

添付資料 - 3 カンボジア国の環境影響評価制度

カンボジアの環境影響評価制度

1. 根拠法やガイドライン

1996年12月24日付の環境保護及び天然資源管理法 (Law on Environmental Protection and Natural Resource Management) の第3章に環境影響評価(Environmental Impact Assessment)についての規定があり、第6条で「民間と政府のすべてのプロジェクトと活動に対して EIA がなされ、環境省が検討評価し (be reviewed and evaluated)、その後政府の意思決定に供される」と規定され、第7条では「政府によるすべての投資プロジェクトの申請とすべてのプロジェクトは、初期環境影響評価 (Initial Environmental Impact Assessment) または環境影響評価を行う」と定められている。

また、1999年8月11日付の環境影響評価プロセスに関するサブ・デクリーは、EIA の定義、対象事業の定義、公衆関与について定めている。さらに、2000年3月9日には EIA 報告書作成のためのガイドラインが公表されている。

2. 手続き

1) 対象事業

サブ・デクリーの中で、工業、農業、観光、インフラの4部門の計80事業が、対象として定められている。各々の規模は表1の通りである。国道は100キロメートル以上が、橋梁は30トン以上が対象となっている。

2) 評価項目

ガイドラインの中で、物理的な項目として大気、水、土地が、生態的項目として生物多様性、動物、植物と森林が、社会経済的項目として、人口と居住、インフラストラクチャー、土地利用、健康と福祉、経済状況(生計、雇用、コミュニティ)と習慣、伝統、先住民族が上げられている。

3) EIA の実施・責任主体

サブ・デクリーの第6・7・8・9・11条で、プロジェクトの所有者が環境影響評価を実施し、その経費を負担することを定めている。環境省は、関連省と協力して EIA レポートを検討・評価するとともにプロジェクトをモニターする。

4) 手続きフロー

サブ・デクリーは、プロジェクトの所有者が EIA レポートを環境省に提出するところからカンボジア政府または開発協議会が承認するところまでがフローチャートで示されている。環境省は EIA の承認プロセスに2段階で関与しており、第1段階の初期環境影響評価 (IEIA) の審査で30日間が、第2段階の環境影響評価 (EIA) の審査で30日間の計60日間が審査期間である。手続きのフローを図1で示した。

5) 公衆の関与

ガイドラインの中で、公衆の関与を EIA レポートの中に記載するよう求めているが、手続きフローの中では特にその関与は記載されておらず、スコーピングやドラフト EIA レポートなどの関与する段階や回数または文書や説明会などの関与する方法は、定められていないと思われる。

3. 組織

環境省環境影響評価部 (EIA Department) が、EIA を主管している。2003年12月3日に環境省を訪問しヒアリングした結果では、部の人員は23名であり、地方に担当課は無く本省のみで対応しているとのことであった。また、事業官庁である公共事業・交通省も訪問したが、EIA の担当課は無かった。EIA の実施の状況を両省においてヒアリングしたが、ドナーの協力事業において実施されているのみで、カンボジア政府単独で行っている事例はない様子であった。

EIA の実施数を環境省で尋ねたが回答は得られなかった。人材育成については、アジア開発銀行が行

った研修に参加したとのことであり、実務の経験が乏しいと思われた。

ヒアリングした環境省の担当官は、以下の通りである。

Mr. NGOUN KONG, Deputy Director, EIA Department, Ministry of the Environment (MOE)

Tel: 011832667, Mail: ngoun kong@hotmail

Mr. Leang Mengleap, Chief of Project Review Office, EIA Department, MOE

4. 実績

カンボジア政府独自で行った EIA は無く、ドナーの協力事業に伴って作成される EIA レポートを審査評価している様子であった。

5. 関連する法律

1999年4月6日発布の水質汚濁の規制に関する法令は公共水域・公共下水道への排水基準を定めている。また、大気汚染及び騒音の規制に関する法令は大気環境基準と排出基準や騒音レベルを、保護地域に関する宣言(1994)は、貴重種と保護地域やラムサール条約の候補地域を示している。

6. 参考文献

- 1) The Law on Environmental Protection and Natural Resource Management (1996)
- 2) The Sub-Decree on Environmental Impact Assessment Process (1999)
- 3) Declaration on Guideline for Conducting Environmental Impact Assessment Report (2000)
- 4) The Sub-Decree on Water Pollution Control (1999)
- 5) The Sub-Decree on Air and Noise Pollution Control
- 6) The Declaration No.1033 on Protected Areas (1994)

