

環境チェックリスト：18. 上水道 (1)
Check List for Environmental Considerations - Water Supply

分類 Category	環境項目 Items for Environmental Considerations	主なチェック事項 Major items to be checked	環境配慮確認結果 Results of environmental and social considerations
1 承認可・説明 Permits and approvals, explanations	(1)EIAおよび環境許可 EIA and Environmental Permits (2)地域住民への説明 Explanations to the public	① 環境影響評価報告書 (EIAレポート)等は作成済みか。 Has the EIA report been prepared? ② EIAレポート等は当該国政府により承認されているか。 Has the EIA report been approved by the national government, if it is prepared? ③ EIAレポート等の承認は無条件か。付帯条件がある場合は、その条件は満たされるか。 If approval, has the approval been given with conditions or without? If with conditions, what are the conditions? ④ 上記以外に、必要な場合は現地の所管官庁からの環境に関する許認可を取得済みか。 Does the project need other approvals than the above EIA? If any, has the project obtain such approvals? ① プロジェクトの内容および影響について、情報公開を含めて地域住民に適切な説明を行い、理解を得るか。 Does the project obtain understandings from the public through information disclosure and explanations to the public? ② 住民および所管官庁からのコメントに対して適切に対応するか。 Does the project respond appropriately to comments from public and/or governmental organizations concerned?	
2 汚染対策 Anti-pollution measures	(1)大気質 Air quality (2)水質 Water quality (3)廃棄物 Waste (4)騒音・振動 Noise and vibrator (5)地盤沈下 Subsidence	① 消毒用塩素の貯蔵設備、注入設備からの塩素による大気汚染はないか。作業環境における塩素は当該国の労働安全基準を満足するか。 Does the chlorine for disinfection in store-rooms and injection facilities not pollute air in the environment? Does the chlorine concentrations in the working areas satisfy the national guideline of occupational health and safety? ② 施設稼働に伴って発生する排水のSS、BOD、COD、pH等の項目は当該国の排水基準を満足するか。 Does waste water from the facilities in operation satisfy the national guideline for such items as SS, BOD, COD, pH and etc? ③ 施設稼働に伴って発生する汚泥等の廃棄物は当該国の基準に従って適切に処理・処分されるか。 Are the such wastes as sludge from the facilities in operation properly treated/disposed in accordance with the national guideline?	
3 自然環境 Natural environment	(1)保護区 Protected areas (2)生態系 Ecosystem	① ボンプ施設等からの騒音・振動は当該国の基準を満足するか。 Does noises and/or vibration from such facilities as the pumping station satisfy the national guideline? ② 大量の地下水汲上げを行う場合、地盤沈下は生じないか。 Does not land subsidence occur, in case the facilities pump up a large amount of ground water? ① サイは当該国の法律・国際条約等に定められた保護区内に立地していないか。プロジェクトが保護区に影響を与えないか。 Does the project site locate in the areas protected by national laws and/or international treaties? Does not the project impose adverse impacts on the environment of the areas. ① サイは原生林、森林の自然林、生態系に重要な生息地 (珊瑚礁、マングローブ湿地、干潟等) を含まないか。 Does not the project site include primary forests, natural forests in tropical areas, habitats with important ecological value (coral reefs, mangrove, wetlands and/or tidal flats) ② サイは当該国の法律・国際条約等で保護が必要とされる貴重種の生息地を含まないか。 Does not the project site include habitats with rare species requiring protection under domestic legislation, international treaties etc. ③ 生態系への重大な影響が懸念される場合、生態系への影響を減らす対策はなされるか。 Does the project implement countermeasures to reduce the impacts against the ecosystem, if serious impacts are to be expected? ④ プロジェクトによる取水 (地表水、地下水) が、河川等の水域環境に影響を及ぼさないか。水生生物等への影響を減らす対策はなされるか。 Does not water intake (of either surface or underground water) impose adverse impacts on environment of water areas? Does the project implement countermeasures to reduce the impacts against aquatic flora and fauna.	
4 社会環境 Social environment	(1)住民移転 Resettlement (2)生活・生計 Living and livelihood (3)文化遺産 Heritage (4)景観 Landscape (5)少数民族、先住民 Ethnic minorities and indigenous peoples	① プロジェクトの実施に伴い事自発的住民移転は生じないか。生じる場合は、移転による影響を最小限とする努力がなされるか。 Does the project impose involuntary resettlement? If any, does the project make efforts to minimize the impacts? ② 移転する住民に対し、移転前に移転・補償に関する適切な説明が行われるか。 Does the project explain on resettlements and compensations to the public before the resettlement? ③ 住民移転のための調査がなされ、正当な補償、移転後の生活基盤の回復を含む移転計画が立てられるか。 Does the project carry out relevant studies for resettlement, prepare the resettlement plan including appropriate compensations, restoring the living conditions and etc? ④ 移転住民のうち特に女性、子供、老人、貧困層、少数民族、先住民等の社会的弱者に適切な配慮がなされた計画か。 Does the resettlement plan make special considerations on vulnerable social groups such as women, children, the poor, ethnic minorities/indigenous, all of whom are susceptible to environmental and social impacts? ⑤ 移転住民について移転前の合意は得られるか。 Does the project obtain agreements on the resettlement before executing the resettlement? ⑥ 住民移転を適切に実施するための体制は整えられるか。十分な実施力と予算確保が確保されるか。 Does the project establish appropriate preparations (including the establishment of the organization in charge) to execute the appropriate resettlement? Are the organizations for such resettlement given sufficient financial arrangements and capable staff? ⑦ 移転による影響のモニタリングが計画されるか。 Does the project make a plan to monitor impacts to be risen from the resettlement? ① プロジェクトによる住民の生活への悪影響はないか。必要な場合は影響を緩和する配慮が行われるか。 Does the project impose adverse impacts on daily lives of people? Does the project consider any remedies to mitigate the impact if needed? ② プロジェクトによる取水 (地表水、地下水) が、既存の水利利用、水城利用に影響を及ぼさないか。 Does not the project by taking water either from surface or ground water impose adverse impacts on vested rights for using water and/or water areas? ① プロジェクトにより、考古学的、歴史的、文化的、宗教的に貴重な遺産、史跡等を損たわなないか。また、当該国の国内法上定められた措置が考慮されるか。 Does the project impose adverse impacts on archeological, historical, cultural, or religious value? Are appropriate measures considered in accordance with the national laws? ② 景観に悪影響を及ぼさないか。必要な場合は景観は取られるか。 Does the project impose adverse impacts on landscape of special consideration? Does the project take appropriate measures? ① 当該国の少数民族、先住民の権利に関する法律が守られるか。 Are the laws and regulations kept regarding rights of ethnic minorities or indigenous peoples. ② 少数民族、先住民の文化、生活様式への影響を軽減する配慮がなされるか。 Does the project consider remedy measures for possible adverse impacts on the cultures and life-styles of ethnic minorities, indigenous peoples?	
5 その他 Others	(1)工事中の影響 Impact during construction (2)モニタリング Monitoring	① 工場の汚染 (騒音、振動、濁水、粉塵、排ガス、廃棄物等) に対して緩和策が用意されるか。 Does the project prepare remedy measures against pollutions (noises, vibrations, water pollution, dust, exhaust gas, solid waste) during construction? ② 工事により自然環境 (生態系) に悪影響を及ぼさないか。また、影響に対する緩和策が用意されるか。 Does the construction of the project impose adverse impacts on natural environment (ecosystem)? If so, are countermeasures prepared against such impacts? ③ 工事により社会環境に悪影響を及ぼさないか。また、影響に対する緩和策が用意されるか。 Does the construction of the project impose adverse impacts on social environment? If so, are countermeasures prepared against such impacts? ④ 必要に応じ、作業員等のプロジェクト関係者に対して安全教育 (交通安全・公衆衛生等) を行うか。 Does the project give guidance on traffic safety, public health and so on to the people working for the construction? ① 上記の環境項目のうち、影響が考えられる項目に対して、事業者のモニタリングが計画・実施されるか。 Does the project (implementing agency) make and execute the monitoring plan for the above items that may have possible impacts? ② 当該計画の項目、方法、頻度等が適切なものと判断されるか。 Are the items, methodology, frequency and etc of the plan considered to be appropriate? ③ 事業者のモニタリング体制 (組織、人員、機材、予算等とそれらの継続性) は確立されるか。 Does the project establish monitoring implementation system (organization, staffing, equipment, financing and etc) at their sustainability? ④ 事業者から所管官庁等への報告の方法、頻度等は規定されているか。 Does the monitoring implementation system define the way of reporting (method, frequency and so on) from the project (implementing agency) to the governmental organizations concerned?	
6 留意点 Notes	環境チェックリスト使用上の注意 Considerations for global impact	① 必要な場合には、越境または地球規模の環境問題への影響も確認する。(廃棄物の越境処理、酸性雨、オゾン層破壊、地球温暖化の問題に係る要素が考えられる場合等) The project shall confirm any trans-boundary or global environment impacts when such elements are considered as vast treatment over boundary, acid rain, ozone depletion, global warming and so on.	

