フィリピン共和国
水質管理能力強化プロジェクト
事前評価調査報告書

平成 17 年 12 月
（2005年）

独立行政法人国際協力機構
フィリピン事務所

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序　　文

日本国政府は、フィリピン共和国政府の要請に基づき、技術協力プロジェクト「水質管理能力強化プロジェクト」を実施することを決定し、独立行政法人国際協力機構（JICA）が本案件を実施することとなりました。

JICAでは、プロジェクトの効果的かつ効率的な実施を図るため、2004年10月から2005年7月までに、二次にわたる事前評価調査を実施し、先方政府関係者と本プロジェクトの内容に関する協議を行いました。第1次調査では、フィリピン共和国における水質悪化の現状や環境管理行政の実態を把握し、プロジェクトの方向性を確認し、これに続く第2次調査では、詳細情報を追加的に収集するとともに、プロジェクトにて追求する目標や実施すべき活動について、詳細なプロジェクト・ドキュメントを作成し、フィリピン共和国政府側と合意しました。その後、本調査の結果を踏まえ、日比両政府間及び日本国内関係者間で協議を継続的に行った結果、2005年10月24日に案件実施に係る討議議事録（Record of Discussion）の署名を行いました。

本報告書は、参考資料として広く関係者に活用されることを願い、取りまとめたものです。終わりに、本調査にご協力とご支援を頂いた関係者各位に、心より感謝申し上げます。

平成17年12月

独立行政法人国際協力機構

フィリピン事務所長

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略　語　一　覧

略　語	正　式　名　称	和　訳
ADB	Asian Development Bank	アジア開発銀行
BOD	Biochemical Oxygen Demand	生物化学的酸素要求量
DENR	Department of Environment and Natural Resources	環境天然資源省
DENR-EMB	DENR-Environmental Management Bureau	環境天然資源省環境管理局
DENR-LLDA	DENR-Laguna Lake Development Authority	同省ラグナ湖開発庁
DILG	Department of Interior and Local Government	内務自治省
DOH	Department of Health	保健省
DPWH	Department of Public Works and Highways	公共事業道路省
EMB-EQD	EMB-Environmental Quality Division	（環境天然資源省）環境管理局環境質部
EMB-WQMS	EMB-EQD Wataer Quality Management Section	（環境天然資源省）環境管理局環境質部水質管理課
FASPO	Foreign-Assisted and Special Projects Office	海外援助特別事業事務所
IRR	Implementation Rule and Regulation	施行細則
JBIC	Japan Bank for International Cooperation	国際協力銀行
LGU	Local Government Unit	地方自治体
LLDA	Laguna Lake Development Authority	ラグナ湖開発公社
NEDA	National Economic and Development Authority	国家経済開発庁
NGO	Non Governmental Organization	非政府組織
NIA	National Irrigation Administration	国家灌漑公社
NWQMF	National Water Quality Management Fund	国家水質管理基金
NWRB	National Water Resource Board	国家水資源委員会
R/D	Record of Discussion	実施協議議事録
USAID	United States Agency for International Development	米国国際開発庁
WQMA	Water Quality Management Areas	水質管理地域

事業事前評価表（技術協力プロジェクト）

2005年8月15日

１．案件名

フィリピン共和国水質管理能力強化プロジェクト

（The Capacity Development Project on Water Quality Management）

２．協力概要

（1）協力内容

水質浄化法及びその施行規則を施行するうえで、特に重要な優先的活動[1]を実施するための、環境天然資源省環境管理局の水質管理行政能力強化を行う。

（2）協力期間

2006年1月から2010年12月までの5年間

（3）協力総額（日本側）　6億9,000万円程度

（4）相手先機関

環境天然資源省（Department of Environment and Natural Resources：DENR）環境管理局（Environmental Management Bureau：EMB）

（5）国内協力機関

環境省

（6）裨益対象者

直接的には1,000名あまりの環境管理局職員のうちの水質管理担当職員（約90名）であるが、間接的には将来の水質改善への貢献を通じて、3つのパイロット地域の住民（約1,300万人）[2]を中心としたフィリピン共和国（以下、「フィリピン」と記す）の国民に広く裨益することが期待される。

３．協力の必要性・位置づけ

（1）現状と問題点

フィリピンにおける水質汚染は、河川水、地下水及び沿岸水の水質汚染が広範囲に進行している。

EMBの全国141河川のモニタリング地点において、約64%が同国環境基準で定める生物化学的酸素要求量（Biochemical Oxygen Demand：BOD）基準を超過している。またマニラ首都

[1] 水質浄化法とその施行規則にて新たに実施が規定された活動のうち、水質浄化法の遵守期限に照らした緊急性と水質管理上の重要性が高いとEMBにより判断された活動。

[2] 事前調査においては、ルソン、ビサヤ、ミンダナオの各地域から1地域ずつ、水質汚染の現況（産業排水が懸念される地域、エコツーリズムなど観光上の重要性が高い地域、鉱山などの汚染が懸念される地域）と地域事務所の体制を考慮して決定することとしており、調査時点では第3、6、12地域が想定されている。

圏を流れる河川はいずれも高度に汚染されており、特に乾期には水中からほとんど溶存酸素が検出されない死の川となっている。これらの水質汚染は飲料水源の悪化を招き住民の生活に影響を与えている。世界銀行（世銀）の報告によると、生活用水として利用されている地下水の58%が基準値を超える大腸菌に汚染され、過去5年間の疾病全体の30%をコレラ、A型肝炎、腸チフス、下痢などの水系伝染病が占めており、保健医療費の増大や働き手の喪失により多額の経済的損失が発生しているとしている。また、水道の整備が遅れている地方においては水系伝染病の発生率はマニラ首都圏に比べて高い傾向にある。

水質汚染は観光業や水産業などの経済的基盤に対しても直接的な影響を与えており、特にここ数年セブ島やボラカイ島などの国内外で知られたリゾート地の環境劣化について問題視する声が高まってきている。また、沿岸部で近年盛んな養殖業に対しても、生活・産業排水の影響が懸念されている。

2004年10月に発表された中期国家開発計画（2004－2010）では、2004年5月に定められた水質浄化法のその確実な実施が盛り込まれている。しかしながら、現状ではフィリピン政府が下水処理施設や産業排水処理施設などの直接的に水質を改善するためのインフラ投資を行うことは容易ではない。

フィリピン議会は水質汚染の深刻さに着目し、4年間にわたる議論を積み重ね、2004年5月に水質浄化法を成立させた。この新たな法律は従来の排出基準を企業に遵守させるだけの水質管理行政手法（Command and Control）から、市場メカニズムを活用した自主的な汚染防止努力の推進（Market -Based Instruments）へと、水質管理政策を大きく転換するものである。

同法においては汚染者負担の原則に基づき、各汚染源（工場等）に対して汚染物質の量を明示した許可証を発行し、汚染物質の排出量に比例した課徴金の負担を求める排水課徴金制度の導入を特徴としている。

もうひとつの特徴としては、地域の関係者による自主的な水質改善の取り組みを促進するために、水質管理地域を指定し、流域の水利用関係者（自治体、企業、住民、大学等）による水質管理委員会を設立し、将来達成すべき水質の改善目標に向かって関係機関が努力することを促進している点にある。

環境天然資源省環境管理局（DENR-EMB）はこの水質浄化法を施行する中心的な役割を与えられている。EMBは2000年より環境天然資源省とは異なる独自の地域事務所を設置し、水質モニタリングや工場検査、操業許可証の発行などを実施してきている。しかしながら水質浄化法にて新たに定められた政策の推進は、EMBにとって従来経験したことのない新しい業務であり、これらの業務の施行のためには、必要な政策・施行ガイドラインの整備と現場レベルでの施行、さらに組織内外の関係者との調整機能の強化など、包括的なキャパシティ・ディベロップメントを行う必要がある。

（2）相手国政府の国家政策上の位置づけ

本プロジェクトは水質浄化法及び施行規則を担当するEMBとその地域事務所が適切に法律を施行できるよう能力を強化するものであり、国家政策に直接合致している。

また、2004年10月に公表された中期国家開発計画（2004-2010）の中でもより健康的な環境の創造が環境天然資源分野の中の5つの重要項目の1つに含まれている。

（3）日本の援助政策との関連

開発途上国の国民生活に深刻な影響を及ぼす環境問題の解決を支援することは、日本政府の援助政策の重要事項のひとつであり、2005年2月に発表されたODA中期計画においては、水質汚濁を含む環境汚染対策は重点課題の中の「地球的規模の問題」のひとつに位置づけられており、また援助実施の原則の1番目にも「環境と開発の両立」が挙げられている。

対フィリピン国別事業実施計画においても、環境分野は重点柱のひとつ「環境保全と防災」に該当している。

さらに、2001年にJICAがまとめた第2次環境分野援助研究会報告書の中では、援助の成果を高め効率を上げるためには、環境管理技術の移転だけではなく政策的な支援を含めたいわゆるキャパシティ・ディベロップメントが必要であると指摘されている。

４．協力の枠組み

（1）協力の目標（アウトカム）

- 本プロジェクトでは政策立案を担当し全国16カ所のEMB地域事務所を指導するEMB本部と、3カ所のパイロット地域事務所を主な対象とし、水質浄化法の施行に必要な能力強化を行うことを中心課題としている。
- プロジェクトは4つの成果から構成され、うち2つはEMB本部の、残り2つはEMB地域事務所の能力強化を目的としている。具体的にはプロジェクト開始後2年間はEMB本部に対して政策立案・ガイドライン作成能力強化（成果1)、地域事務所に対する指導能力強化（成果2）を中心として協力を行い、後半3年間についてはEMB地域事務所を対象として水質管理地域の指定や委員会の設立・運営能力強化（成果3）と各種許可証の発行、立ち入り検査、工場によるモニタリング結果の検証などの水質管理施行能力（成果4）の強化を図る。

1）協力終了時の達成目標（プロジェクト目標）と指標・目標値

水質浄化法及び施行規則を施行するうえでの優先的な活動を行うためのEMB本部及びEMB地域事務所の水質管理能力が強化される。

指標・目標値

- EMB職員が水質管理の手続きと必要な専門技術を習熟している。
- EMB本部・パイロット地域事務所が総合的水質管理を推進する組織的能力（職員数、機材、情報管理システム、ガイドライン・マニュアル、業務計画）を有している。
- EMBと関連機関及び利害関係者との連携が成り立っている。
- パイロット地域事務所が他地域の事務所に対してモデルとしての役割を果たしている。

2）協力終了後に達成が期待される目標（上位目標）と指標・目標値

産業・商業事業者及び自治体その他公的機関により、地域におけるアクションプラン[3]で定められた水質目標を達成するために必要な対策が講じられる。

[3] 関係者により構成される水質管理委員会が策定する、地域ごとの水質目標を達成するために必要な 10 カ年計画。水質浄化法において委員会の設立とアクションプランの作成が規定されている。

指標・目標値

- 水質保全・改善が必要とされる地域が水質管理地域あるいは未達成地域に指定されている。
- 指定された地域において水質管理委員会等が設立され、アクションプランが作成されている。
- アクションプランに基づいた対策が水質管理地域内の関係者により講じられている。

(2) 成果（アウトプットと活動）

＜成果1＞　水質浄化法に基づいた総合的水質管理政策と施行ガイドラインが整備され、EMB職員に周知される。

指標・目標値

a）総合的水質管理政策が作成される。

b）各種施行ガイドライン・マニュアルが発行される。

c）総合的水質管理政策と施行ガイドラインについて普及・訓練が行われる。

活動

1.1 総合水質管理政策とその施行ガイドラインを策定するための関連機関の連携・協調体制を設立する。

1.2 市場経済手法により企業の自主的な水質管理を促進するための総合政策の立案と、施行ガイドラインを策定する。

1.3 陸水（地下水を含む）及び海洋水の水系分類ガイドラインと地下水脆弱性地図作成ガイドラインを策定する。

1.4 水質汚染に関する産業分類を行うためのガイドラインを策定する。

1.5 水質ガイドライン及び排水基準をレビューし、改定する。

1.6 水質浄化法に基づき、水質管理地域（Water Quality Management Areas：WQMA）と未達成地域を指定するためのガイドラインを策定する。

1.7 WQMAアクションプランと遵守計画作成のためのガイドラインを策定する。

1.8 WQMAにおける住民グループ及び他機関との水質モニタリングの連携プログラムを構築し、ガイドラインを策定する。

1.9 重要な汚染源を特定するとともに各種汚染源施設の法令遵守検査マニュアルを策定する。

1.10 特定の産業汚染源に対して流動的な排水基準適用を許容するためのガイドラインを策定し、必要な調整を行う。

1.11 排水許可システムを実施するための汚染負荷及び課徴金算定システムのガイドラインを策定する。

1.12 国家水質管理基金（National Water Quality Management Fund：NWQMF）の管理のためのガイドラインを策定する。

1.13 EMB本部及び全EMB地域事務所に対し上記ガイドラインの研修を行う。

＜成果2＞　EMB本部の地域事務所を指導する水質管理能力が強化される。

指標・目標値

a）以下の水質管理行政システムがEMB本部による地域事務所との連携の下に構築され

稼動する。

- EMB本部が地域事務所間の調整体制が整っている。
- 水質管理モデルが構築されている。
- データベース及び情報管理システムが構築され地方と中央間で共有されている。
- 国家水質状況報告書が発刊される。

b）EMB本部がガイドラインに沿った活動を3パイロット地域で実施するための調整機能を果たしている。

活動

2.1 ≪成果1≫において策定されたガイドラインの実施についてEMB本部と地域事務所との協調体制を確立する。

2.2 EMB地域事務所が利用する水質及び汚染源データベースとその報告システムを構築する。

2.3 EMB本部と地域事務所間で共有される水質管理情報・システムを構築し、EMB内での研修を行う。

2.4 各地域からの報告をもとに国家水質状況報告書（初版）を発行する。

2.5 適切な水質管理モデル[4]を構築し、地域事務所に対しデモンストレーションを行う。

2.6 ≪活動 1.12≫にて策定されたガイドラインに基づいて国家水質管理基金の運用手続きを試行する。

2.7 地域事務所支援のためのEMB中央検査所の体制を整備する。

2.8 水質管理問題についての住民意識を高めるためのキャンペーンを企画し、試行する。

2.9 パイロット地域の成果の他の地域事務所への波及を促進し、また他ドナーによる補完的支援を促進する。

＜成果3＞ 水質管理地域を指定し、水質管理委員会等を設立・運営するためのEMB地域事務所の能力が強化される。

指標・目標値

a）少なくとも1カ所の水質管理地域が各パイロット地域に設定される。

b）設定された水質管理地域において水質管理委員会が組織される。

c）水質管理委員会により水質管理アクションプランが策定される。

活動

3.1 ≪活動1.6≫で策定したガイドラインに基づいて、WQMAの地域を指定する。

3.2 ≪活動1.6≫で策定したガイドラインに基づいて、指定されたWQMAにおいて水質管理委員会を設立する。

3.3 ≪活動1.7≫で策定したガイドラインに基づいて、水質管理委員会が策定する地域水質管理アクションプラン、また、地方自治体が策定する遵守計画書の作成を支援する。