(上條哲也/企画評価部・環境女性課)

Table-1 List of the Projects Required an IEIA or EIA

No.	Type and activities of the projects	Size/Capacity
A	INDUSTRY	
I	Food, Drinks, Tobacco	
1	Food processing and caned	≥ 500 tones/year
2	All fruit drinks manufacturing	$\geq 1,500$ liters/day
3	Fruit manufacturing	≥ 500 ones/year
4	Orange Juice manufacturing	All sizes
5	Wine manufacturing	All sizes
6	Alcohol and Beer brewery	All sizes
7	Water supply	$\geq 10,000$ users
8	Tobacco manufacturing	$\geq 10,000$ boxes/day
9	Tobacco leave processing	≥ 350 tones/year
10	Sugar refinery	$\geq 3,000$ tones/year
11	Rice mill and cereal grains	$\geq 3,000$ tones/year
12	Fish, soy bean, chili, tomato sources	$\geq 500,000$ liters/year
II	Leather tanning, Garment and Textile	
1	Textile and dyeing factory	All sizes
2	Garments, washing, printing, dyeing	All sizes
3	Leather tanning and glue	All sizes
4	Sponge-rubber factory	All sizes
III	Wooden production	
1	Plywood	$\geq 100,000$ m ³ /year (log)
2	Artificial wood	$\geq 1,000$ m ³ /year (log)
3	Saw mill	$\geq 50,000$ m ³ /year (log)
IV	Paper	
1	Paper factory	All sizes
2	Pulp and paper processing	All sizes
V	Plastic, Rubber and Chemical	
1	Plastic factory	All sizes
2	Tire factory	≥ 500 tones/year
3	Rubber factory	$\geq 1,000$ tones/year
4	Battery industry	All sizes
5	Chemical production industries	All sizes
6	Chemical fertilizer plants	$\geq 10,000$ tones/year
7	Pesticide industry	All sizes
8	Painting manufacturing	All sizes
9	Fuel chemical	All sizes
10	Liquid, power, solid soaps manufacturing	All sizes
VI	Mining production other than metal	
1	Cement industry	All sizes
2	Oil refinery	All sizes
3	Gas factory	All sizes
4	Construction of oil and gas pipeline	≥ 2 kilometers
5	Oil and gas separation and storage facilities	$\geq 1,000,000$ liters
6	Fuel stations	$\geq 20,000$ liters
7	Mining	All sizes

8	Glass and bottle factory	All sizes
9	Bricks, roofing tile manufacturing	$\geq 150,000$ piece/month
10	Flooring tile manufacturing	$\geq 90,000$ piece/month
11	Calcium carbide plants	All sizes
12	Producing of construction materials (Cement)	≥ 900 tones/month
13	Cow oil and motor oil manufacturing	All sizes
14	Petroleum study research	All sizes
VII	Metal industries	
1	Mechanical industries	All sizes
2	Mechanical storage factory	All sizes
3	Mechanical and shipyard enterprise	All sizes
VIII	Metal Processing Industrials	
1	Manufacturing of harms, barbed wires, nets	≥ 300 tones/month
2	Steel mill, Irons, Aluminum	All sizes
3	All kind of smelting	All sizes
IX	Other Industries	
1	Waste processing, burning	All sizes
2	Waste water treatment plants	All sizes
3	Power plants	≥ 5 MW
4	Hydropower	≥ 1 MW
5	Cotton manufacturing	≥ 15 tones/month
6	Animal's food processing	$\geq 10,000$ tones/year
B	AGRICULTURE	
1	Concession forest	$\geq 10,000$ Hectares
2	Logging	≥ 500 Hectares
3	Land covered by forest	≥ 500 Hectares
4	Agriculture and agro-industrial land	$\geq 10,000$ Hectares
5	Flooded and coastal forests	All sizes
6	Irrigation systems	$\geq 5,000$ Hectares
7	Drainage systems	$\geq 5,000$ Hectares
8	Fishing ports	All sizes
C	TOURISM	
1	Tourism areas	≥ 50 Hectares
2	Golf field	≥ 18 Holes
D	INFRASTRUCTURE	
1	Urban development	All sizes
2	Industrial zones	All sizes
3	Construction of bridge roads	≥ 30 Tons weight
4	Building	≥ 12 m high or $8,000$ m ² floors
5	Restaurants	≥ 500 Seats
6	Hotels	≥ 60 Rooms
7	Hotel adjacent to coastal area	≥ 40 Rooms
8	National road construction	≥ 100 Kilometers
9	Railway construction	All sizes
10	Port construction	All sizes
11	Airport construction	All sizes
12	Dredging	$\geq 50,000$ m ³
13	Damping site	$\geq 200,000$ People

