancient & Cultural property	C	There are many temples in the city. Setting pipe alignment to avoid making impact to them is possible.
6	Water right & Common right	C	Confirmation of water right in Nam Ngum River for Thangone WTP has not been completed.
7	Sanitary	B	Water supply will improve, however, increase of discharge water from water supply will deteriorate drainage system.
8	Disposal	B	Sludge from the existing is disposed to Mekong River. Sludge from Thangone WTP will be treated at the site and disposed. Solid disposal from WTP in construction and operation will affect the existing solid disposal system.
9	Disaster (risk)	D	Construction of expanding facilities will not require large scale of land development.

Items	Evaluation Result	Remarks (basis)
II. Nature		
10 Topography & Geology	D	Construction of expanding facilities will not require large scale of land development.
11 Erosion	D	Same as above 10
12 Ground water	C	Except temporary drainage from trench for pipe installation and raw water for existing Thadeua WTP, no ground water exploitation will be required.
13 Lakes & marshes & River	B	Raw water intake structures at Kaolieo and Thangone WTP will be constructed at Mekong River and Nam Ngum River respectively.
14 Coast & Area of sea	D	Lao PDR is a landlocked country.
15 Fauna & Flora	C	There are six areas for preservation of nature. No construction works will be done in the areas, however, construction near the areas might cause some change of inhabiting conditions.
16 Climate	D	No construction works will affect the climate.
17 Landscape	C	Raw water intake structures at Kaolieo and Thangone WTP will be constructed at Mekong River and Nam Ngum River respectively. The both will affect the landscape of the rivers.

Items	Evaluation	
	Result	Remarks (basis)
III. Pollution		
18 Air pollution	C	Construction equipment will emit noxious fumes. Wind will blow dust from exposed soil by earth works for construction. This impact will be managed by using low emission equipment and applying construction method with care like spreading water or covering with sheet to piled soil.
19 Water pollution	B	The two existing plants, Kaolieo and Chinaimo, dispose extracted sludge to Mekong River. The effect of sludge disposing will be negligible if compared with river discharge flow of the river. Contrary to Mekong River, discharging sludge to Nam Ngum River from Thangone WTP will affect to water quality since flow rate and turbidity of the river are rather small. In addition, there are many pumps set in the river to lift water to irrigation purpose.
20 Soil pollution	C	Water seep from bottom of sludge treatment plant to be constructed in Thangone WTP will pollute soil. To avoid this seepage, concrete slab is applicable to the bottom of sludge treatment facilities.
21 Noise & Vibration	B	Noise and vibration will be generated from construction equipment during construction and operation of pumps and other equipment in WTP.
22 Subsidence	D	No ground water exploitation other than the existing Thadeua WTP.
23 Bad smell	C	Exhaust gas from heavy equipment during construction and sludge treatment facilities in operation of WTP will appear. Selection of land and location of sludge treatment facilities is to mitigate this impact.

Note: Symbol of evaluation result as:
A: Serious impact expected
B: Some impact expected
C: Unknown (Consideration of the impact is required. It is also considered that impact will be more clear as more progress of investigation)
D: EIA is not required due to none or the least impact expected