3.4 水質管理委員会の行う地域水質管理基金を設立し管理する。

[4] 対象河川における各汚染源の汚染負荷量を算出するための計算式などを含む水質管理のためのツール

3.5 ≪活動1.8≫で策定したガイドラインに基づいて、地域内での水質モニタリングの連携体制を構築する。

＜成果4＞　EMB地域事務所の総合的な水質管理能力が強化される。

指標・目標値

a）排水許可の発行、排水課徴金徴収、自己モニタリング等の汚染源管理が適切に行われている。

b）地域水質状況報告書（初版）が発刊されている。

c）データベース及び情報通信を含む情報管理システムが運用されている。

d）現場及び水質ラボ機材が整備され職員が採水・測定技術を習熟している。

活動

4.1 ≪活動1.3≫で策定したガイドラインに基づいて、必要な水系指定または再指定を行う。

4.2 ≪活動1.6≫で策定したガイドラインに基づいて、達成地域及び未達成地域を特定する。

4.3 汚染源の分類、優先化及び法令遵守検査を実施する。

4.4 ≪活動1.4及び1.9≫で策定したガイドラインに基づいて、重要汚染源のインベントリー調査及び水質調査を実施する。

4.5 ≪活動2.5≫で策定した水質モデルを適用する。

4.6 汚染源並びに水質調査データベースを管理し、EMB本部との情報共有を行う。

4.7 地域水質状況報告書（初版）を作成する。

4.8 ≪活動1.11≫で策定したガイドラインに基づいて、排水許可業務及び排水課徴金制度を試行する。

4.9 排水許可料金及び排水料金の徴収・会計システムを構築する。

4.10 地域の分析機関との提携を支援し、また、EMB地域事務所ラボで調査する項目については採水・測定分析機材を整備し訓練を実施する。

（3）投入

1）日本側（総額6億9,000万円）

a）専門家　7分野

＜コアエキスパート＞

ア）総合的環境管理（総括）

イ）水質環境管理技術

ウ）組織制度構築/業務調整

＜技術専門家＞

エ）水質モニタリング

オ）汚染源管理

カ）水質情報システム

キ）水質モデリング

b）現地コンサルタント

ア）政策フレームワーク及びガイドラインに関する素案作成・普及支援業務

イ）水質モデリング、情報キャンペーン、データベース、ネットワーク、水質状況報告書、水質管理基金等に関する設計・普及などの支援業務

ウ）地域事務所（3カ所）における水質管理地域の設定・設立に関連する指導・訓練などの支援業務

エ）地域事務所（3カ所）における水質管理実務に関する指導・訓練などの支援業務

c）資機材

ア）現場用採水器、測定器、車両等

イ）水質ラボ用測定機材

ウ）情報管理システム用機材

d）日本・第三国でのC/P研修

2）フィリピン側

a）カウンターパート

ア）プロジェクト・ダイレクター

イ）プロジェクト・マネジャー

ウ）水質管理部のスタッフ

エ）パイロット地域事務所水質管理担当スタッフ

b）施設・設備等

JICA専門家用事務所

c）施設・設備等

運営・経常費用並びに維持管理費

（4）外部要因

① EMB等のカウンターパート及び必要施設が適切な時期までに準備されている。

② 水質浄化法に基づく連携機関（公共道路事業省、保健省、内務自治省等）の協力が得られる。

③ 水質モデリングに使用する他機関の所有する重要データ・情報（国家水資源委員会の水理データ等）が入手できる。

④ EMB地域事務所がプロジェクトを実施するために必要な人員と予算が適切な時期に確保される。

５．評価5項目による評価

（1）妥当性

下記のように本プロジェクトを実施する妥当性は高いと判断される。

1）相手国のニーズ

水質浄化法は地方自治体（Local Government Unit：LGUs）や住民、民間セクターの自主的努力を促しつつ水質の改善を図ることを最重要戦略としている。政府主導による環境インフラ整備の実施が財政的な事情によって困難な現状においては、水質を改善しようとする川沿いの利害関係者間での調整や、排出量に応じた排水課徴金などの市場メカニズムを活用した水質管理手法が有効である。しかしながらEMBは従来経験したことがない業務であるため、政策・制度の作成から現場における施行業務まで包括的な組織の構築支援が必要となっている。また、こうした水環境の保全・改善のための取り組みは、地域の住民、地方行政機関、民間セクター、大学関係者などのさまざまな関係者の参画の下に実施されるものであり、直接的、あるいは、間接的に水質の改善を必要とする一般国民、企業・団体などを巻き込んだ水質管理の促進が可能である。

2）相手国の環境政策との整合性

本プロジェクトは、フィリピンの水質管理政策の根幹である水質浄化法を効率的に施行することを目的としており、フィリピンの環境政策に直結している。また、昨年（2004年）11月に公表された中期国家開発計画（2004-2010年）の中でもより健康的な環境の創造が5項目挙げられている環境自然資源分野のなかの重要項目のひとつに含まれている。

3）わが国関連技術の優位性

わが国は1970年代の公害対策とそれらに対する水質保全政策についてさまざまな経験をもっていることから、水質管理の実務にかかわる各種の知見やノウハウを蓄積しており技術的優位性は高い。また、本プロジェクトにおける能力強化の対象の一部である管理技術面については、JICAは過去、タイ王国、中華人民共和国、インドネシア共和国、メキシコ合衆国、チリ共和国、エジプト・アラブ共和国（以下、「タイ」「中国」「インドネシア」「メキシコ」「チリ」「エジプト」と記す）において環境センタープロジェクトを実施してきているので、これらのプロジェクトで得られた知見・教訓（モニタリング体制の構築方法等）を本プロジェクトに活用できる。一方、フィリピンにおいてはJICAは水質浄化法の施行細則の作成を支援し、政策的側面からの支援についての経験を得ている。

（2）有効性

以下の理由より、本プロジェクトは高い有効性を有していると判断される。

EMBは本部と全国16カ所の地域事務所より成り、本部は政策立案を、地域事務所は政策施行を担当している。水質浄化法を施行するうえでは、政策立案・実施が一体的に実施されることが必要であるが、本プロジェクトはEMB本部及び地域事務所の双方を対象とした包括的な能力強化を対象としていることから、より効果的に水質浄化法を施行する体制づくりを行うことが可能である。

具体的アプローチとしては、水質浄化法にて定められた活動のうち特に優先的な取り組みを必要とする活動の実施を行うことを通じて、EMB本部と地域事務所の能力強化を行うが、プロジェクト目標、成果並びに優先的な活動等はEMB本部や地域事務所職員との参加型協議を通して選定されたものであり、カウンターパートの意向を十分に反映している。

また、本プロジェクトは水質浄化法及の施行のための能力強化をめざしていることからプロジェクト目標の内容は明確であり、また、各成果についても同法に基づき本部と地域事務所で具体的に取り組むべき活動を記載していることから、成果と目標のつながりも明確である。よって成果を達成することでプロジェクト目標が達成されることが期待される。

(3) 効率性

以下の理由により、効率性が高いと判断される。

本件はフィリピンの水質管理政策立案・実施にかかわるキャパシティ・ディベロップメントを目的としたプロジェクトであり、カウンターパート個人の技術・経験の向上だけではなく、組織内での制度・体制整備や他の機関との調整能力等の向上も意図している。よって、水質浄化法の施行に先立ち必要となる各種ガイドラインやマニュアル、情報データベースや水質モデルなどの多数のアウトプットの作成が計画されている。これらのアウトプットを得るためには通常多くの時間と投入が必要となるが、本プロジェクトでは現地コンサルタントを日本人専門家の監督の下に有効に活用することで、費用対効果の高い協力を実施することを計画している。なお、フィリピンの政府機関においては政策を策定する際には、民間コンサルタントを活用することが一般的に行われているため、民間セクターに政策策定のノウハウを有する人材が多く存在している。

また、日本人専門家についても民間の人材の積極的な活用が期待される。JICAの開発調査等において、環境管理計画の作成、河川・湖沼の水質管理に従事した経験の豊富な人材が存在することから、プロジェクトの実施については、このような開発途上国の水質管理の技術と開発途上国における技術協力の経験を有する民間のコンサルタントを活用して実施することで高い効率性が確保されると見込まれる。

なお、水質浄化法の施行と水質管理能力強化については他ドナーも関心を有しており〔米国国際開発庁（United States Agency for International Development : USAID）等〕、これらのドナーとの連携を図りつつ事業を進めていくことで、より効率的なプロジェクトの実施が可能である。

(4) インパクト

下記のように本プロジェクトは種々の分野に波及効果を与えるものと判断される。

1) 関係者による水質管理地域アクションプランの策定と実施

本プロジェクトの上位目標は地域の河川利用関係者によりアクションプランで定められた水質目標の達成のために必要な対策が講じられることであるが、以下のとおり達成が見込まれる。

水質浄化法では、特に水質改善の必要性が高い地域を水質管理地域に指定し、地方行政機関、住民、企業、大学など、地域の河川利用にかかわる利害関係者から構成される水質管理委員会を組織することが求められている。EMB地域事務所の役割は水質管理委員会の技術事務局として委員会を円滑に運営するとともに、関連機関を調整しつつアクションプランの作成と遂行を促進していくものである。本プロジェクトは、水質管理地域の指定や委員会の設立のためのガイドラインづくりや、パイロット地域事務所における委員会の設

立・運営推進のための能力強化が成果のひとつとして盛り込まれており、また併せて市民の環境意識を高めるための情報キャンペーンや地域内での水質モニタリングの連携体制の構築などの、地域関係者へ働きかける活動が含まれることから、地元に根ざした水質対策が実施されることが期待される。

2）水質保全・改善への効果

本プロジェクトは環境管理政策の適切な立案・施行を行うための行政能力の基盤を築くことを目標としている。また、地域における水質改善アクションプランの策定が本プロジェクトの重要要素となっており、生活排水、産業排水など広範な汚染源への対策を含む同プランの実施を通じて対象水域における水質の改善に効果を発現することが期待される。アクションプランは10年計画であり、現時点では巨額のインフラ整備のための財源が限られていることから直接的な水質の改善にはそれなりの期間を要すると想定されるが、本プロジェクトで環境行政能力の基盤を築くことにより、これらのプランの実施をたゆまずに促進し、また、将来的な状況の変化に適切に対応することが可能となる。

（5）自立発展性

水質浄化法はフィリピンの議会が立法化し政府に対して実行を求めるものであり、プロジェクト終了後も引き続き継続的に施行していくことがEMB及び関係機関にとっての責務となっていることから、プロジェクトの活動に対する政策面での自立発展性は高いといえる。プロジェクトの終了後にEMBが独自に活動を継続していくうえでは、EMBが適切な人員配置と予算措置をあらかじめ講ずることが必要であり、プロジェクトの準備・実施段階において終了後を見据えた体制確保を働きかけることが重要である。また、本プロジェクトは他機関との調整を要する活動も多く、EMBも含めた関連機関のキャパシティに合わせた無理のない協力を実施していくことが肝要である。本プロジェクトはEMBを中心とした制度づくりを中心に行う前半2年間の協力と、EMB地域事務所を中心とした現場での施行を行う後半3年の協力から構成されていることから、各協力ごとの進捗状況と相手側の体制を適切に把握したうえで、柔軟なプロジェクト管理を実施していくことが必要であり、これらの活動上の配慮を行うことでプロジェクトの自立発展性を確保することが可能である。

（6）結論

本プロジェクトは相手国の環境政策に合致しており、また、数次にわたる参加型協議を踏まえた結果、相手国側のニーズを十分反映した内容となっている。また、ローカルリソースの活用によりプロジェクト全体を効率的に実施する計画となっている。また、プロジェクトによる波及効果も大きく、自立発展性にも配慮されている。

以上より、本プロジェクトの実施は妥当であると判断される。プロジェクトの準備・実施過程においてフィリピン側の受入体制（適正数の職員配置等）が十分に整備されれば、より高いインパクトと自立発展性とが期待できる。

６．貧困・ジェンダー・環境などへの配慮

特になし。

７．過去の類似案件からの教訓の活用

環境分野において過去に実施されてきたプロジェクトの多くについては、モニタリング技術の移転に重点が置かれてきた。しかしながら、プロジェクトの成果を環境管理行政に活用していくうえでは、フレームワークやガイドラインの作成を含む政策策定部分への協力、また、現場における政策の実行に対する協力を併せて実施する必要があるとの教訓が得られている。本プロジェクトにおいては、政策策定から現場における政策実施までに至る包括的な能力強化を目的としており、過去の教訓を活用している。

JICAは、2005年5月に発効した水質浄化法の施行細則（Implementation Rule and Regulation : IRR）の作成に関し、他のドナーとの連携を行いつつ中心的な役割を果たしてきた。具体的には施行細則の素案作成を行い、必要となる科学的な水質管理手法について関係省庁や企業の組合などに対する公聴会の開催を支援し、さらにエンフォースメントを担当する地域事務所の能力の評価等を通じた支援を実施した。この施行細則作成支援という政策支援の過程で得られた経験（ローカルコンサルタントの効果的な活用方法とEMB内外での調整の実施方法等）を当該プロジェクトで活用できる。