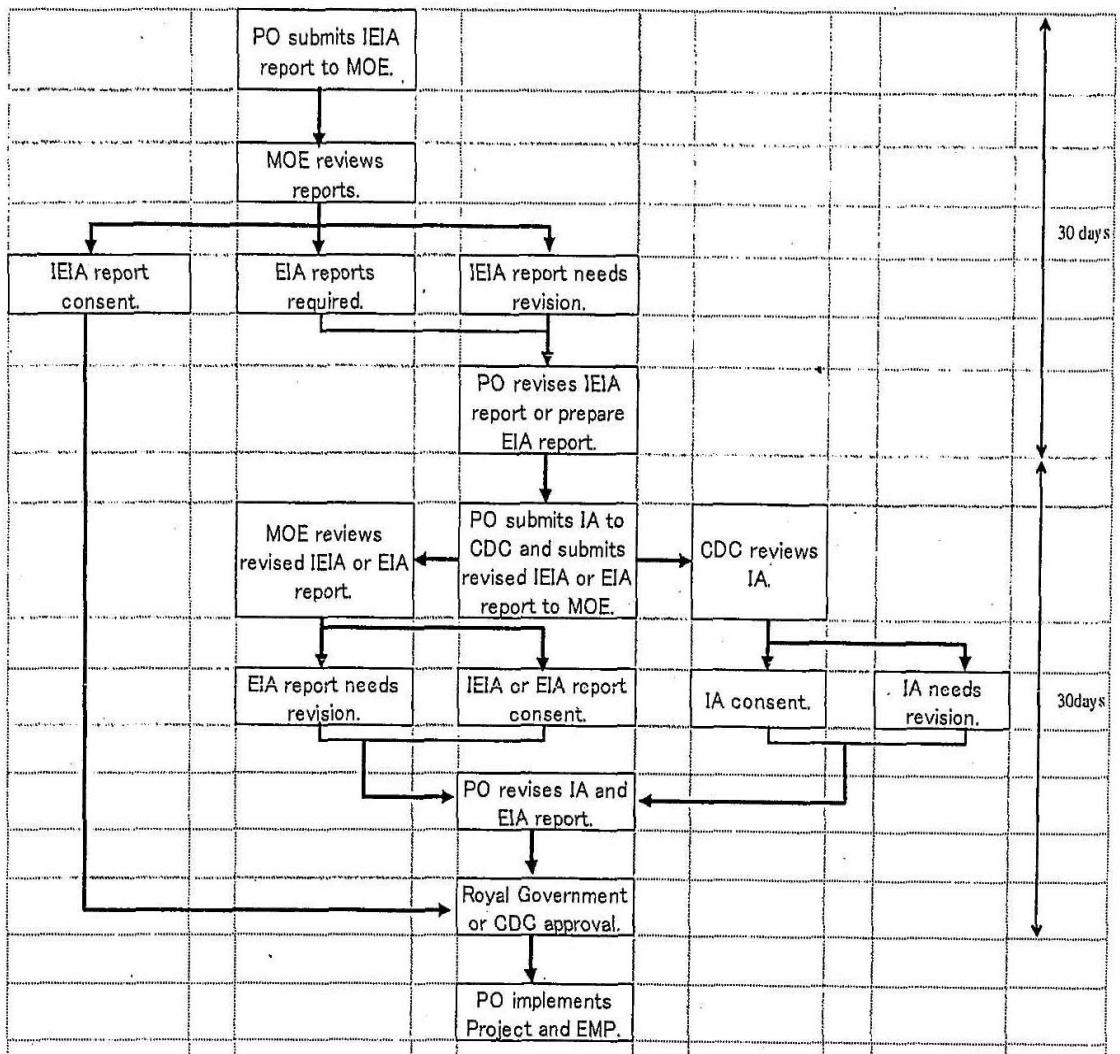


Figure-1. EIA Process for Proposed Project

Note:

PO: Project's Owner

CDC: Cambodia Development Council

MOE: Ministry of Environment

IA: Investment Application

EMP: Environmental Management Plan

IEIA: Initial Environmental Impact Assessment

EIA: Environmental Impact Assessment

EIA: Environmental Examination Application

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環境社会配慮に係る事前評価調査報告書

Preparatory Study (事前評価調査報告書)

Creation Date: 24 August 2004

Reception Date:

1. Title of the Cooperation Project and Name of the Project Proponent

Title of the Cooperation Project: The Study on Integrated Master Plan for Sustainable Development of Siem Reap / Angkor Town in the Kingdom of Cambodia.