Note-1 If the national guidelines referred in the list considerably differs from internationally acknowledged guidelines, considerations shall be given to such differences to its possible issues to be used from them.
If guidelines are not to be established for items other appropriate guidelines from the ones of the country shall be considered to refer, including the ones of Japan.
Note-2 This check list is only a guideline. The project need to modify this check list, when and if necessary, in accordance with its own characters.

注1) 表中「当該国の基準上については、国際的に認められた基準と比較して著しい差がある場合は、必要に応じて対応策を検討する。
当該国において現在規制が確立されていない項目については、当該国以外 (日本における規制も含めて) の適切な基準との比較により検討を行う。
注2) 環境チェックリストはあくまで標準的な環境チェック項目を示したものであり、事業および地域の特性によっては、項目の削除または追加を行う必要がある。

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1 許認可・説明 Permits and approvals, explanations	(1)EIAおよび環境許認可 EIA and Environmental Permits (2)地域住民への説明 Explanations to the public	① 環境影響評価報告書 (EIAレポート)等は作成済みか。 Has the EIA report been prepared? ② EIAレポート等は当該国政府により承認されているか。 Has the EIA report been approved by the national government, if it is prepared? ③ EIAレポート等の承認は無条件か。付帯条件がある場合は、その条件は満たされるか。 If approval, has the approval been given with conditions or without? If with conditions, what are the conditions? ④ 上記以外に、必要な場合には現地の所管官庁からの環境に関する許認可は取得済みか。 Does the Project need other approvals than the above EIA? If any, has the project obtain such approvals? ① プロジェクトの内容および影響について、情報公開を含めて地域住民に適切な説明を行い、理解を得るか。 Does the project obtain understandings from the public through information disclosure and explanations to the public? ② 住民および所管官庁からのコメントに対して適切に対応されるか。 Does the project respond appropriately to comments from public and/or governmental organizations concerned?	
2 汚染対策 Anti-pollution measures	(1)水質 Water quality (2)廃棄物 Waste (3)土壌汚染 Soil pollution (4)騒音・振動 Noise and vibration (5)悪臭 Smell	① 下水処理後の放流水中のSS、BOD、COD、pH等の項目は当該国の排出基準を満足するか。 Do SS, BOD, COD in released water after the waste treatment satisfy the national guidelines? ② 廃棄物に付着して発生する汚染等の廃棄物が当該国の基準に適合し処理・処分されるか。 Are the such waste as sludge from the facilities in operation treated/discharged in accordance with the national guideline? ③ 汚染等と重金属の含有が疑われる場合、これらの廃棄物からの浸出水の漏出等により土壌、地下水を汚染しない対策がなされるか。 If heavy metal should be considered to be contained in sludge, does the project implement countermeasures against possible pollution of soil and/or groundwater by leakage from the sludge? ④ 汚染処理施設、ポンプ施設等からの騒音・振動は当該国の基準を満足するか。 Does noises and/or vibration from sludge treatment and/or pumping facilities satisfy the national guidelines ⑤ 汚染処理施設等からの悪臭の防止対策は取られるか。 Does the project implement countermeasures against smells from sludge treatment facilities and/or the other facilities?	
3 自然環境 Natural environment	(1)保護区 Protected area (2)生態系 Ecosystem	① サイトは当該国の法律・国際条約等に定められた保護区内に立地していないか。プロジェクトが保護区に影響を与えないか。 Does the project site locate in the areas protected by national laws and/or international treaties? Does not the project impose adverse impacts on the environment of the ② サイトは原生林、森林の自然林、重要な自然生息地 (海草礁、マングローブ湿地、干潟等) を含まないか。 Does not the project site include primary forests, natural forests in tropical areas, habitats with important ecological value (coral reefs, mangrove, wetlands and/or tidal flats) ③ サイトは当該国の法律・国際条約等で保護が必要とされる貴重な種の生息地を含まないか。 Does not the project site habitats with rare protection under domestic legislation, international treaties, etc ④ 生態系への重大な影響が懸念される場合、生態系への影響を最小化する対策はなされるか。 Does the project implement countermeasures to reduce the impact against the ecosystem, if serious impacts are to be expected? ⑤ プロジェクトによる取水 (地表水、地下水) が、河川等の水循環に影響を及ぼさないか。水生生物等への影響を減らす対策はなされるか。 Does not water intake of either surface or underground water impose adverse impacts on environment of water areas? ⑥ プロジェクトの取組に伴い表層自発的住民移転は行わないか。また、移転による影響を最小化する努力がなされるか。 Does the project make efforts to minimize the impacts? ⑦ 移転する住民に対し、移転前に移転・補償に関する適切な説明が行われるか。 Does the project explain to a resettlements and compensations to the public before the resettlement? ⑧ 住民移転のための調査がなされ、正当な補償、移転後の生活水準の向上が移転前に行われるか。 Does the project carry out relevant studies for resettlement, prepares the resettlement plan including appropriate compensations, restoring the living conditions and etc?	
4 社会環境 Social environment	(1)生活・生計 Living and livelihood (2)文化遺産 Heritage (3)景観 Landscape (4)少数民族、先住民 Ethnic minorities and indigenous peoples	① 移転住民のうち特に女性、子供、老人、貧困層、少数民族、先住民等の社会的弱者に適切な配慮がなされた計画か。 Does the resettlement plan make special considerations on vulnerable social groups such as women children, elders, the poor, ethnic minorities/indigenous, all of whom are susceptible to environmental and social impact? ② 移転住民について移転前の合意は得られるか。 Does the project obtain agreements on the resettlement before executing the resettlement? ③ 住民移転を適切に実施するための体制は整えられるか。十分な実施能力と予算権限が講じられるか。 Does the project establish appropriate preparations (including the establishment of the organization in charge) to execute the appropriate resettlement? Are the organizations for such resettlement given sufficient financial arrangement and capable staff? ④ 移転による影響のモニタリングが計画されるか。 Does the project make a plan to monitor impacts to be risen from the resettlement? ① プロジェクトによる住民の生活への悪影響はないか。必要な場合は影響を緩和する配慮が行われるか。 Does the project impose adverse impacts on daily life of people? Does the project consider any remedies to mitigate the impact if needed? ② プロジェクトによる取水 (地表水、地下水) が、既存の水利利用、水域利用に影響を及ぼさないか。 Does not the project by taking water either from surface or ground water impose adverse impacts on vested rights of using water and/or water areas? ① プロジェクトにより、考古学的、歴史的、文化的、宗教的に貴重な遺産、史跡等を損なわないか。また、当該国の国内法に定められた措置が考慮されるか。 Does the project impose adverse impacts on archeological, historical, cultural, or religious value? Are appropriate measures considered in accordance with the national laws? ② 特に配慮すべき景観への悪影響はないか。必要な対策は取られるか。 Does the project impose adverse impacts on sceneries of special consideration? Does the project take appropriate measures? ③ 当該国の少数民族、先住民の権利に関する法律が守られるか。 Are the laws and regulations kept regarding rights of ethnic minorities or indigenous peoples. ④ 少数民族、先住民の文化、生活様式への影響を軽減する配慮がなされるか。 Does the project consider measures to remedy possible adverse impacts on the cultures and life-styles of ethnic minorities, indigenous peoples?	
5 その他 Others	(1)工事の影響 Impact during construction (2)モニタリング Monitoring	① 工事中の汚染 (騒音、振動、濁水、粉塵、排ガス、廃棄物等) に対して緩和策が用意されるか。 Does the project prepare remedy measures against pollutions (noises, vibrations, water pollution dust, exhaust gas, solid waste) during construction? ② 工事により自然環境 (生態系) に悪影響を及ぼさないか。また、影響に対する緩和策が用意されるか。 Does the construction of the project impose adverse impacts on natural environment (ecosystem)? If so, are countermeasures prepared against such impacts? ③ 工事により社会環境に悪影響を及ぼさないか。また、影響に対する緩和策が用意されるか。 Does the construction of the project impose adverse impacts on social environment? If so, are countermeasures prepared against such impacts? ④ 必要に応じて、作業員等のプロジェクト関係者に対して安全教育 (交通安全・公衆衛生等) を行うか。 Does the project give guidance on traffic safety, public health and so on to the people working for the constructions? ⑤ 上記の環境項目のうち、影響が考えられる項目に対して、事業者のモニタリングが計画・実施されるか。 Does the project (implementing agency) make and execute the monitoring plan for the above items that may have possible impacts? ⑥ 当該計画の項目、方法、頻度等は適切なものとして判断されるか。 Are the items, methodology, frequency and etc of the plan considered to be appropriate? ⑦ 事業者のモニタリング体制 (組織、人員、機材、予算等) とその持続性は確保されるか。 Does the project establish monitoring implementation system (organization, staffing, equipment, financing and etc) and their sustainability? ⑧ 事業者から所管官庁等への報告の方法、頻度等は規定されているか。 Does the monitoring implementation system define the way of reporting (method, frequency and so on) from the project (implementing agency) to the governmental organizations concerned?	
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当該国において現在規制が成立されていない項目については、当該国以外 (日本における経験も含めて) の適切な基準と比較により検討を行う。

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Note-1) If the national guidelines referred in the list considerably differs from internationally acknowledged guidelines, considerations shall be given to such differences to resolve possible issues to be risen from them.