環境管理分野で行ったプロジェクトの評価として、2002年度に外部有識者評価報告書が発行されている（「特定テーマ評価：環境センターアプローチ：途上国における社会的環境管理能力の形成と環境協力」）。そのなかで、プロジェクトの行政的位置づけ、企業・市民への貢献、地方分権化への対応などの点を今後の課題として指摘するとともに、当該国の環境基本政策が策定されるなど、相手国内での環境対策実施体制が整う時期を見計らって協力を投入することが重要であると述べている。本プロジェクトは水質分野の基本政策である水質浄化法とその施行細則（IRR）が定められEMB及びLGU等の関係機関において水質改善のための機運が高まっている時期にプロジェクトを開始することから、右評価の教訓に沿った協力実施となっている。

８．今後の評価計画

2008年1月　　中間評価調査団派遣予定
2009年6月　　終了時評価調査団派遣予定
2013年12月　案件別事後評価実施予定

第１章　調査団派遣の経緯

１－１　要請の背景

フィリピン共和国（以下、「フィリピン」と記す）では、経済発展による人口や産業の集中化に伴って必要とされる上下水道、都市排水、一般系及び産業系廃棄物処分場や収集サービス、産業系の公害防止対策などの環境インフラの整備が財源不足から追いつかず、水質汚濁が広範囲に進行している。この結果、国民の健康のみならず漁業や観光産業が多大な悪影響を受けている。

これを受け、2003年には水質管理行政の転換が行われ、経済的なインセンティブを民間セクターに与え、公害防止対策推進のための自助努力を促進する市場経済手法を活用した政策が推進されることとなり、2004年5月には水質浄化法が施行された。この法律は、水質管理に必要なさまざまな政策や手続規則、ガイドライン等の作成と実行を求め、環境担当部局及び地方行政機関を含む関係政府機関に多様な義務と責任を与えた。しかし、これら新たな義務と責任は環境天然資源省（DENR）が従来実施した経験のない業務であり、水質浄化法の実施を通して悪化した水質の改善を図ることを組織としての重要戦略としているものの、現在の組織・職員個人の能力、配属職員数では水質浄化法の実施は困難な状況にあり、技術的側面及び政策的側面を含む総合的な水質管理能力の向上が喫緊の課題となっている。

かかる状況の下、フィリピン政府はわが国政府に対して環境管理能力強化に関する技術協力を要請してきた。これを受け、日比双方の現地関係者間で継続的な協議が実施された結果、水質管理行政の能力を強化するための技術協力が必要であるとの認識に至った。

１－２　調査の目的

本事前評価調査では、上記の要請背景を踏まえ、力の必要性、妥当性及び実施可能性について検討する。また、要請された計画、活動、スケジュール等について、先方と合意文書を交わして確認することを目的とする。

第２章　事前評価調査の概要

２－１　第1次調査

２－１－１　調査団の構成

担　当	氏　名	所　属
総　　括	松浦 正三	JICAフィリピン事務所 所長
環境計画	田中 秀穂	環境省地球観光局環境協力室
水質管理計画	田島 正廣	国際航業（株）
水質モニタリング/立入検査	倉田 隆喜	国際航業（株）
組織制度/計画分析	大竹 孝泰	（株）レックス・インターナショナル
環境情報データベース	清田 大作	国際航業（株）
協力企画	杉山 茂	JICAフィリピン事務所 所員

２－１－２　調査日程

月日	曜日	主な内容
10月25日	月	（松浦団員、杉山団員以外）東京　→マニラ JICAフィリピン事務所 打合わせ
10月26日	火	環境天然資源省海外援助特別事業事務所（DENR-FASPO）、環境天然資源省環境管理局（DENR-EMB）打合わせ
10月27日	水	水質管理業務に従事経験があるローカルコンサルタント 聞取り
10月28日	木	
10月29日	金	ラグナ湖 水質汚染状況 現地調査
10月30日	土	資料整理
10月31日	日	資料整理
11月1日	月	祝日
11月2日 ～ 11月4日	火 ～ 木	環境天然資源省環境管理局環境質部水質管理課（EMB-WQMS）聞取り調査
11月5日	金	在フィリピン日本大使館 打合わせ EMB-WQMS 聞取り調査
11月6日	土	資料整理
11月7日	日	資料整理
11月8日	月	国家経済開発庁（NEDA）表敬、ラグナ湖開発公社（LLDA）関係者聞取り調査
11月9日	火	水質浄化法IRR策定ワークショップ 参加
11月10日	水	国家灌漑公社（NIA）関係者 聞取り調査
11月11日	木	上水道、下水道関連民間企業 聞取り調査
11月12日	金	国家水資源委員会（NWRB）関係者 聞取り調査
11月13日	土	調査結果取りまとめ
11月14日	日	調査結果取りまとめ
11月15日	月	祝日

11月16日	火	パッシグ川 水質汚染状況 現場視察 JICA事務所 打合わせ
11月17日	水	DENR-EMB地域事務所 関係者聞取り
11月18日	木	DNER-EMB第3地域事務所 現場視察
11月19日	金	JICA事務所 打合わせ
11月20日	土	調査結果取りまとめ
11月21日	日	調査結果取りまとめ
11月22日 ～ 11月27日	月 ～ 土	DENR-EMB第7地域事務所 現場視察
11月30日 ～ 12月4日	火 ～ 土	DENR-EMB第11地域事務所 現場視察
12月5日 ～ 12月8日	日 ～ 水	調査結果取りまとめ、報告書執筆
12月9日	木	PCMワークショップ実施
12月10日	金	
12月11日 ～ 12月26日	土 ～ 日	関係者 補足聞取り調査 第1次調査 調査報告書取りまとめ
12月27日 ～ 1月3日	月 ～ 月	第1次調査報告書 関係者読み合わせ・コメント作成
1月4日	火	（松浦団員、杉山団員以外）マニラ　→ 東京

２－２　第2次調査

２－２－１　調査団の構成

担　当	氏　名	所　属
水質管理政策及び組織制度強化（1）	東海林 正	（株）テクノ･ファイン
水質管理政策及び組織制度強化（2）	ラモン・アブラコサ	ローカルコンサルタント

２－２－２　調査日程

5月30日	月	（東海林団員）東京→マニラ JICA事務所 打合わせ
5月31日	火	午前：JICA専門家、JICA事務所打合わせ 午後：団内打合わせ
6月1日	水	DENR-EMB フォーカスグループディスカッション
6月2日	木	DENR-EMB 関係者 聞取り調査
6月3日	金	フォーカスグループディスカッション 結果取りまとめ
6月4日	土	資料整理
6月5日	日	資料整理
6月6日	月	地方事務所視察準備

6月7日	火	地方事務所視察準備
6月8日 ～ 6月10日	水 ～ 金	DENR-EMB地域事務所 所長協議（於 マニラ）
6月11日	土	資料整理
6月12日	日	資料整理
6月13日 ～ 6月20日	月 ～ 月	プロジェクトドキュメント取りまとめ
6月21日	火	DENR-EMB フォーカスグループディスカッション
6月22日 ～ 7月6日	月 ～ 水	DENR-EMB プロジェクトドキュメントに係る意見交換 プロジェクトドキュメント 修正作業 対ドナー プロジェクトドキュメント案 説明
7月7日	木	JICAフィリピン事務所、NEDA、在フィリピン日本大使館報告
7月8日	金	（東海林団員）マニラ→東京

２－３　主要面談者

（1）フィリピン関係者

環境天然資源省（DENR）

Mr. Michael T. Defensor	DENR 長官
Mr. Rafael E. Camat, Jr.	DENR 海外協力担当次官
Mr. Julian D. Amador	DENR-EMB 局長
Ms. Erlinda A. Gonzales	DENR-EMB 調整官
大田　正豁	DENR-EMB JICA専門家（局長アドバイザー）
Mr. Renato Cruz	OIC-Chief, EQD-EMB
Mr. Jun Rivera	EMB-WQMS 職員
Ms. Ely Malano	EMB-WQMS 職員
Ms. Leza Merze	EMB-WQMS 職員
Ms. Michi Navaluna	EMB-WQMS 職員
Mr. Nicanor E. Mendoza	EMB-WQMS 職員
Mr. Juan C. Rana	DENR-FASPO 局長
Mr. Robert Jara	DENR-FASPO 部長
Ms. Gloria Arce	DENR-FASPO 職員
Mr. Jesus A. Carino	DENR-FASPO 職員
Mr. Ceazar H. Natividad	DENR-LLDA 職員

その他

Mr. Florante G. Igutiben	NEDA 職員
Ms. Sheila Marie Encabo	NEDA 職員
Ms. Joanne P. Tolentino	NEDA 職員
小澤　與宏	国家灌漑公社（NIA）JICA専門家
Mr. Ramulo A. Ramirez	国家灌漑公社（NIA）計画局 職員

Mr. Lope R. Villenas	国家水資源委員会（NRWB）主任
Ms. Leonor C. Cleofas	マニラ首都圏上下水道公社（NWSS）プロジェクト管理課長
Mr. Joege C. Mateo	マニラ首都圏上下水道公社（NWSS）水質管理課長

JICAフィリピン事務所

吉田　勝美	JICAフィリピン事務所 次長
高田　裕彦	JICAフィリピン事務所 次長
加瀬　晴子	JICAフィリピン事務所 所員

第３章　プロジェクト実施の背景

３－１　要請の背景

JICAでは、フィリピンの抱える各種環境管理及び自然資源上の問題点の把握及び解決に向けた支援のニーズを確認し、政府関係機関と共有する目的で、2002年1月から3月にかけて「対フィリピン環境分野プログラム形成調査」を行った。この調査では、幅広い視点から環境セクターを取り上げ、技術的視点からの幅広いプログラム形成を中心的テーマとして実施された。この結果、「特に住民の生活環境に密接する幅広い水質管理分野を対象としたキャパシティ･ディベロップメントが重要である」との認識が示され、日比双方関係者間で共有された。

この調査を受け、2002年にはフィリピン政府は「EMB Capacity Development Project」なる技術協力プロジェクトを正式に日本政府に対して要請した。このプロジェクトは、環境天然資源省環境管理局（DERN-EMB）が扱う環境管理全般に関する能力強化を目的としたものであったが、要請書内容検討の過程で、協力対象分野が環境管理全般という幅広いものであるところ、効果発現の観点からサブセクターに関する絞り込みが必要であるとの認識に至り、右内容のコメントが日本政府からフィリピン政府に通報された。

こうした考え方を受け、2003年4月より、在フィリピン日本大使館の主導で、JICAフィリピン事務所、国際協力銀行（Japan Bank for International Cooperation：JBIC）マニラ事務所、JICA専門家、さらにはフィリピン政府関係者も含めた勉強会が数次にわたり実施され、対フィリピン環境分野での協力の方向性について議論が行われた。この結果、水質管理強化のための技プロ採択を念頭に置きつつ、さらに必要な事前準備・調査を行い、実施機関となるDENR-EMBの現行体制や能力強化に向けた意思などを確認する必要があるとの合意に至った。

こうした関係者の合意を受け、2003年6月から2004年3月ごろにかけて、JICAフィリピン事務所、DENR-EMB派遣中のJICA専門家（長期及び短期）、及びDENR-EMBでは、プロジェクトのフレームワークについて検討を開始し、ワークショップやDENR-EMBの幹部職員、担当スタッフからの聞取り調査などを通して、水質管理の現状や水質管理のためのDENR-EMBが果たすべき役割、水質管理のための各種基準、水質のモニタリングと分析、産業排水のモニタリング技術などフィリピンにおける水質管理上の問題を幅広い角度から分析し、議論が行われた。この結果を踏まえ、JICAとDENR-EMBによってプロジェクトのフレームワーク案が作成され、プロジェクトの方向性について合意が形成された。

また、2004年3月には、フィリピンにて水質浄化法が制定され、技術協力プロジェクトの準備と並行して、派遣中の長期専門家の活動の一環として、施行細則（Implementation Rule and Regulation：IRR）の制定支援が進められた。さらには、JICAフィリピン事務所は2004年2月～5月にかけて全国のDENR-EMB地域事務所の環境管理能力の実態を明らかにする目的でベースライン調査を実施した。

こうした前駆的調査や支援を通して、フィリピンの水質管理体制を強固なものにするには、DENR-EMB本部並びに地域事務所における政策立案及び実施面において、総合的能力強化を図ることの必要性が確認された。特に、2004年水質浄化法の発効に伴う新たなDENR-EMBに多くの責務が課されたことから、水質管理分野の総合的能力強化が早急の課題であることが確認された。

３－２　事前調査の実施

こうした検討を受け、2004年10月25日から2005年1月4日にかけて、第1次事前調査が実施された。この調査では、それまでの各種検討をレビューするとともに、フィリピンの水質汚染及び水質管理行政の現状、特に新たに制定された水質浄化法によってDENR-EMBが新たに抱えるマンデートの分析と能力強化の方向性について関係者間で検討が進められた。この結果、プロジェクトでは、水質浄化法及びその施行細則に規定される役割をDENR-EMBが実施するための能力強化をめざすことで、その方向性が合意された。

しかし、この時期は水質浄化法が発効してまだ数箇月であり、DNER-EMB内部においても多くの面において法律の規定内容についての共通した理解が固まっていない時期でもあった。また、その実施の詳細を定める施行細則（IRR）の準備作業が進捗していた時期であり（IRRの発効は2005年5月）、調査団は準備中のIRRを基にプロジェクトの設計を行ったものの、IRRが制定されたあとに、これとの整合性や活動の優先順位などについて改めて検討が必要との認識に至った。

これを受け、IRRの発効後の2005年5月30日から7月8日にかけて第2次事前調査を実施し、プロジェクトの戦略や活動に関する詳細な検討を行いプロジェクト･ドキュメントをまとめ上げるとともに、調査終了時にはミニッツを締結し、プロジェクト・ドキュメントの内容について合意した。

この結果をもって、2005年10月24日には、環境天然資源省長官とJICAフィリピン事務所長との間で討議議事録（R/D）が締結され、プロジェクトの実施が合意された。