Name of the Project Proponent: The Siem Reap Province.

2. Outline of the Project

2.1 Background of the Study

The Siem Reap/ Angkor Town has been attracting an increasing number of international as well as domestic tourists, and consequently an increasing number of hotels and accommodations has been constructed in the area. This fact has been causing a constant increase of migration of people from outside looking for employment and business opportunities. As the result, the area has been suffering such various development issues as shown below and needs immediate actions to cope with them:

- (1) Deterioration of urban environment including waste, sewage and flood water;
- (2) Shortage of such urban utilities as water and electricity as well as public services;
- (3) Under-development of road network and transport services that induce traffic control;
- (4) Lack of legal and institutional framework for emerging issues; and
- (5) Capacity shortage of local governments to tackle these issues.

Although the thriving tourism sector has been contributing to economic boom of the area to some extent, the contribution seems to have been partial in terms of beneficiaries and local economy. An importance needs to be placed on promoting and diversifying local economy based on tourism for the benefit of local people and firms. In this context, the Integrated Master Plan needs to include planning of promotion and diversification of local economy in connection with tourism development.

2.2 Objectives of the Study

Taking the above background into account, the Study has three objectives:

- (1) To propose an Integrated Master Plan for sustainable development of Siem Reap / Angkor Town in a long run with a view to achieving a reasonable balance among tourism industry, urban environment, and institutional capacity;
- (2) To propose a package of measures with a view to promoting and diversifying local economy in connection with tourism development as a part of the Integrated Master Plan; and
- (3) To promote technical transfer to the Cambodian counterparts with a view to institutional capacity building of such local stakeholders as governments and community.

2.3 Study Area

The Study Area covers Siem Reap District with focus on urban area.

2.4 Target Year

The Target year of the Master Plan shall be 2020.

2.5 Supposed Project Components

The Project will be consists of sectors listed below, have significant adverse impact on the environment and society.

- (1) Thermal power
- (2) Hydropower and Reservoir
- (3) River
- (4) Power transmission and distribution lines
- (5) Roads and bridge
- (6) Airport
- (7) Water supply, sewage and wastewater treatment
- (8) Waste management and disposal
- (9) Tourism

3. Legal Framework of Environmental and Social Considerations

3.1 Laws

A matrix table shown below is given relevant environmental law / regulations and the project

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component shown in 2.5.

Table-1 Environmental Law and Project Components

	(1) Thermal power	(2) Hydropower and Reservoir	(3) River	(4) Power transmission and distribution lines	(5) Roads and bridge	(6) Airport	(7) Water supply, sewage and wastewater treatment	(8) Waste management and disposal	(9) Tourism
(1) The Law on Environmental Protection and Natural Resource Management (1996)	√	√	√	√	√	√	√	√	√
(2) The Law on the Establishment of the Ministry of Environment (1996)	√	√	√	√	√	√	√	√	√
(3) The Law on the Protection of Cultural Heritage (1996)	√	√	√	√	√	√	√	√	√
(4) Royal Decree on the Creation and Designation of Protected Area (1993)	√	√	√	√	√	√	√	√	√
(5) The Sub-Decree No. 27 on Water Pollution Control (1999)							√	√	
(6) The Sub-Decree No. 36 on Solid Waste Management (1999)							√	√	
(7) The Sub-Decree No. 42 on Air and Noise Pollution Control (2000)	√					√			√
(8) The Sub-decree No.57 on the Organization and Function of the Ministry of Environment (1997)	√	√	√	√	√	√	√	√	√
(9) The Sub-Decree No.72 on Environmental Impact Assessment Process (1999)	√	√	√	√	√	√	√	√	√
(10)The Declaration No.49 on Guideline for Conducting Environmental Impact Assessment Report (2000)	√	√	√	√	√	√	√	√	√
(11)The Declaration No. 1033 on Protected Area (1993)	√	√	√	√	√	√	√	√	√

3.2 Competent Agency

Ministry of Environment (MOE).

Provincial department of environment is a local agency of the Ministry of Environment.

3.3 Projects subject to IEIA/EIA

Projects listed in the annex of the sub-decree No. 72 on Environment Impact Assessment Process are subject to IEIA/EIA. The summary of the annex is shown below.