If guidelines are yet to be established for items, other appropriate guidelines than the ones of the country shall be considered to refer, including the ones of Japan.

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	(2)地域住民への説明 Explanations to the public	① プロジェクトの内容および影響について、情報公開を含めて地域住民に適切な説明を行い、理解を得るか。 Does the project obtain understandings from the public through information disclosure and explanations to the public? ② 住民および関係団体からのコメントに対して適切に対応するか。 Does the project respond appropriately to comments from public and/or governmental organizations concerned? ③ 排出ガス、臭気、騒音、振動、ダイオキシン等の大気汚染物質は当該国の排出基準、環境基準を満足するか。 Do exhausts such as SOx, NOx, smoke and dust, dioxin, and/or etc from the incinerator, vehicles for waste collection and transporter, and so on; satisfy the national guidelines for exhausts?	
2 汚染対策 Anti-pollution measures	(1)大気質 Air quality	① 焼却施設、収集・運搬車等から排出される硫黄酸化物 (SOx)、窒素酸化物 (NOx)、煤塵、ダイオキシン等の大気汚染物質は当該国の排出基準、環境基準を満足するか。 Do exhausts such as SOx, NOx, smoke and dust, dioxin, and/or etc from the incinerator, vehicles for waste collection and transporter, and so on; satisfy the national guidelines for exhausts?	
	(2)水質 Water quality	① 施設からの排水は当該国の排水基準、環境基準を満足するか。 Does the waste water from the facilities satisfy the relevant national guidelines? ② 廃棄物処分場から発生する浸出水等の水質は当該国の排水基準、環境基準を満足するか。 Does the quality of waste water leaking from the waste treatment facility satisfy the relevant national guidelines? ③ こぼれの水が表流水あるいは地下水を汚染しない対策がなされるか。 Are countermeasures taken against possible pollution to surface water and/or groundwater by waste water?	
	(3)廃棄物 Waste	① ゴミの破砕、選別工程で発生する処理残渣、選別灰、灰塵、コンポスト施設から発生するコンポスト内不燃物の廃棄物は当該国の基準に従って適切に処理・処分されるか。 Are materials' treatment residues, incinerate ash, flying ash through selection and crushing of waste, compost ② 有害廃棄物、危険物については、他の廃棄物と区別し、無害化された上で当該国の基準に従って適切に処理・処分されるか。 Are toxic and/or dangerous waste to be separated and to be disposed after detoxified in accordance with the relevant national guidelines?	
	(4)土壌汚染 Soil Pollution	① 廃棄物処分場から発生する浸出水等により、二酸化、地下水を汚染しない対策がなされるか。 Does the project take countermeasures against possible pollution by leaking water and/or etc from the waste treatment facilities?	
3 自然環境 Natural environment	(1)騒音・振動 Noise and Vibration	① 焼却施設 (特に焼却施設・破砕施設)、ゴミの収集・運搬を行う車両の通行による騒音・振動は当該国の基準を満足するか。 Does the noise and vibration caused by the operating facilities (in particular the incinerating facility, waste selecting and crushing facility), and vehicles for waste collection and transportation?	
	(2)悪臭 Smell	① 悪臭源は何か、悪臭防止対策はとられるか。 Does the project create origins of smell? If so, does the project make countermeasures against such impacts?	
	(3)保護区 Protected area	① サイトは当該国の法律・国際条約等に定められた保護区内に立地していないか、プロジェクトが保護区に影響を与えないか。 Does not the project site locate in the areas protected by national laws and/or international treaties? Does not the project impose adverse impacts on the environment of the areas. ② サイトは生態系、稀希の動植物、貴重樹木、自然森林 (熱帯林、マングローブ森林、干潟等)を含むか。 Does not the project site include primary forests, natural forests in tropical areas, habitats with important ecological value (coral reefs, mangrove, wetlands and/or tidal flats) ③ サイトは当該国の法律・国際条約等で保護が必要とされる貴重種の生息地を含むか。 Does not the project site habitats with rare species requiring protection under domestic legislation, international treaties, etc. ④ 生態系への重大な影響が懸念される場合、生態系への影響を減らす対策はとられるか。 Does the project implement countermeasures to reduce the impact against the ecosystem, if serious impacts are to be expected?	
4 社会環境 Social environment	(1)生態系 Ecosystem	④ 水生生物に悪影響を及ぼす恐れはないか、影響がある場合、対策はなされるか。 Does not the project impose adverse impacts on flora in water? If so, does the project take countermeasures against the impacts? ⑤ 植生、野生動物に悪影響を及ぼす恐れはないか、影響がある場合、対策はなされるか。 Does not the project impose adverse impact on fauna and wild animals? If so, does the project take countermeasures against such impact?	
	(2)跡地管理 Monitoring the treatment facility after use (closure)	① 処分場の廃棄終了後の環境保全対策 (ガス対策、浸出水対策、不法廃棄対策、緑化等)は考慮されるか。 Does the project consider the environmental protection measures against such matters as gas, leaking water and/or illegal waste disposal; and/or re-forestation, after use (closure) of the waste treatment site? ② 跡地管理の継続体制は確立されるか。 Will a continuous monitoring implementation system be established for the waste treatment site after use (closure)? ③ 跡地管理に際して適切な予算確保は講じられるか。 Is appropriate financial arrangement made for the monitoring the waste treatment site after use (closure)?	
	(3)住民移転 Resettlement	① プロジェクトの実施に伴い非自発的住民移転は生じないか、生じる場合は、移転による影響を最小限とする努力がなされるか。 Does the project impose involuntary resettlement? If any, does the project make efforts to minimize the impacts? ② 移転する住民に対し、移転前に移転・補償に関する適切な説明が行われるか。 Does the project make appropriate explanations on resettlements and compensations to the public before the resettlement? ③ 住民移転のための調査がなされ、正当な賠償、移転後の生活基盤の回復を含む移転計画が立てられるか。 Does the project carry out the relevant studies for resettlement, establish the resettlement plan including appropriate compensations, restoring the living conditions and etc? ④ 移転住民のうち特に女性、子供、老人、貧乏層、少数民族、先住民等の社会的弱者に適切な配慮がなされたか。 Does the resettlement plan make special considerations on vulnerable social groups such as women, children, elders, the poor, ethnic minorities/indigenous, all of whom are susceptible to environmental and social impacts? ⑤ 移転住民について移転前の合意は得られるか。 Does the project obtained agreements on the resettlement before executing the resettlement? ⑥ 住民移転を適切に実施するための体制は整えられるか、十分な実施能力と予算確保が講じられるか。 Does the project establish appropriate preparations (including the establishment of the organization in charge) to execute the appropriate resettlement? Are the organizations for such resettlement given sufficient financial arrangement and capable staff? ⑦ 移転による影響のモニタリングが計画されるか。 Does the project make a plan to monitor impacts to be risen from the resettlement?	
	(4)生活・生計 Living and livelihood	① プロジェクトによる住民の生活への悪影響はないか、必要な場合は影響を緩和する配慮が行われるか。 Does the project impose adverse impacts on daily life of people? Does the project consider any remedies to mitigate the impact if needed? ② ウェストリック等を含めた既存の資源回収システムへの配慮はとられるか。 Does the project give appropriate considerations for existing waste collection system such as waste-pickers? ③ 廃棄物搬送による地域交通への影響はないか。 Does the transportation of the waste impose adverse impacts on the local traffic system? ④ プロジェクトからの排水、焼却物処分場から発生する浸出水等によって消費および地域住民の水利用 (特に飲料水)に悪影響を及ぼさないか。 Does not the project impose adverse impacts on fishery and water usage (in particular drinking water, of local people by leaking water from the waste water, waste treatment facilities)? ⑤ 衛生害虫は発生しないか。	
5 その他 Others	(1)文化遺産 Heritage	① プロジェクトにより、考古学的、歴史的、文化的、宗教的に貴重な遺産、史跡等を損なわないか、また、当該国の国内法に定められた措置が考慮されるか。 Does the project impose adverse impacts on archeological, historical, cultural, or religious value? Are appropriate measures to be considered in accordance with the national laws?	
	(2)景観 Landscape	① 特に配慮すべき景観への悪影響はないか、必要な対策は取られるか。 Does the project impose adverse impacts on landscapes of special consideration? Does the project take appropriate measures?	
	(3)少数民族、先住民 Ethnic minorities and indigenous peoples	① 当該国の少数民族、先住民の権利に関する法律が守られるか。 Are the laws and regulations kept regarding rights of ethnic minorities or indigenous peoples. ② 少数民族、先住民の文化、生活様式への影響を軽減する配慮がなされるか。 Does the project consider measures to remedy possible adverse impacts on the cultures and life-styles of ethnic minorities, indigenous peoples?	
	(4)工事中の影響 Impact during construction	① 工事中の汚染 (騒音、振動、濁水、粉塵、排ガス、廃棄物等)に対して緩和策が用意されるか。 Has the project prepared remedy measures against pollution (noises, vibrations, water pollution dust, exhaust gas, solid waste) during construction? ② 工事により自然環境 (生態系)に悪影響を及ぼさないか、また、影響に対する緩和策が用意されるか。 Does the construction of the project impose adverse impacts on natural environment (ecosystem)? If so, have countermeasures been prepared against such impacts? ③ 工事による社会環境に悪影響を及ぼさないか、また、影響に対する緩和策が用意されるか。 Does the construction of the project impose adverse impacts on social environment? If so, have countermeasures been prepared against such impacts? ④ 必要に応じて、作業員等のプロジェクト関係者に対して安全教育 (交通安全、労働衛生等)を行うか。 Does the project give guidance on traffic safety, public health and so on to the people concerned with the constructions? ⑤ 上記の環境項目のうち、影響が考えられる項目に対して、事業者のモニタリングが計画・実施されるか。 Does the project (implementing agency) make and execute the monitoring plan for the above items that may have possible impacts? ⑥ 当該計画の項目、方法、頻度等は適切なのかと判断されるか。 Are the items, methodology, frequency and etc of the plan considered to be appropriate? ⑦ 事業者のモニタリング体制 (組織、人員、機材、予算等)とそれらの継続性)は確立されるか。 Does the project establish monitoring implementation system (organization, staffing, equipment, financing and etc; and their sustainability)? ⑧ 事業者から関係者等への報告の方法、頻度等は規定されているか。 Does the monitoring implementation system define the way of reporting (method, frequency and so on) from the project implementing agency to the governmental organizations	
6 留意点 Note	他の環境チェックリストの参照 Referring another JIBC check list	① 必要な場合は、林業に係るチェックリストの資源チェック事項も追加して評価すること (焼却物処分場等の建設に伴い、大規模な森林伐採が行われる場合等)。 Please use the JIBC check list for forestry when and if needed in such case that a large scale forest clearing should take place.	
	環境チェックリスト使用上の注意 Consideration for global impact	① 必要な場合には、越境または地球規模の環境問題への影響も確認する。(廃棄物の不適切処理、酸性雨、オゾン層破壊、地球温暖化の問題に係る要素が考えられる場合等) The project shall confirm any trans-boundary or global environmental impacts when such elements are considered as trans-boundary treatment of waste, acid rain, ozone depletion, global warming and so on.	