第４章　フィリピン水質管理の現状と課題

４－１　水環境の現況

フィリピンにおいては、河川水、地下水及び沿岸水の水質汚染が広範囲に進行している。DENR-EMBの調査結果によれば、全国141河川のモニタリング地点の約64％で同国環境基準のA級水質で定めるBOD基準を超過している。また、世界銀行の報告によると生活用水として利用されている地下水の50％のモニタリング地点において大腸菌が基準を超え、最近5年間の水系疾病の割合は約30％にものぼっており、住民の生活に深刻な影響を与えている。 マニラ湾においては未処理で流入する生活排水や産業排水の影響で季節的な有害藻類の発生が恒常化している。さらに、都市圏においてはマニラ首都圏のパシグ川に代表されるように都市環境の著しい悪化を生じており、水産業や観光業に対しても大きな影響を与えている。低所得者地区の管理されていない腐敗槽（セプティックタンク）から発生する生活汚水は都市部における主要な汚染源であり、このように水質汚染は同国の抱える貧困問題とも関連している。

フィリピンの国民生活及び社会・経済的基盤を保全する観点から、水質汚染問題は早急な対策を必要としている。このような同国の水質汚染は、生活排水や産業排水などに対するインフラ施設が未整備であることが直接的な原因である。しかしながら、それ以上に水質モニタリングを通して水環境の状況を科学的に明らかにしたうえで水質の保全・改善に対する長期的計画を立案し、それを踏まえて生活排水や産業排水分野のインフラ整備を促進するために連携・協調を働きかけるべく水質管理行政が十分になされていないことが水質悪化を防止できない根本的原因と判断される。

４－２　水質浄化法及びその施行細則

水質浄化法とその施行細則（おのおの2004年5月及び2005年5月発効）は水質管理法としては、世界諸国の流れを汲んだもので、利害関係者が共有する流域単位ごとに水質を管理することを主題としている。また、将来的には、水質管理行政を地方自治体（LGU）に移行させるねらいもあるとみられる。内容的には、排水課徴金制度、地域管理委員会の主導による水質管理等々、各種の制度設置が盛り込まれており、これに伴って数々の管理活動においてDENR-EMBが主導することを求めている。

フィリピン水質浄化法は同国の悪化する水質への効果的・効率的な対策実施の方向を指し示したものである。これはわが国が1960年代に顕在化した一連の公害に対する対策を1970年代から1980年代初頭にかけて規制強化や総量規制の導入などの諸施策によって対応した経験と類似するものである。このように水質浄化法はその目的を主として水利用に伴う人の健康の保護や水環境の保全に置いている。1990年代以降、欧米主要国やわが国の水環境対策における基本方向となっている不特定汚染源（非点源汚染）への対策、あるいは、各種微量化学物質に対する生態系保全といった地球的規模における環境保全の視点から水質管理を展望するものではない。

従来、フィリピンにおいては全国の河川を水質等級別に分類し（水系分類）、それに対応する排水基準を適用して行う規制（いわゆるコマンド・アンド・コントロール）が行われてきたが、DENR-EMBの能力不足もありこの制度が十分機能せず効果が上がっていなかった。そこで、以前の規制制度を踏襲しつつも、水質保全・改善を図る目的で従来の水質管理政策を大きく転換する水質浄化法が制定された。水質浄化法及び施行細則に盛り込まれた主要な規定/制度は表-2のとお

りである。水質浄化法は全国的水質管理の目標と施策を設定する総合的水質管理フレームワークの策定、並びに、関係機関の連携・協調に基づく地域ベースの水質管理の推進を柱としている。表-1は水質浄化法に規定される各種項目の実施期限を表す。

表－１　水質浄化法規定の実施期限

実施項目	実施期限
・　国家水質管理基金年次報告書	会計年度末後2カ月
・　国家水質状況報告書の作成	水質浄化法発効後24カ月
・　総合的水質管理フレームワークの作成	国家水質状況報告書の完成後12カ月
・　10カ年水質管理地域アクションプランの作成	総合的水質管理フレームワーク完了後12カ月、必要な場合は管理委員会が5年ごとに見直し
・　国家地下水脆弱性マップの作成・公表	水質浄化法発効後24カ月
・　水質ガイドラインの実施、レビュー、改訂	水質浄化法発効後12カ月、必要な場合、5年ごとに関連他機関との協調によりDENR-EMBによって見直し
・　排水基準のレビュー及び設定	水質浄化法の発効直後及び5年ごと、当面、DAO35が適用される
・　汚染物質の採水及び分析に関する国際的に容認される手順の確立	水質浄化法発効後12カ月
・　点源及び非点源汚染源の分類	水質浄化法発効後18カ月、その後2年ごと
・　地下水源の分類	水質浄化法発効後12カ月
・　水域の水系分類及び再分類	IRR発効後5カ年、その後10年ごと

フィリピンは過去、水質の保全・改善にかかわる数々の諸法令を発布してきた歴史を有している。しかしながら、多くは同国の社会・経済やそれを実施する行政当局の能力やリソースに考慮されることなく法令が発布されたため、水質保全・改善の効果は上がらないばかりか、一部偏った規制措置や罰則適用などにより、一種の社会的不公平を生じる結果ともなっている。今回の水質浄化法をきっかけにして実効的な水質保全・改善への取り組みが開始されることが求められている。

水質浄化法が求める多くの制度は現在のDENR-EMBでは取り組まれていないものであること、また、協力プロジェクトが管理技術面の要素技術移転のみならず、政策・実施戦略立案をも含む総合的能力強化を指向するものであるために、取り組まれるべき活動は広範囲で、かつ、大規模なものとなる。また、水質浄化法においてはDENR-EMBが果たすべき責務の多くには期限が定められているが、現在のDENR-EMBの体制/能力からみると期限内の達成が難しいものが多く、また、そのタスクの内容もいまだ明確ではないものも含まれている。これらは、プロジェクトの実施過程において、現実的な期限の見直しや規定の具現化をしていかねばならない状況と考えられる。

表－２　水質浄化法の概要

水質浄化法に基づく中心的規定/制度	規定/制度の概要	備考
総合的水質管理フレームワークの策定（DENR-EMBが関連機関と連携・協調し策定）	・ 水質の保全・改善に関係するすべての政策・計画を包括するフィリピン総合的政策ガイドラインである。過去、関係省庁によって策定された政策もこの総合的水質管理フレームワークに吸収される。 ・ この主要な内容は、水質の達成すべき目標、達成期限、水質汚染防止の戦略・技術的対策、水質情報公開や環境教育並びに実施のための人材育成計画などである。	今までは、各機関が個別に所管分野の立場から政策・計画を作成していた。
水質管理地域の指定（各地域が準備し、それに基づいてDENR-EMBが指定）	・ 地域ベースの水質管理（地域水質管理）を行う目的で複数のLGUが含まれる一定の地理的範囲（一般には流域境界を基準にして）を水質管理地域として指定する。これによりその地域内の利害関係者（DENR-EMB、LGU、NGO、住民など）が中心となって連携・協調により水質管理を推進する。 ・ これを実行するために水質管理委員会、技術事務局､水質管理基金を設けるがEMBはこれらの中心機関としてこの地域における水質管理を主導する。 ・ 地域ごとに10年アクション・プランを策定し（総合的水質管理フレームワーク策定後1年）、また、LGUは生活排水処理についての遵守計画を作成･実行する義務がある。 ・ 水質管理基金の収入は罰金、排水課徴金などで、これらの資金は地域の水質改善活動等に支出される。	今まではなし
未達成地域の指定（DENR-EMBが指定）	・ 水質ガイドラインの基準値を超過し水質汚染が著しい地域を未達成地域として指定し､特に厳しい規制管理を行う。 ・ この地域においては主要な排水企業･機関は改善対策の提出が義務化され、また、新規の企業の施設増設は現在の負荷削減をしない限り許可されない。 ・ 地域ごとにより厳しい上乗せ排水基準を設定できる。	今まではなし
排水課徴金制度	・ 排出される汚濁負荷量（水量ｘ濃度）に応じて排水課徴金を徴収する市場経済手法と呼ばれる。 ・ 排水企業は課徴金を削減するためにより効果的な排水処理の努力することになり､この結果が水質改善へとつながる。	今までは排水基準を超えた場合に対する罰則適用による規制（コマンド・アンド・コントロール）であった。
排水許可制度	・ 基本的に企業が排水するためには許可が必要であるが、許可を発行する条件を厳しく設定する。 ・ 排水についての情報、基準遵守のスケジュール、自己水質モニタリング報告等の条件をクリアして許可される。	今までも制度はあったが、許可条件が厳しくなる。

水質浄化法に基づく中心的規定/制度	規定/制度の概要	備考
その他主要規定/制度	・ 国家/地域状況報告書の発行、水質ガイドライン（水質浄化法発行後1年）・排水基準の見直し、環境影響評価制度の改訂、各種インセンティブ制度の明示、関連機関（DPWH、LGU等）の水質管理にかかわるマンデートの明確化	

４－３　水質管理の体制

DENR-EMBは、DENRの環境政策のもと環境管理分野（水質・大気・廃棄物）の政策を展開している。1987年にフィリピンでは大統領令192号により行政機構の改革が行われ環境自然資源省（DENR）が誕生した。水質管理については、大統領令1152号と984号等に基づいて、環境水質モニタリング（指定水域の環境水質モニタリング、水域指定拡大のためのモニタリング）、汚染源管理（排水源の工場検査、遵守排水モニタリング及び事業所等の排水許可証の発行、苦情があった場合の立ち入り調査、環境影響報告に排水源が含まれる場合の施設整備の審査）、環境情報・教育などを行っている。

DENR-EMBは環境政策を策定し環境に関する規制の実施方策を策定したうえで水質管理を実施し、一般の人々を教育するマンデートをもっているが、それらの業務は主に政策立案を所管する本部と現場における政策実施を担当する全国16カ所の地域事務所によって行われている。水質管理に関係するDENR-EMBの人員は臨時スタッフを含めて総勢約90名（本部14名、地域事務所76名）である。

それまで単に政策立案として位置づけられていたDENR-EMBは、1999年大気浄化法の施行をきっかけとして政策の実施面にも責任を有する立場へと制度的変革がなされた。しかしながら、DENR-EMB本部においては水質管理の政策実施にかかわる経験を有しなかったこと、また、地域事務所においても職員の多くがDENRからの転入であったため水質管理実務の経験がなかったことから水質管理業務は遅々として進まない状況にある。表-3は水質浄化法を実施するにあたってのDENR-EMB本部と地域事務所がなすべき役割を示している。

以上の状況より、DENR-EMB本部並びに全国地域事務所（16カ所）の政策立案から現場での水質管理実務の全般にわたる管理体制を整え、水質浄化法のマンデートを実施する総合的能力の強化が求められている。

表－３　水質浄化法におけるDENR-EMB本部と地域事務所のマンデート

	本　部	地域事務所
＜政策・計画＞	・ 総合的水質管理フレームワークの策定 ・ 水質管理地域及び未達成地域指定ガイドラインの作成 ・ 水質管理地域アクション策定ガイドラインの作成 ・ 地域水質管理委員会、技術事務局、マルチセクター・グループ運営ガイドラインの作成 ・ 排水許可発行及び排水課徴金徴収ガイドラインの作成 ・ 地域事務所が実施する水域及び地下水源の分類プログラムの作成 ・ 地域水質ラボラトリー改善ガイドラインの作成 ・ 産業セクター分類の実施 ・ 地熱及び油・ガス開発に適用する特例水質基準の確立	・ 水質管理地域の指定、未達成地域の指定、水質管理地域アクションプラン、水域・地下水源の分類にかかわる地域事務所としての基本方針と優先度の設定 ・ 水域の分類または再分類にかかわるプログラムの設定 ・ 分類された水域の水質モニタリングプログラムの設定 ・ 産業・商業施設の法令遵守検査プログラムの設定
＜調査・科学的分析＞	・ 国家水質状況報告書の作成 ・ 国家地下水脆弱性マップの作成 ・ 水質ガイドラインのレビュー・改訂 ・ 排水基準のレビュー・改訂 ・ 水質ラボラトリーの公定試験方法及び認証制度の設立 ・ 点源・非点源汚染源の分類 ・ 地下水源の分類 ・ 排水負荷割当のための現況水質ガイドラインと汚染負荷量との相関性を求める手順・ガイドラインの作成	・ 地域水質状況報告書の作成 ・ 地域地下水脆弱性マップの作成 ・ マルチセクター・グループのプログラム作成 ・ 効果的地域水質管理のための地域水質データベースの整備 ・ 水域及び地下水源の分類 ・ 上記活動のための現場作業
＜実施（現場での実践活動）＞		・ 水質管理地域・未達成地域の計画 ・ 水質管理アクションプランの作成・実施 ・ 排水許可証の発行 ・ 排水課徴金の徴収 ・ 自己モニタリング報告書の受領・検証 ・ クリーン･アップ活動の実践（必要に応じて）

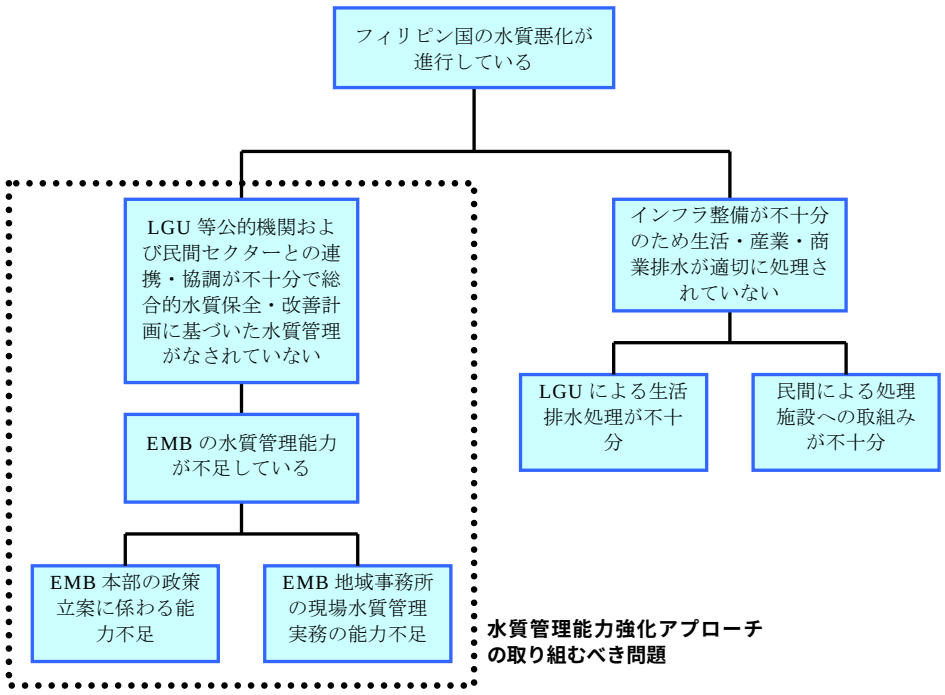
	本　部	地域事務所
		・　排水施設の法令遵守検査 ・　法令実施のための地域ラボラトリーの運営
＜調整＞	・　国家下水道及びし尿汚泥管理プログラムの作成 ・　生活排水収集・処理・処分ガイドラインの作成 ・　企業に対する奨励制度の設立 ・　教育省、沿岸警備局、農業省、公共事業・ハイウエー省、健康省、科学技術省、内務省、情報省との連携メカニズムの強化	・　他関連機関と共同した水質管理地域アクション･プランの実施 ・　他機関と連携したマルチセクター・グループによる水質調査・水質モニタリングプログラムの実施 ・　LGUとの連携・協調の強化
＜基金管理＞	・　国家水質管理基金の管理	・　地域水質管理基金の管理