- (1) Thermal power: Construction of a thermal power station which will generate more than 5 MW is required IEIA/EIA.
- (2) Hydropower and Reservoir: Construction of a hydroelectric power station which will generate more than 1 MW is required IEIA/EIA.
- (3) River: Dredging with more than 50,000 m³ is required IEIA/EIA.
- (4) Power transmission and distribution lines: Power transmission and distribution lines itself is not required IEIA/EIA.
- (5) Roads and bridge: More than 30 tones weight of bridge construction is required EIA. National road construction with more than 100 km is required IEIA/EIA.
- (6) Airport: Air port construction with all size is required an IEIA/EIA.
- (7) Water supply, sewage and wastewater treatment: All size of waste water treatment plant is required EIA. Dredging with more than 50,000 m³ is required IEIA/EIA.
- (8) Waste management and disposal: Construction of dumping site for more than 200,000 people is required IEIA/EIA.

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- (9) Tourism: More than 50 ha of tourism area development is required IEIA/EIA. Construction of hotel with more than 60 rooms is required IEIA/EIA.

3.4 Procedures

The Sub-decree No.72 on Environmental Impact Assessment Process approved on 11th August 1999 has decided EIA process. Every private and public project or activity must be reviewed by MOE prior to the submission for a decision from the RGC. Project owner: the Siem Reap Province and the APSARA Authority have to submit IEIA report to MOE. The MOE judge EIA is required or not based on the annex of the Sub-decree No.72. The project owner has to prepare and implement EMP¹. Duration to get approval to implement the project is 60 days in maximum excluding IEIA/EIA revising period. Cost for reviewing IEIA/EIA and monitoring EMP by MOE will be covered by the Project owner.

Donor agency must bear all cost to conduct IEIA/EIA and EMP in fact because of shortage of budget for the Project owner.

3.5 Information Disclosure

The information disclosure in accordance with JICA Guidelines for Environmental and Social Considerations is agreed.

3.6 Stakeholders Participation

The article 1 of the Sub-decree No.72 on Environmental Impact Assessment Process approved on 11th August 1999 provides the stakeholders' participation.

The stakeholders participation (meeting with stakeholders) in accordance with JICA Guideline for Environmental and Social Considerations is agreed.

As the category B is not required the stakeholders participation, meeting with stakeholders will be conducted three times at the M/P stage.

4. Outline of the Location

4.1 Population

Siem Reap district has a population of 123,337 in 2003, comprising 58,334 males and 65,003 females. The percentage of female population is 52.7.

The district consists of 10 communes and 76 villages. The population of this district constitutes 16.4 percent of the provincial population.

4.2 Race

The Khmer (Cambodian) is dominant. The Vietnamese and the Cham (Islam) is living in/around the Tonle Sap Lake. The Kuy is ethnic minority living in norther part of Siem Reap province.

4.3 Economics

No useful information.

4.4 Education

Provincial school enrollment ratios are shown below.

Table-2 School Enrollment Ratios

	Primary School	Lower Secondary School	Upper Secondary School
Siem Reap Province	89.3 %	12.8 %	4.4 %
The whole country	87.0 %	18.9 %	7.4 %

Source: Education Statistics and Indicators, 2001/2002, Department of Planning, Ministry of Education, Youth and Sport.

4.5 Landuse

Total area of Siem Reap Province is 10,299 km² including 1,970 km² (19%) of agricultural land and 5,570 km² (54%) of forest.

4.6 The Environment

There are four protected areas in and around the study area as shown below.

- (1) Phnom Kulen: National Park, one of the catchment area of Siem Reap river.
- (2) Kulen Prompet: Wildlife Sanctuary, biggest wetland in northern Cambodia.
- (3) Angkor: Protected Landscape and World Heritage, historic site.
- (4) Tonle Sap lake: Multiple Use Area, important lake ichthyologically.

¹ EMP: Environmental Management Plan

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4.7 Other Socioeconomic Situation

Many historical sites are spread especially in northern part of the Study Area. The Tonle Sap Lake and Nature in northern part of the Province is rich in precious natural resources.

Compared with capital of the country Phnom Penh, beggars are not so much around the Study Area. Some beggar-children is saw in sightseeing point.

Main income source of squatters around the Siem Reap River seems to be hotel construction site.

Main income source of squatters in/around the Tonle Sap Lake, they are Vietnam and Cambodian, seems to be fishery in the lake.