注1) 表中当該国の基準については、国際的に認められた基準と比較して著しい乖離がある場合には、必要に応じて対策を検討する。
注2) 当該国において現在適用されていない項目については、当該国以外 (日本における経験も含めて)の適切な基準との比較により検討を行う。
注3) 環境チェックリストはあくまでも標準的な環境チェック項目を示したものであり、事業および地域の特性によっては、項目の削減または追加を行う必要がある。

Note 1) If the national guidelines referred in the list considerably differs from internationally acknowledged guidelines, considerations shall be given to such differences to resolve possible issues to be risen from them.
Note 2) If guidelines are yet to be established for items, other appropriate guidelines than the ones of the country shall be considered to refer, including the ones of JIBC.
Note 3) This check list is only a guideline. The project need to modify this check list, when and if necessary, in accordance with its own characteristics.

Questionnaire

A. Questionnaire about General Information (national level)
(for Ministry of Industry, Mines and Energy: MIME or other ministries)

A.1 Socio-economic Conditions

Please provide the following socio-economic statistical data (to identify trends to date, please provide records of past five years) or please specify the name of agency managing the following data

A.1.1 Population, number of households, average family size (number of people per household)
(national data and Siem Reap Province data)

Name of agency: _____)

A.1.2 Final report on 2008 census results for national data and Siem Reap Province data

Name of agency: _____)

A.1.3 Number of tourist for national data and Siem Reap Province data

Name of agency: _____)

A.1.4 Average household income per month for national data and Siem Reap Province data

Name of agency: _____)

A.1.5 Please provide results of past socio-economic survey (household questionnaire survey), if any, for national data and Siem Reap Province data.

Name of agency: _____)

A.1.6 Please provide list of NGOs which are acting in Siem Reap concerning water supply

Name of agency: _____)

A.2 Administration

Please specify name of ministries/agencies concerned and provide respective organization chart.

A.2.1 National Government (name of ministries)

A.2.2 Ministry of Industry, Mines and Energy (MIME)

A.2.3 Department of Potable Water Supply, MIME (how many staff in each division/section?)

A.2.4 Provincial Office in Siem Reap, MIME (how many staff in each division/section?)

A.2.5 Public health

Responsible ministry/agency: _____, with organization chart

A.2.6 Planning (national/regional infrastructure development)

Responsible ministry/agency: _____, with organization chart

A.2.7 Environment

- Responsible ministry/agency: _____, with organization chart
- A.2.8 Tourism
- Responsible ministry/agency: _____, with organization chart
- A.2.9 Coordination of international assistances and aid agencies/donors
- Responsible ministry/agency: _____, with organization chart

A.3 National/Regional Development

- A.3.1 Are there any national development plan? (“The Cambodia Rectangular Strategy for Growth, Employment, Equity and Efficiency”, “National Strategic Development Plan”, “National Growth and Poverty Eradication Strategy”, or “Third Five-Year Socioeconomic Development Plan”)
- If any, please specify the title of the plan, _____,
- And please provide copy of the summary of the development plan which includes basic policies concerning water supply, public health, and environmental sectors.
- A.3.2 Are there any regional (Siem Reap Province) development plan?
- If any, please specify the title of the plan, _____,
- And please provide copy of the summary of the development plan which includes basic policies concerning water supply, public health, and environmental sectors.
- A.3.3 Are there any sector (water supply, public health, environment) development plan or development target?
- If any, please specify the title of the plan or target,
- _____,
- And please provide copy of the summary of the development plan which includes basic policies concerning water supply, public health, and environmental sectors.
- A.3.4 Do you have “water sector policy and strategy” (service ratio, per capita water consumption and so on)?
- If yes, please provide copy of the summary of water sector policy and strategy.

A.4 Legislation System

Please specify any related laws or regulations to following aspects and please provide outline of these laws or regulations.

- A.4.1 Water supply
- A.4.2 Public health
- A.4.3 Approval of new construction (above and under ground) of infrastructures

A.5 Water Supply Standards

- A.5.1 Are there any Standards or Manuals for Planning, Designing and Construction of Water Supply Facilities
- A.5.2 Are there any Standard Specifications for Water Supply Facilities
- A.5.3 Are there any Standard Drawings for Water Supply Facilities
- A.5.4 What kind of standard (for materials) usually do you apply, ISO, BS, AWWA, or others?

A.6 On-going or Planned (committed) Development Project

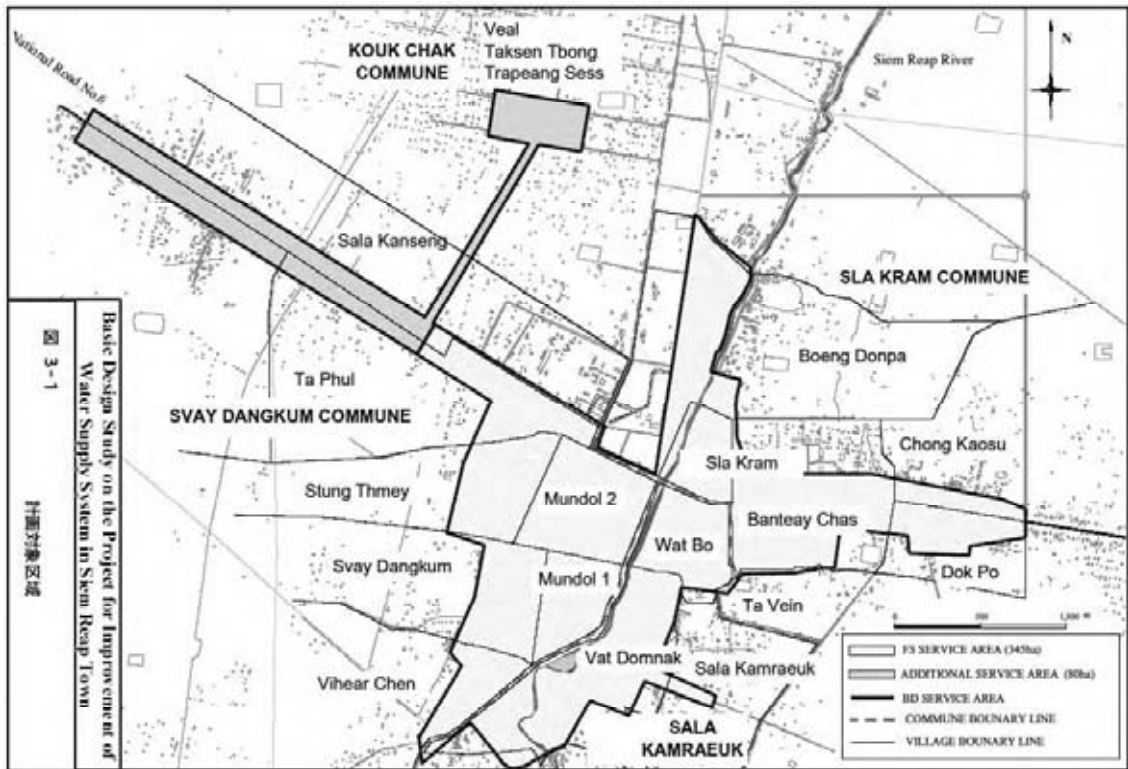
- A.6.1 Please list up on-going or planned (committed) development projects with their name, scope, initiation/completion schedule, source of fund, total project costs, related to Siem Reap Province.
- A.6.2 Please provide latest information about new water treatment plant construction in Siem Reap by KTC project.