第５章　プロジェクトの設計

５－１　問題分析

フィリピンの水質汚染とこれにかかわる関係機関について役割・影響についての分析がなされた。これより図-1に示すように現在の水質悪化の主原因は、排水（生活排水、産業・商業排水）に対するインフラ整備が不十分なこと、また、水質保全・改善計画に沿った水質管理がなされていないことと分析される。本プロジェクトにおける取り組みは、DENR-EMBを中心とした水質管理能力を強化するアプローチに沿って行うものである。この水質管理能力の強化アプローチには、インフラ整備を促進するために公共事業道路省（Department of Public Works and Highways：DPWH）、LGUあるいは民間企業協会などの関係機関に連携・協調メカニズムを通して働きかけを行うことが含まれる。

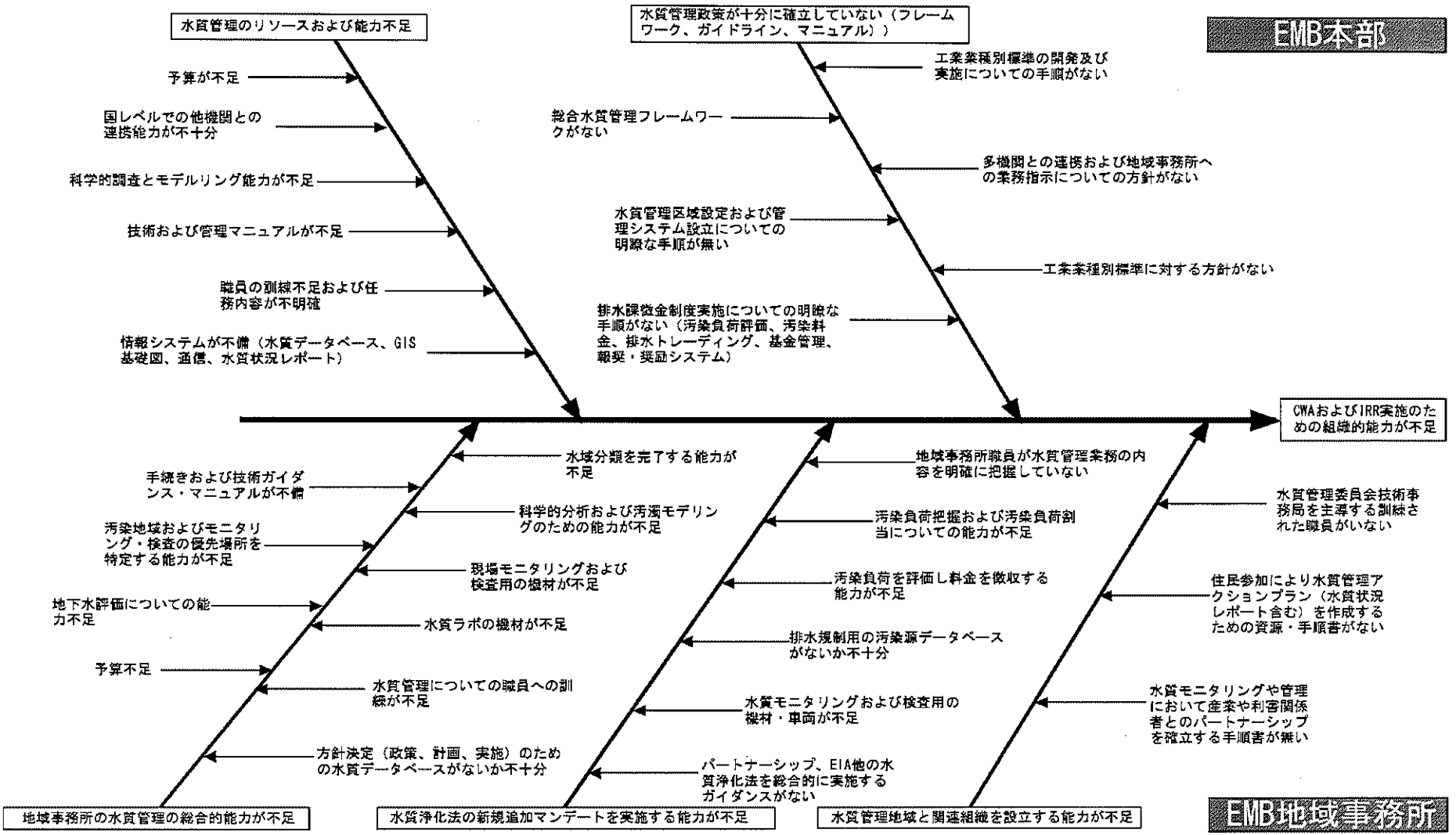
DENR-EMBはマニラ首都圏ケソン市の本部と全国16カ所に配置された地域事務所より成る。地域事務所の水質管理能力は地域によって大きな差異が認められ、また、抱える問題も多様である。こうした本部を含む全国地域事務所の管理能力の実態は、2004年JICAフィリピン事務所が実施したベースライン調査において明らかにされている。



図－１　水質悪化の問題分析系図

水質管理を主導するDENR-EMBについて各種視点から問題分析を行った。図-2はフォーカスグループ・ディスカッションにおいて実施した問題分析の結果を表している。水質管理にかかわる政策立案及び現場管理活動実施の両面において、DENR-EMBはリソース（職員数、財政、資機材）に不足しており、また、限られた現有リソースも効果的に運用されていないことが明らかになった。結論としてDENR-EMB水質管理体制における弱点は次の4つに集約された。

- 実施計画、ガイドライン、マニュアルを含めて水質管理にかかわる総合的政策フレームワークがなく、また、これらを実施する協調メカニズムがない。
- 水質管理の現場活動を実践する地域事務所を主導しサポートする本部の能力が不足している。
- 水質浄化法がめざしている地域ベースの水質管理を実行する組織の設立・運営を実施する地域事務所の経験・能力が不足している。
- 排水許可や排水課徴金制度といった水質浄化法の下に与えられたマンデートを実施する地域事務所の水質管理にかかわる技術及び管理能力が不足している。



図－２　EMB 水質管理の問題分析図

５－２　プロジェクトの設計方針

本プロジェクトの特徴とするところは、多くのマンデートを規定する水質浄化法の実施を前提としていること、技術移転の対象が単なる要素技術ではなく政策立案をも含むこと、さらには、DENR-EMBがフィリピン全国16カ所に広く展開した組織構造であることである。このため技術移転に要するわが国投入が大型となる。

このような大型の技術協力プロジェクトであることを踏まえつつ、プロジェクトの設計は先方国及び日本側関係者との協議結果に基づき、次の基本方針に沿って行うこととした。

① DENR-EMBの基本戦略は水質浄化法及び施行細則に基づいた総合的水質管理を実施することである。ゆえに、本プロジェクトはこの戦略に沿って同法・規則の実施を通してこれの実施に必要とする総合的能力の強化を図ることとする。

② 当該プロジェクト準備のためにJICAが実施した各種調査報告書や世銀のレポート及びDENR-EMB職員、地域事務所長との協議によって水質管理におけるDENR-EMBの有する弱点が明らかにされた。その弱点をどのように克服するかを緊急性及び長期的な視点での重要性、財政的な限界を根拠に優先づけを行ったうえで、プロジェクトのフレームを設定する。

③ 全国的な水質管理体制を構築するにはDENR-EMBの自立発展的能力強化が不可欠であり、このためには本プロジェクトはDENR-EMBの強いオーナーシップを育成するものでなければならない。

④ DENR-EMBの地域事務所は水質浄化法及びその施行細則の現場でのエンフォースメントを担当する。しかしながら、そのエンフォースメントに際しては、DENR-EMB本部が主導的な役割を果たし、エンフォースメントに不可欠の技術マニュアルや手続き規則を作成し、16の地域事務所がそのマニュアルに添ってエンフォースするということが重要であるので、DENR-EMB本部及び地域事務所の双方を対象とする。

⑤ フィリピンでは、あらゆる政府機関が政策の作成等に際して幅広くコンサルタントを活用するという習慣があるため有能なコンサルタントが得られる条件にある。このようなことから現地において得られるコンサルタントを活用することがプロジェクトの効果的・効率的な実行にとって適切であることから、ローカルコンサルタントの活用を図ることとする。

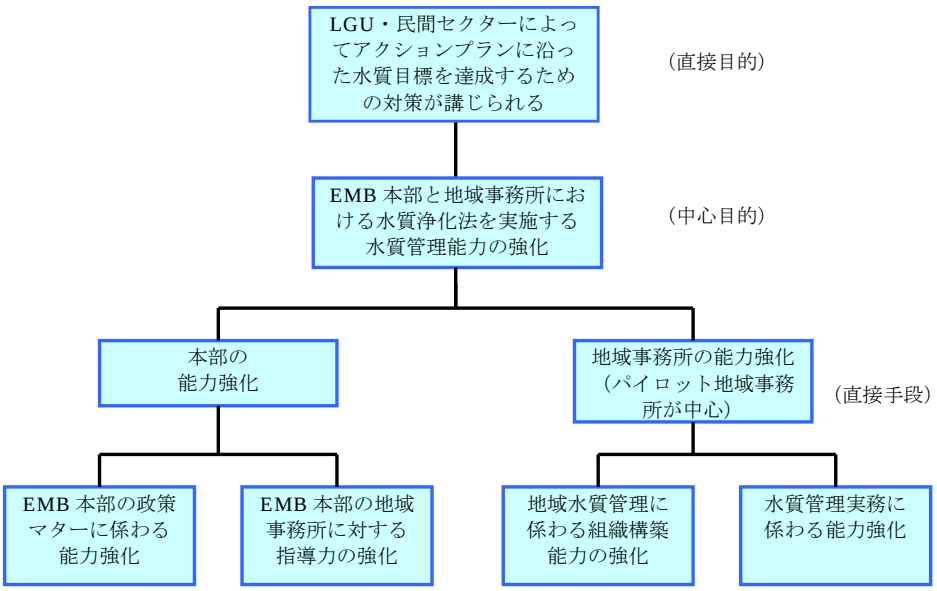
⑥ 日本側の投入量の制約から、地域事務所については全国16カ所から選定したパイロット地域として集中的な指導・訓練を実施することとするが、他のドナーと協力関係を構築し、ジョイントでプロジェクトを推進する体制づくりが重要である。本プロジェクトにおいて作成されたガイドライン/マニュアル等は、その実効性を高めるために地域事務所において実際に試行し、その結果をフィードバックして改訂することを原則とした。

⑦ 本プロジェクトにおいて作成されたガイドライン/マニュアル等、並びに地域での使用を目的に構築された水質モデル、データベースシステムなどは、その実効性を高めるために地域事務所において実際に試行し、その結果をフィードバックして改訂することを原則とした。

⑧ DENR-EMBの水質ラボラトリーにおいては水質測定用機材が十分には整備されていない状況にあるが、本プロジェクトが総合的な能力強化を目的とするものであることを考慮して、供与する機材はプロジェクト実施に必要な最低限度とする。

５－３　目的分析

先方とのフォーカスグループ･ディスカッションにおける問題分析のなかで、同国水環境を保全・改善するには、インフラ整備を促進し生活排水や産業・商業排水などの処理を行う必要があり、また、そのためには、DENR-EMBの水質管理能力の強化、並びに、LGU、民間セクターなどインフラ整備機関との連携・協調メカニズムの構築・強化が必要であることが確認された。これに基づいて、「DENR-EMB本部と地域事務所において水質浄化法を実施する水質管理能力を強化する」を中心目的とする本プロジェクトの目的分析系図が形成された（図-3)。



図－３　目的分析系図

５－４　目標

DENR-EMBは水質浄化法及び施行細則の実施を基本戦略としている。しかし、水質浄化法は多くのマンデートをDENR-EMBに与えるものであるが、現在のDENR-EMBの水質管理能力はこれらのマンデートを実施するには不十分であり、職員個人、組織及び水質管理を取り巻く社会・制度の各レベルにおいて格段の対処能力向上が求められている。DENR-EMBが全国16カ所の地域事務所より成り、また、それらの現在能力が地域によって大幅に差があること、さらには、日本側投入量の限界を考慮して、次のように段階的に水質管理能力の強化を図ることとする。

＜プロジェクト実施段階＞

政策立案を担当し全国DENR-EMBを主導する中核的機関である本部の能力強化を図りつつ、プロジェクトで得られた成果を全国へ普及し、同時に、選定した3カ所のパイロット地域事務所に対し集中・総合的訓練による能力強化を図る。

＜プロジェクト完了後＞

DENR-EMBの自立発展的取り組みによる全国地域事務所の能力強化を図り、また、本プロジェクトの成果を基づいて行う他ドナーの支援によるパイロット地域事務所以外の地域における

能力強化によってパイロット地域での成果を全国へ普及する。

(1) プロジェクト目標

本プロジェクト完了時（開始後5年）に到達すべきプロジェクト目標を次のように設定した。

水質浄化法及び施行細則施行上の優先的な活動を行うためのEMB本部及びEMB地域事務所の水質管理能力が強化される。

選択した3カ所のパイロット地域事務所に対しては、特に集中的な指導・訓練を行う。パイロット地域事務所はルソン、ビサヤ、ミンダナオ地域から選定するが、それらがフィリピンの水質管理能力にあたって他地域事務所の学習場所として機能することが必要であるため次の基準を用いて後日、選定する。