5. Categorization and its Reason

Category B:

Impact on factors like cultural heritage, land use, water usage and waste is assumed. Consideration is necessary if infrastructure construction is included in the M/P

6. Provisional Scoping

Table-3 Provisional Scoping

		Items	Rating	Reason(s)
Social Environment	1	Resettlement	A	<ul style="list-style-type: none"> Northern part of Siem Reap River in urban area is occupied by more than 200 houses. If it is important to improve the landscape of Siem Reap River, it may be necessary to resettle some squatters who are living on the embankment. The necessity of the improvement of the landscape as well as the present condition and the intention of the squatters will be confirmed in M/P stage. Several households living around the garbage disposal site may be resettled depending on the present condition of ground water pollution. Ground water pollution will be confirmed in M/P stage. If their ground water is polluted, appropriate measures will be proposed. Their resettlement will be alternative.
	2	Economic Activities	A	<ul style="list-style-type: none"> Scavengers in disposal site may lose their job if measures are taken for waste disposal. Employment measures like garbage segregation by scavengers will be necessary. Taxi and motorbike drivers may lose their job if measures are taken to minimize air pollution and noise. Relief measures for unemployment may be necessary. Some farmers may lose their farm land if facilities for sightseers are constructed. Relief measures for the farmers will be necessary.
	3	Traffic and Public Facilities	B	
	4	Split of Communities	B	
	5	Cultural Property	A	<ul style="list-style-type: none"> Ruins may collapse by vibration and noise caused by heavy traffic due to increase of economic activities...The present condition of damages of ruins caused by environmental pollution will be confirmed in M/P stage and suitable measures will be proposed.
	6	Water Rights, Right of Common	B	
	7	Public Health Condition	B	
	8	Waste	A	Quantity of garbage may increase due to increase of economic activities. Quality and quantity of garbage will be confirmed in M/P stage.
	9	Hazards	B	
Natural Environment	10	Topography and Geology	B	
	11	Soil Erosion	A	Soil in the study area are vulnerable to erosion Suitable mitigation plan will be proposed in M/P.
	12	Groundwater	A	The groundwater may be contaminated by increase of domestic waste and garbage due to increase of economic activities.. The water quality and mitigation measures will be confirmed in M/P stage.
	13	Hydrological Situation	B	The lake and river water may be contaminated by increase of domestic waste and garbage due to increase of economic activities..
	14	Coastal Zone	C	No coastal zone in the study area.
	15	Flora and Fauna	A	Flora and fauna may be affected by domestic waste. Natural environment of Tonle Sap Lake is studied by other donors.
	16	Meteorology	B	
Pollution	17	Landscape	A	Northern part of Siem Reap River in urban area is occupied by more than 200 squatters' houses. The landscape management will be considered in M/P stage. Resettlement of squatters will be one of alternative.
	18	Air Pollution	A	Increase of tourist may increase car fumes. Air pollution will be confirmed in M/P stage.
	19	Water Pollution	A	Groundwater, river water and the Tonle Sap Lake water may be polluted by domestic waste. The water quality will be confirmed in M/P stage.
	20	Soil Contamination	A	Soil of Southern part of the Siem Reap district may be contaminated by domestic waste. Hearing to farmers will be necessary in M/P stage. Detailed laboratory analysis should be conducted if necessary.

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	Items	Rating	Reason(s)
21	Noise and Vibration	B	vibration and noise caused by heavy traffic due to increase of economic activities.
22	Land Subsidence	B	
23	Offensive Odor	A	Offensive odor from drainage in dry season is anticipated. Closed drainage in urban area is one of alternatives. The offensive odor will be confirmed in dry season of M/P stage.

Note: The scoping list is prepared based on JICA Guideline on Environmental Consideration for Integrated Regional Development, January 1994.
Rating category

A : Further scrutiny is needed in the Master Plan stage, as the Project may induce this SEI².

B : Further study is needed in Master Plan stage, as the preliminary evaluation is unable to clearly this SEI

C : This SEI is not anticipated under the Project

6. Alternative including no Action

The present environmental condition of the sight is unknown and the development of the area is progressing without any overall plans or environmental and social considerations. Without any information, overall plans or measures drawn up by this M/P, there is possibility that environment situation would worsen by imprudent development caused by rapid growth of number of tourists and population. And eventually, the attractiveness of the area as an international sight seeing spot will be lost and standard of living of people will also be degraded.

However, some components of the M/P may cause adverse impact on the environment and society and if so, the alternatives including no action of each component will be considered in the study.

² SEI: Significant Environment Impact