A.7 Training and Capacity Development

- A.7.1 What are the most significant problems concerning to training and capacity development for national staff and provincial staff of water supply sector?
- A.7.2 Do you have any training plan or program to improve skill and knowledge of national staff and provincial staff?
- A.7.3 What kind of training program or technical assistance do you need for national staff and provincial staff of water supply sector?

A.8 Future Water Supply Service Area

- A.8.1 The existing service area of Siem Reap Water Supply System is shown in figure below, according to Basic Design Study Report in 2003 conducted by JICA. Do you have a plan of future water supply service area or do you have any idea for future service area?



A.8.2 Do you need additional water supply facilities for Siem Reap Water Supply System urgently? And why do you think so?

A.9 Water Quality

A.9.1 Please provide water quality test results of Lake Tonle Sap in last five years.

B. Questionnaire about General Information (provincial level)
(for Siem Reap Province and/or Water Supply, Siem Reap Province)

B.1 Socio-economic Conditions

Please provide the following socio-economic statistical data (to identify trends to date, please provide records of past five years) or please specify the name of agency managing the following data

- B.1.1 Population, number of households, average family size (number of people per household)
Name of agency: _____)
- B.1.2 Final report on 2008 census results for Siem Reap Province data
Name of agency: _____)
- B.1.3 Number of tourist
Name of agency: _____)
- B.1.4 Average household income per month
Name of agency: _____)
- B.1.5 Please provide results of past socio-economic survey (household questionnaire survey), if any.
Name of agency: _____)
- B.1.6 Please provide list of NGOs which are acting in Siem Reap concerning water supply
Name of agency: _____)

B.2 Administration

Please specify name of departments/agencies concerned and provide respective organization chart.

- B.2.1 Siem Reap Province (name of departments)
- B.2.2 Water Supply, Siem Reap Province (how many staff in each division/section?)
- B.2.3 Provincial Office in Siem Reap, MIME (how many staff in each division/section?)
- B.2.4 Public health
Responsible department/agency: _____, with organization chart
- B.2.5 Planning (regional infrastructure development)
Responsible department/agency: _____, with organization chart
- B.2.6 Environment
Responsible department/agency: _____, with organization chart
- B.2.7 Tourism
Responsible department/agency: _____, with organization chart
- B.2.8 Coordination of international assistances and aid agencies/donors
Responsible department/agency: _____, with organization chart

B.3 National/Regional Development

B.3.1 Are there any regional (Siem Reap Province) development plan?

If any, please specify the title of the plan, _____,

And please provide copy of the summary of the development plan which includes basic policies concerning water supply, public health, and environmental sectors.

B.3.2 Are there any sector (water supply, public health, environment) development plan or development target?

If any, please specify the title of the plan or target,

_____.

And please provide copy of the summary of the development plan which includes basic policies concerning water supply, public health, and environmental sectors.

B.3.3 Do you have “water sector policy and strategy” (service ratio, per capita water consumption and so on)?

If yes, please provide copy of the summary of water sector policy and strategy.

B.4 Legislation System

Please specify any related laws or regulations to following aspects and please provide outline of these laws or regulations.

B.4.1 Water supply

B.4.2 Public health

B.4.3 Approval of new construction (above and under ground) of infrastructures

B.5 On-going or Planned (committed) Development Project

B.5.1 Please list up on-going or planned (committed) development projects with their name, scope, initiation/completion schedule, source of fund, total project costs, related to Siem Reap Province.

B.5.2 Please provide latest information about new water treatment plant construction in Siem Reap by KTC project.

B.6 Training and Capacity Development

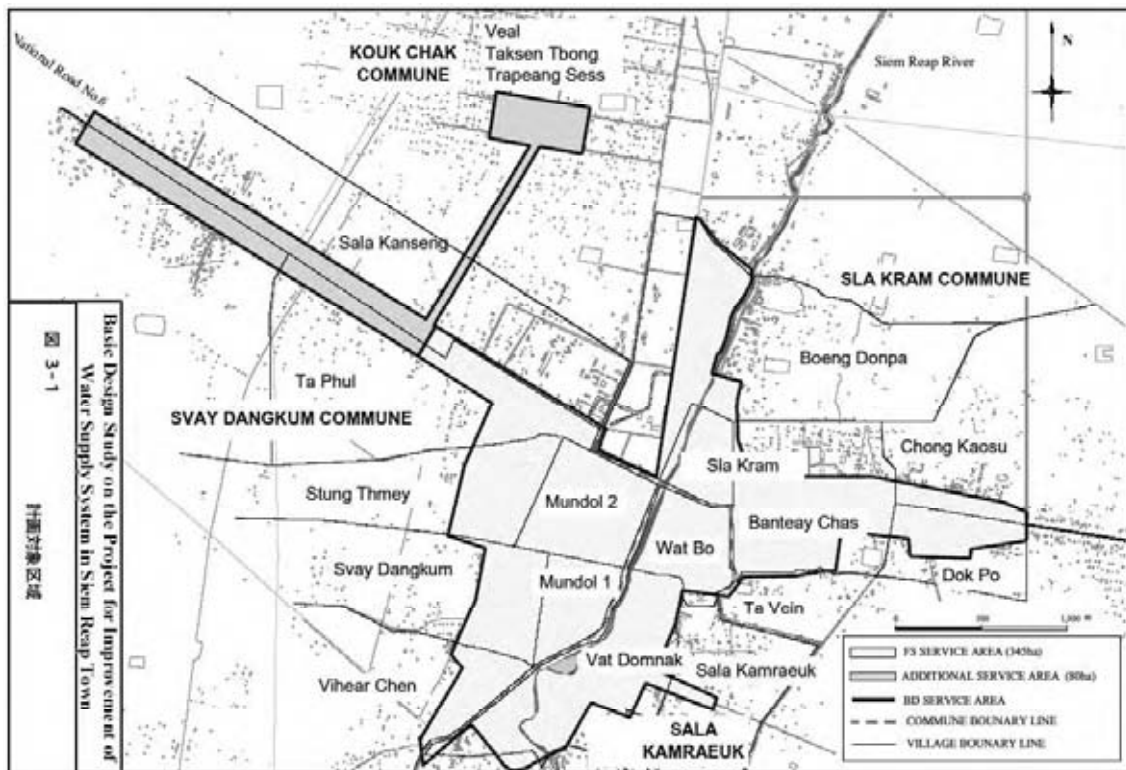
B.6.1 What are the most significant problems concerning to training and capacity development for water supply staff?

B.6.2 Do you have any training plan or program to improve skill and knowledge of water supply staff?

B.6.3 What kind of training program or technical assistance do you need for water supply staff?

B.7 Future Water Supply Service Area

B.7.1 The existing water supply service area is shown in figure below, according to Basic Design Study Report in 2003 conducted by JICA. Do you have a plan of future water supply service area or do you have any idea for future service area?



B.7.2 Do you need additional water supply facilities for Siem Reap Water Supply System urgently? And why do you think so?

B.8 Water Quality

B.8.1 Please provide water quality test results of Lake Tonle Sap in last five years.