- 地域的にはルソン、ビサヤ、ミンダナオの各地域から選定する。
- フィリピンを代表する水質管理が必要とされる地域（高度に都市化した地域、エコツーリズムと水産業保全のための水質管理を必要とする地域、たとえば鉱山のような深刻な産業汚染の管理が必要とされる地域）。
- 能力強化のための指導・訓練が可能な適正数の職員が配置されていること。

一方、パイロット地域事務所以外の地域事務所に対しては、策定したガイドライン等をワークショップ開催などにより技術の普及を図ることとする。

プロジェクト目標の達成状況は、水質管理の活動実態並びにプロジェクト実施によるDENR-EMBの職員個人、組織及び社会・制度レベルにおける主要な能力要素の改善効果の観点から次の指標を用いて評価することとした。

- DENR-EMB本部及び地域事務所職員の技術習熟度、機材と情報システムの整備などの組織的能力、関連機関及び利害関係者との連携状況など
- パイロット地域事務所の他地域に対する学習地域としての効果

(2) 上位目標

産業・商業事業者及び自治体その他公的機関により、地域におけるアクションプラン（注）で定められた水質目標を達成するために必要な対策が講じられる。

（注）：関係者により構成される水質管理委員会が策定する地域ごとの水質目標を達成するために必要な10カ年計画。水質浄化法において委員会の設立とアクションプランの作成が規定されている。

この上位目標は、外部条件として挙げている「フィリピン政府が水質浄化法の実施に対する政策を維持する」限りにおいて継続されるはずである。

なお、水質管理の究極的目標である水質の保全・改善の効果は、本プロジェクトの上位目標が達成されたあと、DENR-EMBによる総合フレームワークに基づいた協調ベースの働きかけによって、生活排水や産業・商業排水等に対するインフラ施設の整備とともに発現する究極的目標と考えられる。

５－５　成果

（1）成果

目的分析に基づいて、プロジェクト目標を発現するための条件を整理し、次のように4つの成果を上げることとした。

成果1 水質浄化法に基づいた総合的水質管理政策と施行ガイドラインが整備され､EMB職員に周知される。

成果1はDENR-EMB本部の主に政策立案面における能力向上を図るものである。

成果2 EMB本部の地域事務所を主導し指導する水質管理能力が強化される。

成果2は本部の主に全国地域事務所の水質管理を主導し、また、全国的な水質管理活動を行う能力向上を図るものある。

成果3 水質管理地域を指定し、水質管理委員会等を設立・運営するためのＥＭＢ地域事務所の能力が強化される。

成果3は主にパイロット地域事務所の地域ベースの水質管理を実施するための水質管理地域指定に関する組織の設立・運営能力の向上を図るものである。

成果4 EMB地域事務所の総合的な水質管理能力が強化される。

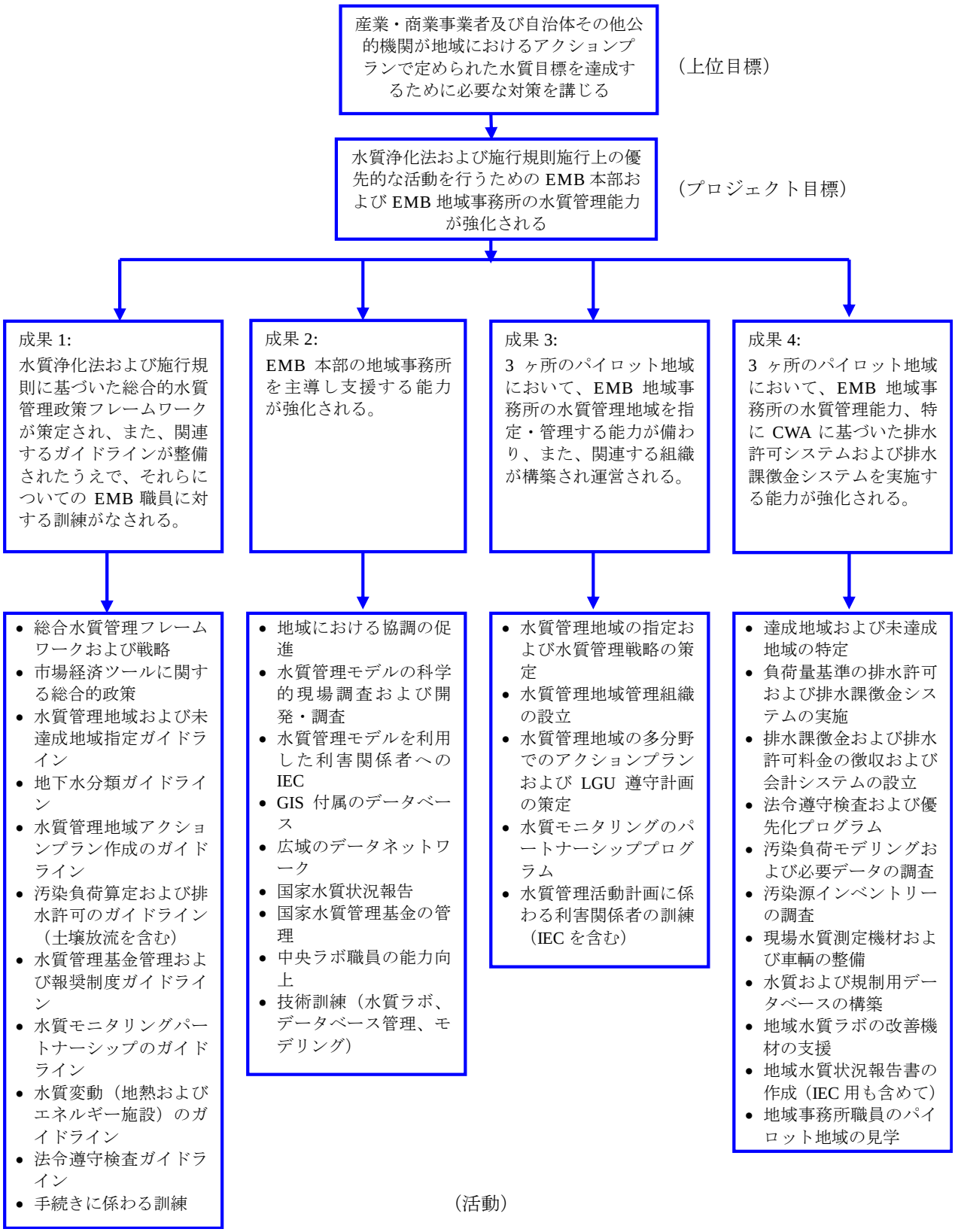
成果4は主にパイロット事務所の水質管理における現場における活動実務の能力向上を図るものである。

成果に基づいてプロジェクト目標が発現されるための主要な外部条件として、「水質浄化法の実施に際し、DENR-EMBと連携・協調する関連機関の取り組み姿勢」を挙げている。具体的には中央レベルにおいては政策調整を行うDPWH、保健省（Department of Health：DOH）、内務自治省（Department of Interior and Local Government：DILG）などが、自らの予算でDENR-EMBと必要な連携・協調を行うことである。また、地域レベルにおいては地域ベースの水質管理の推進をDENR-EMBと連携して行う立場になるLGUの行動であり、DENR-EMBとLGUとの緊密な連携メカニズムの構築が求められている。

各成果の達成状況は、おのおのの成果に対応する代表的な活動の達成・進捗状態によって評価されることとした。

５－６　活動

4つの成果に対して図-4に示すように合計39の活動が挙げられている。これら活動の要約を次に示した。これらの活動は水質浄化法においてDENR-EMBが求められている水質管理マンデートを実施するためのものである。



図－４　プロジェクトの活動

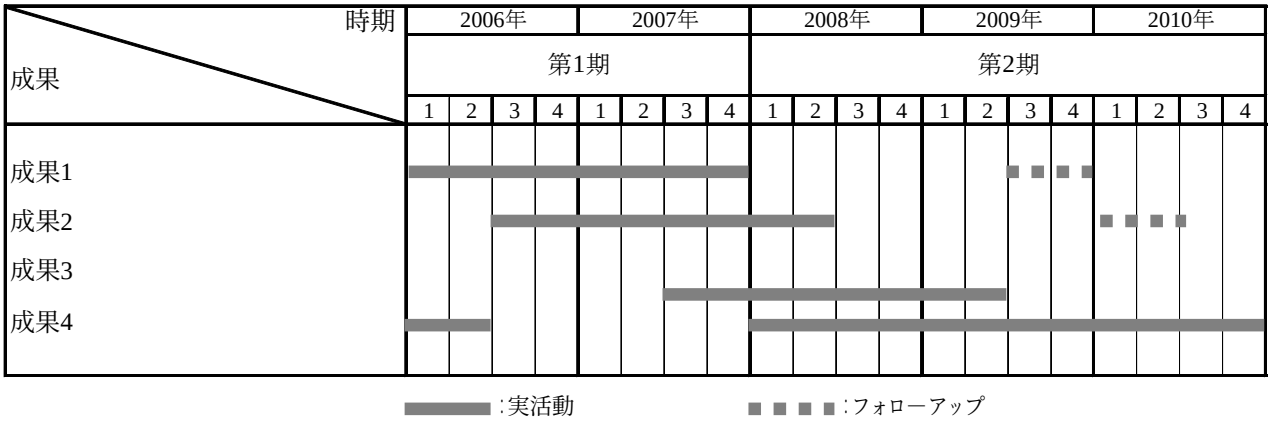
DENR-EMB本部を対象とする成果1及び成果2における主要活動には地域事務所における現場での水質管理実施に関するガイドラインや水質モデル、データベースといった管理ツールが含まれている。このような活動については成果1及び成果2において策定・開発された成果品を成果3及び成果4に対応する活動においてパイロット地域事務所での試行を行い、その結果を成果1及び成果2の活動においてレビューし、必要な改訂を行うように配慮している。

日本側は上記の成果1及び成果2（本部対象）については、フィリピン側と共同して各活動を実施するなかで、助言・指導を行う。ガイドライン及びフレームワークなどの策定について日本側は長期/短期専門家の管理の下に、雇用する現地コンサルタントを利用してそれらのドラフトを起案しフィリピン側と協議するなかで、これらの成果達成をめざすものである

また、成果3及び成果4（地域事務所対象）については、フィリピン側が各活動を実施し、日本側は雇用する現地コンサルタントを利用して指導・訓練を行うことによってこれら成果の達成をめざすものである。

５－７　活動計画

プロジェクトの全体期間は、要素活動が多様で量的にも大きいこと、また、地域事務所での指導・訓練の前に本部において必要とする活動があることなどを考慮して5年としている。全体工程はおおむね第1期（2006年から2007年）及び第2期（2008年から2010年）に分けられる（図-5）



図－５　プロジェクト実施工程

基本的には、第1期はDENR-EMB本部を対象とする成果1及び成果2に対する活動を、また、第2期は地域事務所を対象とした成果3及び成果4に対する活動を中心的に行う。しかしながら水質浄化法による各規定の実施期限、並びに地域事務所における試行結果のフィードバックを考慮し、入りこんだ工程となっている。

各期において取り組まれる主要な活動を以下に記す。

	第1期（2006年から2007年）活動	第2期（2008年から2010年）活動
成果1の活動（本部）	・政策立案における多機関との協調システムの構築 ・総合水質管理政策フレームワークの立案 ・総合フレームワークを実施するためのガイドライン/マニュアルの開発 ・政策フレームワーク及び手順を実施に関する地域事務所職員の教育・訓練	・総合政策に関する多機関による連携・協調の実行 ・政策レビュー及び精査 ・ガイドライン/マニュアルのレビュー及び改訂 ・ガイドライン実施に関する地域事務所職員に対する訓練の継続
成果2の活動（本部）	・ガイドラインの開発に関するEMB地域事務所との協調 ・水質モデリングのような科学的ツール並びにデータベース、ネットワークのような情報システムの開発 ・水質管理基金の管理システムの開発 ・データ収集を含む水質状況報告作成システムの構築 ・情報公開・教育メカニズムの構築 ・水質ラボ手順の合理化及び地域職員の訓練	・地域おけるガイドラインの試行に関する協調並びにガイドラインの精査 ・水質モデル、データベース、報告システムのような管理ツールの精査及び改良 ・情報公開・教育施策の改善
成果3の活動（地域事務所）	・初回の水質管理地域の指定 ・地域管理組織を設立するステークホルダー間の協調の構築 ・地域管理員会をサポートする技術事務局員の訓練	・水質管理地域の追加指定 ・地域の水質管理計画とそれに基づく管理実施に関するステークホルダーの教育・訓練 ・地域管理委員会及びステークホルダーなど多機関による計画立案 ・LGUによるアクションプラン立案 ・地域水質改善計画の実施 ・水質モニタリングに関する協調プログラムの構築
成果4の活動（地域事務所）	・水質データ調査/まとめ ・水質状況報告書の作成 ・採水及び水質測定機材の整備及び訓練	・水系分類 ・未達成地域の特定 ・汚染源インベントリーの作成及び分類 ・排水許可制度及び排水課徴金制度の開始 ・水質管理基金の会計及び報告 ・排水法令遵守検査 ・未達成地域を管理するための水質モデルの運用 ・データベースの構築

５－８　投入

プロジェクトの全体期間は、要素活動が多様で量的にも大きいこと、また、地域事務所での指導・訓練の前に本部において必要とする活動があることなどを考慮して5年としている。全体工程はおおむね第1期（2006年から2007年）及び第2期（2008年から2010年）に分けられる。

なお、投入に関する留意点は以下のとおりである。

５－８－１　日本側投入

(1) 専門家

日本側専門家は、水質管理政策、水質管理技術、業務調整の3名の常駐ベースの専門家の派遣が想定される。このうち、水質管理政策専門家は、チームの総括も兼任し、各種制度及びガイドラインの策定・執行に関する助言や、DENR幹部らに対してプロジェクトにて策定した政策フレームワークや各種ガイドラインを施行すべく政策助言を行うことが期待されている。水質管理技術専門家については、各種制度及びガイドラインの策定に際する技術的観点からの指導・監督、DENR-EMB本部及び地域事務所職員に対し、水系分類、汚染源分類、排水基準、水質モニタリング等の水質管理技術に関する指導・助言などが期待される。

これに加えて、水質モニタリング、汚染源管理、データベース構築、水質モデルといった分野の短期ベースの専門家を投入して、特定分野での活動を進める。

(2) ローカルコンサルタントの活用

フィリピンは環境行政における長い歴史をもっており、その主たる取り組みに民間コンサルタントが深くかかわってきた。このために環境分野において経験を豊富に有するローカルコンサルタントが多数存在する状況にある。そこで本プロジェクトにおいては、プロジェクト費用の低減の観点から、積極的にローカルコンサルタントを活用する。

しかし、このようなローカルコンサルタントの活用により実施するプロジェクトにおいても、本プロジェクトがわが国の保有する水質管理分野の知見の技術移転を基本とするものであることに留意する。すなわち、日本人専門家がローカルコンサルタントの管理を十分に行い、必要な指示・助言を適切に行う体制で臨むこととする。また、ガイドラインの起案等に際して、日本人専門家とローカルコンサルタントだけで実施されてしまい、カウンターパートたるDENR-EMB職員の巻き込みが低下してしまえば、フィリピンの水質管理行政に係るキャパシティ･ディベロップメントという目標は達成し得ない。このため、本プロジェクトに対するDENR-EMBのオーナーシップを高め、自立発展性を確保する観点から、極力、DENR-EMB本部職員が深くかかわるように工夫・働きかけをして技術移転を図り、また、このために必要な職員数を配置するようにDENR側に働きかけることが重要である。

ローカルコンサルタントの活動内容については、本調査にて大まかの検討がなされているものの、プロジェクト活動後に改めてDENR-EMBと協議を行い、TORを明確かつ詳細に検討したうえで雇用することとする。

(3) 機材供与

フィリピン側との協議に基づいて、日本側は水質管理能力強化に必要とする機材は水質測定機材、並びに情報管理システム機材などを供与することとする。

本プロジェクトが水質管理にかかわる政策立案や現場における政策実施を含めた総合的能力の強化を目標としているものであり、水質測定・分析や情報管理は本プロジェクトの要素活動の一部に位置づけられてはいるが、本プロジェクトの中心的要素ではない。これ

より、日本側より供与する機材の種類、及びそれらの数量は本プロジェクトにおいて行う総合的能力の強化プログラムの実行に必要な最低限度にとどめることとした。

本プロジェクトにおける地域事務所に対する支援・指導は全国から3カ所のパイロット地域を選定して実施される。このパイロット地域の選定は、まだ検討中であるが、現在のところ第3事務所、第6事務所、及び第12事務所が有力である。ここでは暫定的に、これらのパイロット地域が必要とする水質測定機材並びに情報管理機材を供与することとした。また、DENR-EMB本部が実施するラボでの検査機能の向上や水質モニタリング活動の改善に向けても、最低限度にとどめつつ機材提供を行う。

なお、供与される機材の内容等については、プロジェクト開始後に改めて詳細に調査を行い決定する。

５－８－２　フィリピン側投入

(1) カウンターパートの配置

DENR-EMB本部並びにDENR-EMB地域事務所の職員がカウンターパートとして配置される。本部では、環境天然資源省環境管理局環境質部（EMB-Environmental Quality Division：EMB-EQD）の課長をプロジェクト・マネジャーとして活動の指揮をとり、DENR-EMB局長がプロジェクト・ディレクターとしてこれを統括する。地域事務所においては、地域事務所長のイニシアティブの下で、水質管理に従事する職員が主体的にプロジェクト活動に参画する。

なお、合同調整委員会のフィリピン側議長及び主要メンバー、並びに主としてプロジェクトに従事するDENR-EMB職員については、2005年10月24日付のDENR Special Order 851号にて任命されている。

なお、DENR-EMB地域事務所では、本部と同様、または、それ以上に人員が不足しており、また、多くの職員が水質管理を専門とはしていない。本プロジェクトの自立発展性を確保する観点から、適切な学歴・職歴を有する必要な職員数を配置するようにDENRに働きかけていくことも重要である。

第６章　プロジェクト実施の妥当性

６－１　妥当性

下記のように本プロジェクトを実施する妥当性は高いと判断される。

（1）相手国のニーズ

水質浄化法は地方自治体（LGU）や住民、民間セクターの自主的努力を促しつつ水質の改善を図ることを最重要戦略としている。政府主導による環境インフラ整備の実施が財政的な事情によって困難な現状においては、水質を改善しようとする川沿いの利害関係者間での調整や、排出量に応じた排水課徴金などの市場メカニズムを活用した水質管理手法が有効である。しかしながらDENR-EMBは従来経験したことがない業務であるため、政策・制度の作成から現場における施行業務まで包括的な組織の構築支援が必要となっている。また、こうした水環境の保全・改善のための取り組みは、地域の住民、地方行政機関、民間セクター、大学関係者などのさまざまな関係者の参画の下に実施されるものであり、直接的、あるいは、間接的に水質の改善を必要とする一般国民、企業・団体などを巻き込んだ水質管理の促進が可能である。

（2）相手国の環境政策との整合性

本プロジェクトは、フィリピンの水質管理政策の根幹である水質浄化法を効率的に施行することを目的としており、フィリピンの環境政策に直結している。また、昨年（2004年）11月に公表された中期国家開発計画（2004-2010）のなかでもより健康的な環境の創造が5項目挙げられている環境自然資源分野の重要項目のひとつに含まれている。

（3）わが国関連技術の優位性

わが国は1970年代の公害対策とそれらに対する水質保全政策についてさまざまな経験をもっていることから、水質管理の実務にかかわる各種の知見やノウハウを蓄積しており技術的優位性は高い。また、本プロジェクトにおける能力強化の対象の一部である管理技術面については、JICAは過去、タイ、中国、インドネシア、メキシコ、チリ、エジプトにおいて環境センタープロジェクトを実施してきているので、これらのプロジェクトで得られた知見・教訓（モニタリング体制の構築方法等）を本プロジェクトに活用できる。一方、フィリピンにおいてはJICAは水質浄化法の施行細則の作成を支援し、政策的側面からの支援についての経験を得ている。

６－２　有効性

以下の理由より、本プロジェクトは高い有効性を有していると判断される。

DENR-EMBは本部と全国16カ所の地域事務所より成り、本部は政策立案を、地域事務所は政策施行を担当している。水質浄化法を施行するうえでは、政策立案・実施が一体的に実施されることが必要であるが、本プロジェクトはDENR-EMB本部及び地域事務所の双方を対象とした包括的な能力強化を対象としていることから、より効果的に水質浄化法を施行する体制づくりを行うことが可能である。

具体的アプローチとしては、水質浄化法にて定められた活動のうち特に優先的な取り組みを必要とする活動の実施を行うことを通じて、DENR-EMB本部と地域事務所の能力強化を行うが、プロジェクト目標、成果、並びに優先的な活動などはEMB本部や地域事務所職員との参加型協議を通して選定されたものであり、カウンターパートの意向を十分に反映している。

また、本プロジェクトは水質浄化法の施行のための能力強化をめざしていることからプロジェクト目標の内容は明確であり、また、各成果についても同法に基づき本部と地域事務所で具体的に取り組むべき活動を記載していることから、成果と目標のつながりも明確である。よって成果を達成することでプロジェクト目標が達成されることが期待される。

６－３　効率性

以下の理由により、効率性が高いと判断される。

本件はフィリピンの水質管理政策立案・実施にかかわるキャパシティ・ディベロップメントを目的としたプロジェクトであり、カウンターパート個人の技術・経験の向上だけではなく、組織内での制度・体制整備や他の機関との調整能力などの向上も意図している。よって、水質浄化法の施行に先立ち必要となる各種ガイドラインやマニュアル、情報データベースや水質モデルなどの多数のアウトプットの作成が計画されている。これらのアウトプットを得るためには通常多くの時間と投入が必要となるが、本プロジェクトでは現地コンサルタントを日本人専門家の監督の下に有効に活用することで、費用対効果の高い協力を実施することを計画している。なお、フィリピンの政府機関においては政策を策定する際には、民間コンサルタントを活用することが一般的に行われているため、民間セクターに政策策定のノウハウを有する人材が多く存在している。

また、日本人専門家についても民間の人材の積極的な活用が期待される。JICAの開発調査等において、環境管理計画の作成、河川・湖沼の水質管理に従事した経験の豊富な人材が存在することから、プロジェクトの実施については、このような開発途上国の水質管理の技術と開発途上国における技術協力の経験を有する民間のコンサルタントを活用して実施することで高い効率性が確保されると見込まれる。

なお、水質浄化法の施行と水質管理能力強化については他ドナーも関心を有しており（USAID等)、これらのドナーとの連携を図りつつ事業を進めていくことで、より効率的なプロジェクトの実施が可能である。

６－４　インパクト

下記のように本プロジェクトは種々の分野に波及効果を与えるものと判断される。

(1) 関係者による水質管理地域アクションプランの策定と実施

本プロジェクトの上位目標は地域の河川利用関係者によりアクションプランで定められた水質目標の達成のために必要な対策が講じられることであるが、以下のとおり達成が見込まれる。

水質浄化法では、特に水質改善の必要性が高い地域を水質管理地域に指定し、地方行政機関、住民、企業、大学など、地域の河川利用にかかわる利害関係者から構成される水質管理委員会を組織することが求められている。DENR-EMB地域事務所の役割は水質管理委員会の技術事務局として委員会を円滑に運営するとともに、関連機関を調整しつつアクションプラ

ンの作成と遂行を促進していくものである。本プロジェクトは、水質管理地域の指定や委員会の設立のためのガイドラインづくりや、パイロット地域事務所における委員会の設立・運営推進のための能力強化が成果のひとつとして盛り込まれており、また併せて市民の環境意識を高めるための情報キャンペーンや地域内での水質モニタリングの連携体制の構築などの、地域関係者へ働きかける活動が含まれることから、地元に根ざした水質対策が実施されることが期待される。

(2) 水質保全・改善への効果

本プロジェクトは環境管理政策の適切な立案・施行を行うための行政能力の基盤を築くことを目標としている。また、地域における水質改善アクションプランの策定が本プロジェクトの重要要素となっており、生活排水、産業排水など広範な汚染源への対策を含む同プランの実施を通じて対象水域における水質の改善に効果を発現することが期待される。アクションプランは10年計画であり、現時点では巨額のインフラ整備のための財源が限られていることから直接的な水質の改善にはそれなりの期間を要すると想定されるが、本プロジェクトで環境行政能力の基盤を築くことにより、これらのプランの実施をたゆまずに促進し、また将来的な状況の変化に適切に対応することが可能となる。

６－５　自立発展性

水質浄化法はフィリピンの議会が立法化し政府に対して実行を求めるものであり、プロジェクト終了後も引き続き継続的に施行していくことがDENR-EMB及び関係機関にとっての責務となっていることから、プロジェクトの活動に対する政策面での自立発展性は高いといえる。プロジェクトの終了後にDENR-EMBが独自に活動を継続していくうえでは、DENR-EMBが適切な人員配置と予算措置をあらかじめ講ずることが必要であり、プロジェクトの準備・実施段階において終了後を見据えた体制確保を働きかけることが重要である。また、本プロジェクトは他機関との調整を要する活動も多く、DENR-EMBも含めた関連機関のキャパシティに合わせた無理のない協力を実施していくことが肝要である。本プロジェクトはDENR-EMBを中心とした制度づくりを中心に行う前半2年間の協力と、DENR-EMB地域事務所を中心とした現場での施行を行う後半3年の協力から構成されていることから、各協力ごとの進捗状況と相手側の体制を適切に把握したうえで、柔軟なプロジェクト管理を実施していくことが必要であり、これらの活動上の配慮を行うことでプロジェクトの自立発展性を確保することが可能である。

６－６　結論

本プロジェクトは相手国の環境政策に合致しており、また、数次にわたる参加型協議を踏まえた結果、相手国側のニーズを十分反映した内容となっている。またローカルリソースの活用によりプロジェクト全体を効率的に実施する計画となっている。また、プロジェクトによる波及効果も大きく、自立発展性にも配慮されている。

以上より、本プロジェクトの実施は妥当であると判断される。プロジェクトの準備・実施過程においてフィリピン側の受入体制（適正数の職員配置等）が十分に整備されれば、より高いインパクトと自立発展性とが期待できる。

６－７　貧困・ジェンダー・環境への配慮

これらの観点についてのネガティブな影響は、現時点では想定されていない。

付　属　資　料

１．討議議事録（R/D）

２．ミニッツ

３．プロジェクト・ドキュメント

RECORD OF DISCUSSIONS
BETWEEN THE JAPAN INTERNATIONAL COOPERATION AGENCY AND AUTHORITIES CONCERNED OF THE GOVERNMENT OF THE REPUBLIC OF THE PHILIPPINES ON JAPANESE TECHNICAL COOPERATION FOR THE CAPACITY DEVELOPMENT PROJECT ON WATER QUALITY MANAGEMENT

Following the Minutes of Meeting on Japanese Technical Cooperation for the Capacity Development Project on Water Quality Management signed on July 11, 2005, the Japan International Cooperation Agency (hereinafter referred to as "JICA") had a series of discussions through the Resident Representative of JICA Philippine Office on the project implementation with the Government of the Republic of the Philippines.

As a result of the discussions, JICA and the Philippine authorities concerned agreed on the matters referred to in the document attached hereto.

Quezon City, October 24, 2005

SHOZO MATSUURA
Resident Representative,
Japan International Cooperation Agency,
Philippine Office

MICHAEL T. DEFENSOR
Secretary
Department of Environment and
Natural Resources

THE ATTACHED DOCUMENT

I. COOPERATION BETWEEN JICA AND THE GOVERNMENT OF THE REPUBLIC OF THE PHILIPPINES

1. The Government of the Republic of the Philippines will implement the Capacity Development Project on Water Quality Management (hereinafter referred to as "the Project") in cooperation with JICA.

2. The Project will be implemented in accordance with the Project Design, which is given in Annex I.

II. MEASURES TO BE TAKEN BY JICA

In accordance with the laws and regulations in force in Japan, JICA will take, at its own expense, the following measures according to the normal procedures under the Colombo Plan Technical Cooperation Scheme.