C. Questionnaire about Water Supply Sector (provincial level)
(for Water Supply, Siem Reap Province)

C.1 Water Treatment Plants

C.1.1 Please provide us the list of water treatment plants with their name, location, general plan (drawing), together with following information of each plant facility.

a.	Name of Water Treatment Plant		
b.	Year of Establishment		
c.	Source of Fund for Construction		
d.	Capacity of Plant	m ³ /day	m ³ /day
e.	Water Source	<input type="checkbox"/> Groundwater <input type="checkbox"/> River (name:) <input type="checkbox"/> Lake (name:) <input type="checkbox"/> Others ()	<input type="checkbox"/> Groundwater <input type="checkbox"/> River (name:) <input type="checkbox"/> Lake (name:) <input type="checkbox"/> Others ()
f.	Intake Capacity	m ³ /day	m ³ /day
g.	Treatment Process	<input type="checkbox"/> Slow Sand Filtration <input type="checkbox"/> Rapid Sand Filtration <input type="checkbox"/> Pressure Filtration <input type="checkbox"/> Others ()	<input type="checkbox"/> Slow Sand Filtration <input type="checkbox"/> Rapid Sand Filtration <input type="checkbox"/> Pressure Filtration <input type="checkbox"/> Others ()
h.	Chemical Dosing	<input type="checkbox"/> Pre-chlorine (for <input type="checkbox"/> Fe, <input type="checkbox"/> Mn, <input type="checkbox"/> others) <input type="checkbox"/> Intermediate-chlorine <input type="checkbox"/> Post-chlorine <input type="checkbox"/> Alum <input type="checkbox"/> Lime <input type="checkbox"/> Polymer	<input type="checkbox"/> Pre-chlorine (for <input type="checkbox"/> Fe, <input type="checkbox"/> Mn, <input type="checkbox"/> others) <input type="checkbox"/> Intermediate-chlorine <input type="checkbox"/> Post-chlorine <input type="checkbox"/> Alum <input type="checkbox"/> Lime <input type="checkbox"/> Polymer
i.	Reservoir Details	<input type="checkbox"/> elevated or <input type="checkbox"/> ground Capacity: m ³ /day H.W.L: m, L.W.L: m	<input type="checkbox"/> elevated or <input type="checkbox"/> ground Capacity: m ³ /day H.W.L: m, L.W.L: m
j.	Pump Station	Q m ³ /min x H m x kW x sets	Q m ³ /min x H m x kW x sets
k.	Metering System (Are there any flow meters at the plant?)	<input type="checkbox"/> Yes (<input type="checkbox"/> inlet <input type="checkbox"/> outlet) (type of meter:) <input type="checkbox"/> No	<input type="checkbox"/> Yes (<input type="checkbox"/> inlet <input type="checkbox"/> outlet) (type of meter:) <input type="checkbox"/> No
l.	Please tell us power supply condition. How often and how long do you have power failure?	How often? times/day or times/week How long? /hrs/time (average or about)	How often? times/day or times/week How long? /hrs/time (average or about)
m.	Do you have stand-by generator?	<input type="checkbox"/> Yes (kW x sets) <input type="checkbox"/> No	<input type="checkbox"/> Yes (kW x sets) <input type="checkbox"/> No
n.	How many staff in the plant?	persons	persons

- C.1.2 Please provide record of plant operation, operation hours, intake and production quantities, chemical dosed.
- C.1.3 Please list up difficulties or problems concerning plant operation and maintenance
- C.1.4 Please list up recently completed, on-going or planned (committed) plant expansion or rehabilitation project with their name, scope, initiation/completion schedule, source of fund, total project costs.

C.2 Booster Pumping Stations (if any)

- C.2.1 Please provide us a list of booster pumping stations with their name, location, water origin/destination, pump specifications, year of establishment, and capacity of reservoir.
- C.2.2 Please provide data concerning number of staff in each pumping stations with their shift.
- C.2.3 Please provide record of operation of the pumping station
- C.2.4 Please list up difficulties or problems concerning operation and maintenance of the pumping station
- C.2.5 Are there any measuring devices on inlet and outlet pipelines?
- C.2.6 Please provide drawing of the pumping stations.

C.3 Distribution Reservoirs (if any)

- C.3.1 Please provide us a list of distribution reservoir with their name, location, capacity, type of reservoir (ground or elevated?), year of establishment, coverage area, HWL/LWL, and approximate number of households supplied from respective reservoirs.
- C.3.2 Usually, float valves are installed at inlet of reservoir?
- C.3.3 Does reservoir equipped with water meter?
- C.3.4 Please provide drawings of distribution reservoir

C.4 Distribution Pipelines

- C.4.1 Please provide pipe network drawing which shows pipe alignment, diameter, and material.
- C.4.2 What kind of categories of pipes by their diameter do you apply? (ie. 600mm or larger: Primary Pipe, 300 to 500 mm: Secondary Pipe, etc.)
- C.4.3 Please provide us a list of pipelines by their diameter, material, installation year, supply zone
- C.4.4 Please provide information concerning country of origin of pipe materials.
- C.4.5 Do you apply water supply zoning system? If so, please provide drawing of the zoning.
- C.4.6 In general, how are valve conditions in distribution system? Do you have any difficulties concerning valve operation?
- C.4.7 How do you control water pressure in distribution system?

- C.4.8 Are there any district or bulk water meter in distribution system?
- C.4.9 Please provide standard costs or recent unit costs of pipe installation works (excavation, pipe installation, backfilling and restoration of road surface including all labor and equipment costs)
- C.4.10 Please list up recently completed, on-going or planned (committed) plant expansion or rehabilitation project with their name, scope, initiation/completion schedule, source of fund, total project costs.

C.5 House Connections

- C.5.1 Please provide record of house connection numbers in last five years.
- C.5.2 Do you have standard installation drawing of the house connection?
- C.5.3 Are there any regulations concerning periodical meter replacement?
- C.5.4 Do you have any improvement plan to increase ratio of house connections?
- C.5.5 How do you calibrate water meters?
- C.5.6 What is major material of house connection pipe? How much the typical diameter?
- C.5.7 How much the unit cost for one house connection including meter, pipes and labor cost)?
- C.5.8 What is the brand of water meter and imported from where?

C.6 Leakage

- C.6.1 Are there any special task team against leakage (for detection and repairing)? If any, please specify name of the team and organization and number of staff.
- C.6.2 When leakage was repaired, do you prepare any record of the repair? If any, please show us the record.
- C.6.3 Do you have any idea concerning leakage tendency? (Leakage was found frequently in _____ area.)
- C.6.4 What are the most significant problems against leakage reduction?
- C.6.5 How do you estimate leakage ratio under the situation that only 20 % of house water meters are running?
- C.6.6 Have you found any illegal connection? When you found, what is your action against the illegal connection?
- C.6.7 Do you have any special equipment for detecting underground leakage?

C.7 Water Quality

- C.7.1 How do you monitor or control water quality? Please specify sampling points, frequency of sampling, and parameters of water quality analysis.
- C.7.2 Please provide records of water quality test results in last five years.

- C.7.2 Do you have drinking water quality standard?
- C.7.3 Where do you analyze water quality?
- C.7.4 What is the problem concerning water quality?

C.8 Water Supply Standards

- C.8.1 Are there any Standards or Manuals for Planning, Designing and Construction of water supply Facilities
- C.8.2 Are there any Standard Specifications for Water Supply Facilities
- C.8.3 Are there any Standard Drawings for Water Supply Facilities
- C.8.4 What kind of standard (for materials) usually do you apply, ISO, BS, AWWA, or others?

C.9 Service Conditions

- C.9.1 Please provide data concerning present service conditions of Water Supply System (Population, Service Ratio, Per Capita Consumption, UFW Ratio, Peak Factors, hours of supply, Total Distribution Amount, Billed Amount, etc.)
- C.9.2 Please list up 20 biggest consumers in Siem Reap with their average consumption per month.
- C.9.3 Are there or do you plan any private sector participation for operation/maintenance, management, or investment?
- C.9.4 Outside of water service area or in case of not connecting to water supply system, how do people get water? (from groundwater, river, water bender or others?)

C.10 Operation and Maintenance

- C.10.1 Do you have any policies for operation and maintenance?
- C.10.2 Please provide maintenance records including repairing and accident records of facilities and equipment of water treatment plants, wells, pumping stations, reservoirs and pipelines.
- C.10.3 What are the most significant problems concerning to routing operation and maintenance? (Do you have enough staff and budget for O&M?)
- C.10.4 Do you have any scheduled training program to improve operation and maintenance?
- C.10.5 Another training program or technical assistance will be required for improvement of operation and maintenance?

C.11 Economic and Financial Analysis

Please provide following data/information

- C.11.1 Latest water tariff table
- C.11.2 Manual for meter reading, billing and collection procedure

- C.11.3 Income statement of Water Supply Sector of Siem Reap Province for last 5 years
- C.11.4 Balance sheet of Water Supply Sector of Siem Reap Province for last 5 years
- C.11.5 Cash flow statement of Water Supply Sector of Siem Reap Province for last 5 years
- C.11.6 Approved budget for Water Supply Sector of Siem Reap Province for last 5 years
- C.11.7 Manual for accounting system/procedure, if any.
- C.11.8 How much should new customer pay for application of new house connection?
- C.11.9 How do you calculate water tariff in the case that water meter on the house connection is broken or missing?
- C.11.10 Please explain approval procedure of increasing water tariff.
- C.11.11 Do you receive any subsidy from national or provincial government?

C.12 History/Future Projects and Organization of Water Supply, Siem Reap Province

- C.12.1 Please describe history (establishment, past projects with scope and source of fund) and on-going and planned projects with scope and source of fund of Siem Reap Water Supply System.
- C.12.2 Please provide detailed organization chart of Siem Reap Province and Water Supply, Siem Reap Province with number of staff in each section.
- C.12.3 Please provide regulation or authorized documents which define mission of Water Supply, Siem Reap Province

QUESTIONNAIRE

(Sewerage and Drainage Planning – MPWT)

We have already taken over some of the data/information collected by the JICA preparatory study team for the integrated master plan for sustainable development of Siem Reap/Angkor Town in July 2004.

We intend to update the previously collected data/information with those recently made available. The team member in charge of sewerage and drainage planning would like to discuss and collect the data/information as requested in this questionnaire. Your cooperation for the JICA team will be very much appreciated.

1. Basic Data and Information

Although some of general information of the following items have already been collected, more updated and detailed information, if any are available, kindly provide us:

1.1 Chronology of Sewerage and Drainage Development

Please provide us the information as to name of scheme, year of construction, design and present capacity of major facilities.

1.2 Organizational Charts and Annual Budget of the Ministry

- (1) Please provide us the organization chart and number of staff of the Ministry
- (2) Please explain annual budget of the Ministry

1.3 Organizational Charts and Annual Budget of Sewerage/Drainage Department

- (1) Please let us know the name of department which is in charge of sewerage/drainage works.
- (2) Please provide us the organization chart and number of staff in the sewerage/drainage department
- (3) Please explain the duty/work of the sewerage/drainage department
- (4) Please explain annual budget of the sewerage/drainage department

1.4 National Development Plan for Sewerage/Drainage Development

- (1) Please let us know the national development plan for sewerage/drainage development in the Kingdom of Cambodia.
 - 1) Rectangular Strategy for Growth, Employment, Equity and Efficiency, 2004
 - 2) National Strategic Development Plan (NSDP) 2006-2010
- (2) In NSDP, the target access rate to sanitation is indicated as below. Please fill in the blanks or provide data, if available.

Particulars	Access rate (%)			
	1998	2005	2007 or 2008	2010 (projected)
Access to sanitation (urban)	49.0	55.0		67.0
Access to sanitation (rural)	8.6	16.4		25.0

1.5 Law and Regulation

- (1) Please specify the law and regulation regarding sewerage, drainage and sanitation facilities and please provide the outline of law and regulation, agency of information source and name of materials.

1.6 Existing or Planed Wastewater Treatment Facilities in the Kingdom of Cambodia (if available)

Please provide us the information of the following items:

- (1) Location and name of facilities (please attach maps)
- (2) Wastewater treatment system and capacity
- (3) Wastewater treatment systems' present technical problems and causes in operation and maintenance of existing facilities.
- (4) Present activity of water quality analysis
- (5) O/M cost and O/M staff training program

1.7 On-site Sanitation Facilities (Septic Tank etc.)

Please provide us the information of the following items:

- (1) Type of on-site sanitation facilities
- (2) Population by type of on-site sanitation facility
- (3) Present management activity

1.8 Sewage Tariff System (if any)

- (1) Tariff system and tariff collection method
- (2) Collection conditions (collection ratio) of sewage tariff
- (3) Annual average income per household (Upper class, Middle class, Lower class)
- (4) Connection charge for sewer pipe

2. Present Situation of Sewerage/Drainage System in Siem Reap

2.1 Existing Sewerage/Drainage Facilities

Please provide us any available information on the following items

- (1) Existing sewer/drainage network
- (2) Pumping stations, wastewater treatment plant and sludge treatment plant
- (3) Present technical problems of existing facilities.

2.2 Operation and Maintenance of the Existing Sewerage/Drainage Facilities

- (1) Present activity of sewer/drainage cleaning and repair
- (2) Equipment for cleaning
- (3) Present activity of water quality analysis, including latest monthly records
- (4) O/M staff training program

3. ADB Sewerage/Drainage Project in Siem Reap

3.1 Implementation agency, relevant organizations and institutions

Please clarify the role, functions and responsibility of MPWT, Siem Reap DPWT and Siem Reap State government to implement this project with the interface among each organization.

3.2 Contents of the Project and Progress

Please let us know the progress of each work at present (January 2009).

No.	Work Item	Progress (%)	
		Oct. 2008	Jan. 2009
1	Rehabilitation of Town Center Drain (L=2,100m)	67	
2	Improve of the Irrigation Canal	100	
3	Main Sewer Pipe (along Sivatha St. and Wat Chork St., L=3,675m)	26	
4	Pumping Station	38	
5	Force Main Sewer (fr. PS to STP, L=2,812m)	93	
6	Sewerage Treatment Plant	52	
	Total Progress	60	

3.3 Basic Data and Planning Criteria

Please provide us the following data and information.

- (1) General map showing the locations of proposed sewerage/drainage facilities such as sewer/drainage pipe, pumping stations and wastewater treatment plants.

Sewerage Planning

- (2) Target year
- (3) Coverage population or percentage
- (4) Sub-service area boundaries

Drainage Planning

- (5) Target return period
- (6) Catchments Area (please attach the map together with boundaries)

3.4 Project Cost

Please fill in the blanks or provide data and information for the project cost.

Item	Foreign Currency (1,000US\$)	Local Currency (1,000US\$)	Total (1,000US\$)
Land Acquisition and Resettlement			
Construction Works			
Equipment			
Consulting Service			
Physical Contingency			

Social Work			
Total			

4. Other Sewerage/Drainage Project in Siem Reap, if available

Please explain us the following project about implementation agency's name, outline of project, project area, project cost, implementation schedule and present situation of progress

- (1) Provincial Government Emergency Project
- (2) AIMF (Association Internationale des Maires Francophones)
- (3) Sewerage Network Expansion Project by Korea Company

5 Future plan by other donors for Siem Reap

Please list up the future plans in Siem Reap Province regarding sewerage, drainage and sanitation performed by other donors commenting donor's name, outline of project, project area, project cost, implementation schedule, present situation of progress and describe, if any, the relation between this project and those listed project.

QUESTIONNAIRE

(Sewerage and Drainage Planning – DPTW)

We have already taken over some of the data/information collected by the JICA preparatory study team for the integrated master plan for sustainable development of Siem Reap/Angkor Town in July 2004.

We intend to update the previously collected data/information with those recently made available. The team member in charge of sewerage and drainage planning would like to discuss and collect the data/information as requested in this questionnaire. Your cooperation for the JICA team will be very much appreciated.

1. Basic Data and Information

Although some of general information of the following items have already been collected, more updated and detailed information, if any are available, kindly provide us:

1.1 Chronology of Sewerage and Drainage Development

Please provide us the information as to name of scheme, year of construction, design and present capacity of major facilities.

1.2 Organizational Charts and Annual Budget of the Department

- (1) Please provide us the organization chart and number of staff of the Department
- (2) Please explain annual budget of the Department

1.3 Sewer and Public Electricity Office

- (1) Please provide us the number of staff in the sewer and public electricity office
- (2) Please explain the duty/work of the sewer and public electricity office
- (3) Please explain annual budget of the sewer and public electricity office

1.4 Sewage Tariff System

- (1) Tariff system and tariff collection method
- (2) Collection conditions (collection ratio) of sewage tariff
- (3) Annual average income per household
- (4) Connection charge for sewer pipe

2. Present Situation of Sewerage/Drainage System in Siem Reap

2.1 Existing Sewerage/Drainage Facilities

Please provide us any available information on the following items

- (1) Existing sewer/drainage network
- (2) Pumping stations, wastewater treatment plant and sludge treatment plant
- (3) Present technical problems of existing facilities.

2.2 Operation and Maintenance of the Existing Sewerage/Drainage Facilities

- (1) Present activity of sewer/drainage cleaning and repair
- (2) Equipment for cleaning
- (3) Present activity of water quality analysis, including latest monthly records
- (4) O/M staff training program

3. ADB Sewerage/Drainage Project in Siem Reap

3.1 Implementation agency, relevant organizations and institutions

Please clarify the role, functions and responsibility of MPWT, Siem Reap DPWT and Siem Reap State government to implement this project with the interface among each organization.

3.2 Contents of the Project and Progress

Please let us know the progress of each work at present (January 2009).

No.	Work Item	Progress (%)	
		Oct. 2008	Jan. 2009
1	Rehabilitation of Town Center Drain (L=2,100m)	67	
2	Improve of the Irrigation Canal	100	
3	Main Sewer Pipe (along Sivatha St. and Wat Chork St., L=3,675m)	26	
4	Pumping Station	38	
5	Force Main Sewer (fr. PS to STP, L=2,812m)	93	
6	Sewerage Treatment Plant	52	
	Total Progress	60	

3.3 Basic Data and Planning Criteria

Please provide us the following data and information.

- (1) General map showing the locations of proposed sewerage/drainage facilities such as sewer/drainage pipe, pumping stations and wastewater treatment plants.

Sewerage Planning

- (2) Target year
- (3) Coverage population or percentage
- (4) Sub-service area boundaries

Drainage Planning

- (5) Target return period
- (6) Catchments Area (please attach the map together with boundaries)

3.4 Project Cost

Please fill in the blanks or provide data and information for the project cost.

Item	Foreign Currency (1,000US\$)	Local Currency (1,000US\$)	Total (1,000US\$)
Land Acquisition and Resettlement			
Construction Works			
Equipment			
Consulting Service			
Physical Contingency			
Social Work			
Total			

4. Other Sewerage/Drainage Project in Siem Reap

Please explain us the following project about implementation agency's name, outline of project, project area, project cost, implementation schedule and present situation of progress

- (1) Provincial Government Emergency Project
- (2) AIMF (Association Internationale des Maires Francophones)
- (3) Sewerage Network Expansion Project by Korea Company

5 Future plan by other donors

Please list up the future plans in Siem Reap Province regarding sewerage, drainage and sanitation performed by other donors commenting donor's name, outline of project, project area, project cost, implementation schedule, present situation of progress and describe, if any, the relation between this project and those listed project.

QUESTIONNAIRE

(Sewerage and Drainage Planning – AFD)

We have already taken over some of the data/information collected by the JICA preparatory study team for the integrated master plan for sustainable development of Siem Reap/Angkor Town in July 2004.

We intend to update the previously collected data/information with those recently made available. The team member in charge of sewerage and drainage planning would like to discuss and collect the data/information as requested in this questionnaire. Your cooperation for the JICA team will be very much appreciated.

1. East Siem Reap Drainage Development Project

1.1 Loan Agreement Agency

Please let us know the name of loan agreement agency for this project.

1.2 Implementation Agency

Please let us know the name of implementation agency for this project.

1.3 Basic Data and Planning Criteria

- (1) Please provide us the following data and information. General map showing the locations of proposed sewerage/drainage facilities such as sewer/drainage pipe, pumping stations and wastewater treatment plants.

Sewerage Planning

- (2) Target year
- (3) Coverage population or percentage
- (4) Sub-service area boundaries

Drainage Planning

- (5) Target return period
- (6) Catchments Area (please attach the map together with boundaries)

And please provide data/information on planning sewerage/drainage facilities such as pumping stations, wastewater treatment plants and sludge treatment plants if any in the project area.

- (7) Pumping Stations
 - Design capacity (the number of pump units, types and dimensions)
- (8) Wastewater Treatment Plants
 - Design flow and wastewater quality (influent and effluent) such as BOD and COD
 - Type of wastewater treatment process
- (9) Sludge Treatment Plants
 - Sludge treatment and disposal process

1.4 Project Cost

Please fill in the blanks or provide data and information for the project cost.

Item	Foreign Currency (1,000US\$)	Local Currency (1,000US\$)	Total (1,000US\$)
Land Acquisition and Resettlement			
Construction Works			
Equipment			
Consulting Service			
Physical Contingency			
Social Work			
Total			

1.5 Implementation Schedule and Progress

Please explain about implementation schedule and present situation of progress for the project.

- (1) Detailed Design: from _____ to _____.
- (2) IEE and EIA: from _____ to _____.
- (3) Resettlement: from _____ to _____.
- (4) Construction Works: from _____ to _____.

2. Future Plans in Siem Reap Province

- (1) Please list up the future plans regarding sewerage, drainage and sanitation in Siem Reap Province, if any.
- (2) Please let us know outline of project, project area, project cost, implementation schedule, present situation of progress and if any, the relation between other donor project (ADB, KOECF and JICA) and those listed project.

QUESTIONNAIRE

(Sewerage and Drainage Planning— ADB)

We have already taken over some of the data/information collected by the JICA preparatory study team for the integrated master plan for sustainable development of Siem Reap/Angkor Town in July 2004.

We intend to update the previously collected data/information with those recently made available. The team member in charge of sewerage and drainage planning would like to discuss and collect the data/information as requested in this questionnaire. Your cooperation for the JICA team will be very much appreciated.

1. Sewerage/Drainage Project in Siem Reap Province (Loan Agreement No. 1969-CAM (SF), 7 Feb. 2003).

1.1 Loan Agreement Agency

Please let us confirm the name of loan agreement agency for this project.

→ Ministry of Tourism (MOT)

1.2 Implementation Agency

Please let us confirm the name of implementation agency for this project.

→ Ministry of Public Works and Transport (MPWT), Project Management Unit (PMU)

→ Department of Public Works and Transport (DPWT) Siem Reap, Project Implementation Unit (PIU)

1.3 Contents of the Project and Progress

Please let us know the progress of each work at present (January 2009).

No.	Work Item	Progress (%)	
		Oct. 2008	Jan. 2009
1	Rehabilitation of Town Center Drain (L=2,100m)	67	
2	Improve of the Irrigation Canal	100	
3	Main Sewer Pipe (along Sivatha St. and Wat Chork St., L=3,675m)	26	
4	Pumping Station	38	
5	Force Main Sewer (fr. PS to STP, L=2,812m)	93	
6	Sewerage Treatment Plant	52	
	Total Progress	60	

1.4 Basic Data and Planning Criteria

Please provide us the following data and information.

- (1) General map showing the locations of proposed sewerage/drainage facilities such as sewer/drainage pipe, pumping stations and wastewater treatment plants.

Sewerage Planning

- (2) Target year
- (3) Coverage population or percentage
- (4) Sub-service area boundaries

Drainage Planning

- (5) Target return period
- (6) Catchments Area (please attach the map together with boundaries)

1.5 Project Cost

Please fill in the blanks or provide data and information for the project cost.

Item	Foreign Currency (1,000US\$)	Local Currency (1,000US\$)	Total (1,000US\$)
Land Acquisition and Resettlement			
Construction Works			
Equipment			
Consulting Service			
Physical Contingency			
Social Work			
Total			

2. Provincial Town Improvement Project (Sanitation & Waste management in Sihanoukville) (Loan Agreement No. CAM 29282-01).

2.1 Loan Agreement Agency

Please let us know us the name of loan agreement agency for this project.

2.2 Implementation Agency

Please let us know us the name of loan agreement agency for this project.

2.3 Contents of the Project

Please explain the outline and contents of project, including information of the following items.

- (1) Project Area (please attach maps)
- (2) Target year and population projections (in case of separate sewer system)
- (3) Target probable rainfall intensity for storm-water
- (4) Wastewater Treatment Plants
 - Location (please attach maps)
 - Design flow and wastewater quality (influent and effluent) such as BOD and COD
 - Type of wastewater treatment process

2.4 Project Cost

Please fill in the blanks or provide data and information for the project cost.

Item	Foreign Currency (1,000US\$)	Local Currency (1,000US\$)	Total (1,000US\$)
Land Acquisition and Resettlement			
Construction Works			
Equipment			
Consulting Service			
Physical Contingency			
Social Work			
Total			

2.5 Implementation Schedule and Progress

Please explain about implementation schedule and present situation of progress for the project.

- (1) Detailed Design: from _____ to _____.
- (2) Resettlement (if any): from _____ to _____.
- (3) Construction Works: from _____ to _____.

3. Future Plans in Siem Reap Province

- (1) Please list up the future plans regarding sewerage, drainage and sanitation in Siem Reap Province, if any.
- (2) Please let us know outline of project, project area, project cost, implementation schedule, present situation of progress and if any, the relation between other donor project (AFD, KOECF and JICA) and those listed project.

QUESTIONNAIRE
(Sewerage and Drainage Planning— Korea Exim Bank)

1. Feasibility Study on the Siem Reap Sewerage System and Improvement of Siem Reap River.

Please let us confirm the name of loan agreement agency for this project.

- (1) Please provide us the following data and information. General map showing the locations of proposed sewerage/drainage facilities such as sewer/drainage pipe, pumping stations and wastewater treatment plants.

Sewerage Planning

- (2) Target year
- (3) Coverage population or percentage
- (4) Sub-service area boundaries

Drainage Planning

- (5) Target return period
- (6) Catchments Area (please attach the map together with boundaries)

And please provide data/information on planning sewerage/drainage facilities such as pumping stations, wastewater treatment plants and sludge treatment plants if any in the project area.

- (7) Pumping Stations
 - Design capacity (the number of pump units, types and dimensions)
- (8) Wastewater Treatment Plants
 - Design flow and wastewater quality (influent and effluent) such as BOD and COD
 - Type of wastewater treatment process
- (9) Sludge Treatment Plants
 - Sludge treatment and disposal process

1. Future Plan in Siem Reap

- (1) Please list up the future plans regarding sewerage, drainage and sanitation in Siem Reap Province, if any.
- (2) Please let us know outline of listed project, project area, project cost, implementation schedule, present situation of progress and describe, if any, the relation between other donor project (ADB and AFD) and those listed project.