1. DISPATCH OF JAPANESE EXPERTS
   JICA will provide the services of Japanese Experts as listed in Annex II.

2. PROVISION OF EQUIPMENT
   JICA will provide equipment and other materials (hereinafter referred to as "the Equipment"), necessary for the project implementation as listed in ANNEX III. The Equipment will become the property of the Government of the Republic of the Philippines upon being delivered C.I.F. (cost, insurance and freight) to the Philippine authorities concerned at the ports and/or airports of disembarkation.

3. TRAINING OF THE PHILIPPINE PERSONNEL
   JICA will carry out technical training in Japan and/or in the Republic of the Philippines for the Philippine personnel connected with the project.

4. OTHERS
   JICA will take special measures with the purpose of supplementing a portion of local cost expenditures necessary for the execution of training program. In addition to Japanese experts, JICA will provide the local consultants or firms who are engaged in the project activities.

III. MEASURES TO BE TAKEN BY THE GOVERNMENT OF THE REPUBLIC OF THE PHILIPPINES

1. The Government of the Republic of the Philippines will take necessary measures to ensure that the self-reliant operation of the Project will be sustained during and after the period of Japanese technical cooperation, through full and active involvement in the Project by all related authorities, beneficiary groups and institutions.

2. The Government of the Republic of the Philippines will ensure that the technologies and knowledge acquired by the Philippine nationals as a result of Japanese technical cooperation will contribute to the economic and social development of the Philippines.

3. The Government of the Republic of the Philippines will grant in the Philippine privileges, exemptions and benefits to the Japanese experts referred to in II-1 above and their families, which are no less favorable than those accorded to experts of third countries working in the Philippines under the Colombo Plan Technical Cooperation Scheme.

4. The Government of the Republic of the Philippines will ensure that the Equipment referred to in II-2 above will be utilized effectively for the implementation of the Project in consultation with the Japanese experts referred to in Annex II.

5. In accordance with the laws and regulations in force in the Philippines, the Government of the Republic of the Philippines will take necessary measures to provide at its own expense :

   (1) Services of the Philippine counterpart personnel and administrative personnel as listed in Annex IV;

   (2) Land, buildings and facilities as listed in Annex V;

   (3) Supply or replacement of machinery, equipment, instruments, vehicles, tools, spare parts and any other materials necessary for the implementation of the Project other than the Equipment provided by JICA under II-2 above;

   (4) Assistance to find suitably furnished accommodation for the Japanese

experts and their families.

6. In accordance with the laws and regulations in force in the Philippines, the Government of the Republic of the Philippines will take necessary measures to meet:

   (1) Expenses necessary for transportation within the Philippines of the Equipment referred to in II-2 above as well as for the installation, operation and maintenance thereof;

   (2) Customs duties, internal taxes and any other charges, imposed in the Philippines on the Equipment referred to in II-2 above; and

   (3) Running expenses necessary for the implementation of the Project.

IV. ADMINISTRATION OF THE PROJECT

1. The Director, Environmental Management Bureau (EMB) of the Department of Environment and Natural Resource (DENR), as the Project Director will bear overall responsibility for the administration and implementation of the Project.

2. The Chief of the Environmental Quality Division (EQD) will act as Project Manager. He will be responsible for the managerial and coordination matters of the Project. The Chief of the Water Quality Management Section (WQMS) will act as Assistant Project Manager.

3. The Other DENR/EMB Counterparts of the Project, as the Project Staff, will be responsible for the technical matters of the Project as defined in the Special Order to be issued by DENR.

4. The Regional Directors of the pilot DENR/EMB Regional Offices will actively participate in the implementation of project activities. An Operations Steering Group composed of concerned Regional Directors will be formed to provide operational directions in the implementation of the project at the regional level.

5. The Japanese experts and Local Consultant(s) employed by JICA will provide necessary recommendations and advice to the Project Director, the Project

Manager, the Project Staff and the Regional Directors of the pilot DENR/EMB Regional Offices on any matters pertaining to the implementation of the Project.

6. For the effective and successful implementation of the Technical Cooperation Project, a Joint Coordinating Committee will be established according to the functions and composition described in Annex VI.

7. For the effective and successful implementation of the Technical Cooperation Project, a Project Management Structure within the context of the DENR unified Project Management Office will be established according to the functions and composition described in Annex VII.

V. JOINT EVALUATION

Evaluation of the Project will be conducted jointly by JICA and *DENR-EMB at the* end of Phase 1 and during the last six months of the cooperation term in order to assess the level of achievement of the Project.

VI. CLAIMS AGAINST JAPANESE EXPERTS

The Government of the Republic of the Philippines undertakes to bear claims, if any arises, against the Japanese experts engaged in technical cooperation for the Project either resulting from, occurring in the course of, or otherwise connected with the discharge of their official functions in the Philippines except for those arising from the willful misconduct or gross negligence of the Japanese experts.

VII. MUTUAL CONSULTATION

There will be mutual consultation between JICA and the Government of the Republic of the Philippines on any major issues arising from, or in connection with this Attached Document.

VIII. MEASURES TO PROMOTE UNDERSTANDING OF AND SUPPORT FOR THE PROJECT

For the purpose of promoting support for the Project among the people of the Philippines, the Government of the Republic of the Philippines will take appropriate measures to make the Project widely known to the people of the Philippines.

IX. TERM OF COOPERATION

The duration of the Technical Cooperation Project under this Attached Document will be from January 2006 to December 2010.

ANNEXES

ANNEX I
Project Design

1. Overall Goal

Under initiatives of the WQMA Governing Board, industries, commercial entities, LGUs and other public organizations take necessary actions for achieving the water quality goal established in the WQMA Action Plan.

2. Project Purpose

Capabilities of EMB Central and Regional Offices to implement priority actions mandated under CWA /IRR are strengthened.

3. Outputs & Activities

《Output 1》

Integrated policy framework for WQM based on the CWA is established and supported by adequate procedural guidelines and training for EMB staff.

<Activities>

1.1 Set-up multi-agency coordination system to formulate an integrated water quality management framework and its implementation plan
1.2 Prepare procedural guidelines for designating Water Quality Management Areas (including identification of non-attainment areas as defined under the CWA)
1.3 Formulate a comprehensive policy on the use of market-based instruments for water quality management, including procedural guidelines for implementation
1.4 Prepare procedural guidelines for classifying inland and marine water bodies as well as groundwater, including guidelines for groundwater vulnerability mapping
1.5 Prepare procedural guidelines for facilitating WQMA action planning (by the Area Governing Board) and follow-on compliance planning (by LGUs)
1.6 Prepare procedural guidelines, including system and procedures, for pollution load and charge computation in support of the wastewater charge system
1.7 Prepare procedural guidelines for managing the National Water Quality Management Fund
1.8 Prepare procedural guidelines for categorization of industries, including point and non-point sources of water pollution
1.9 Develop approach and prepare guidelines for establishing cooperation programs with other agencies and civic groups in water quality monitoring

1.10 Prepare guidelines and initiate coordination arrangements for allowing flexibility in enforcing discharge standards for specific types of industry sources

1.11 Prioritize pollution sources and prepare an operations manual on conducting compliance inspections for various types of polluting facilities

1.12 Review water quality guidelines to provide basis for water re-classification and revision of effluent standards

1.13 Design and implement a training program for EMB CO and RO staff in all regions for each set of procedural guidelines; prepare training materials and conduct the training

《Output 2》

Capacity of EMB Central Office to lead and support the Regional Offices is strengthened.

<Activities>

2.1 Establish coordination system with EMB Regional Offices in implementing the guidelines developed under Output 1

2.2 Select or develop appropriate water quality modeling techniques, including calibration, testing and demonstration in selected regions

2.3 Design, develop, and pilot implement a national information campaign for raising public awareness of water quality management issues

2.4 Design and develop a water quality and pollution source database management system for use by ROs, with capability for mapping pollution sources using GIS

2.5 Design and develop an Internet-based WQM information and communication system to link the EMB CO and the ROs

2.6 Integrate regional reports and publish the first national status report on water quality

2.7 Implement procedures for managing the national water quality management fund (based on procedural guidelines developed under Activity 1.7)

2.8 Procure sampling equipment for WQMS staff, and streamline operations of the EMB central laboratory as a reference laboratory and training center for RO staff

2.9 Design and implement a training program for EMB CO staff on use of the information and communication system developed, including fund management

2.10 Conduct activities to generate resources for non-pilot ROs, e.g., planning workshops with other donor agencies

《Output 3》

Capacity of Regional Offices to establish and support WQMAs is strengthened

in 3 pilot regions.

<Activities>

3.1 Implement guidelines for WQMA delineation

3.2 Set up the Governing Board (GB), Technical Secretariat and multi-sectoral working groups for the designated WQMAs

3.3 Facilitate the formulation of WQMA GB action plans and LGU compliance plans based on guidelines developed under Activity 1.5

3.4 Assist WQMA GBs in establishing and managing the area water quality management fund and activities of multi-sectoral monitoring groups

3.5 Assist in establishing area-based cooperation arrangements in water quality monitoring based on procedures developed under Activity 1.9

《Output 4》

Overall capability of EMB Regional Offices in water quality management is strengthened in 3 pilot regions.

<Activities>

4.1 Identify attainment and non-attainment areas based on the procedures developed under Activity 1.2

4.2 Classify or re-classify water bodies as needed based on guidelines developed in Activities 1.4 and 1.12

4.3 Implement the wastewater charge system based on procedures developed under Activity 1.6

4.4 Set up collection and accounting systems for permitting fees and waste water charges

4.5 Conduct pollution source inventories and water quality field surveys

4.6 Apply the water quality model developed under Activity 2.2, e.g., for allocating pollution quotas in non-attainment areas

4.7 Implement procedures (developed under Activities 1.8 and 1.11) for pollution sources categorization, prioritization and compliance inspections

4.8 Manage the database of pollution source and WQ data survey results, and link the regional database to the national database at the EMB CO

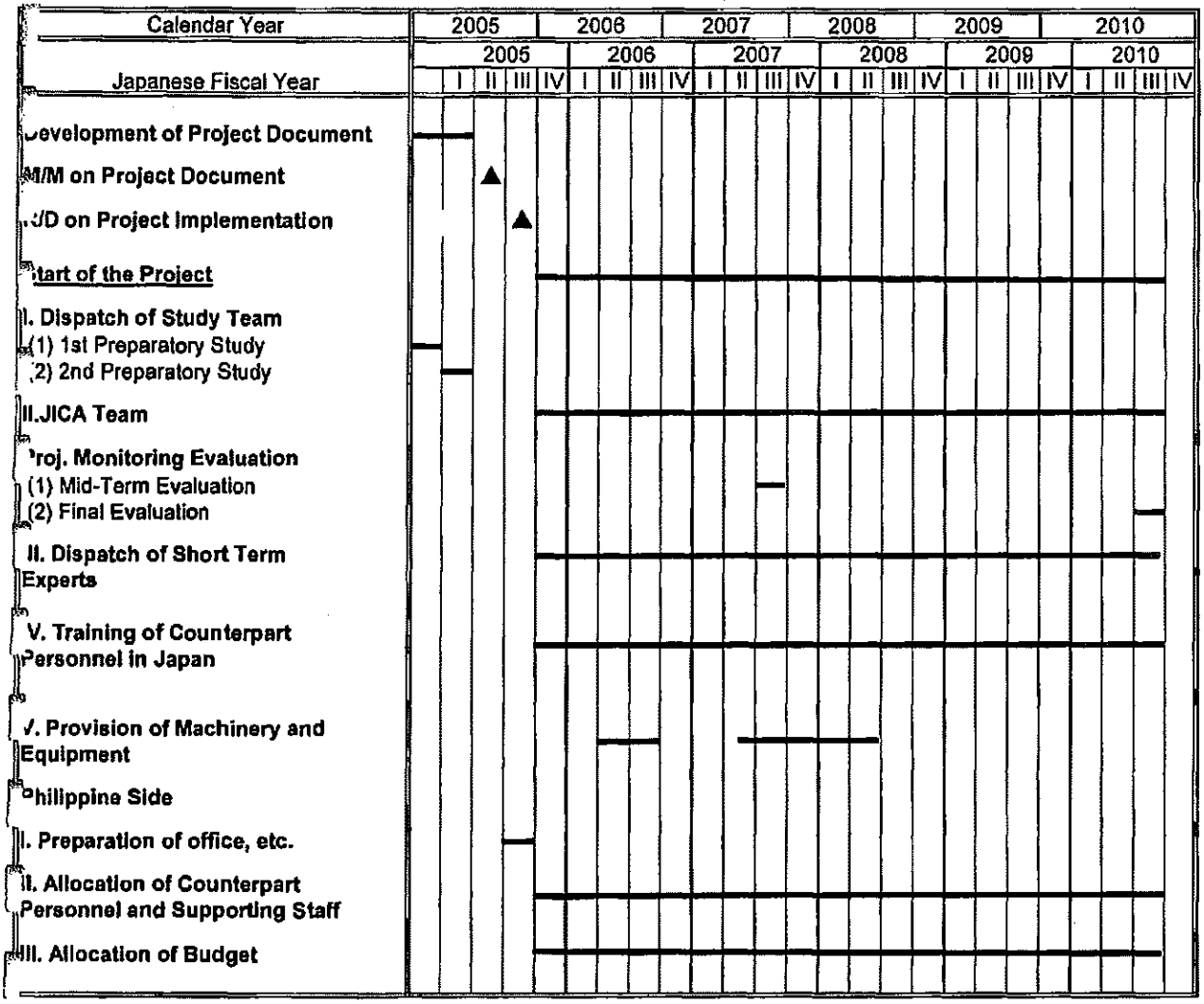
4.9 Provide equipment and develop training materials to enhance capability of EMB laboratories, and assist ROs in initiating laboratory partnerships

4.10 Prepare and disseminate the first regional water quality status report

4.11 Design and implement a program for RO staff in non-pilot regions to visit and observe WQM procedures being implemented in the pilot regions

Annex I

TENTATIVE SCHEDULE OF IMPLEMENTATION (TSI)



Note:
1. Japanese fiscal years starts in April and ends in March.
2. This schedule is subject to change if necessary, such as with the progress/budgetary constraint of the Project.
3. Four Short-Term team members on specific fields will be dispatched, when necessary within the first two years.
4. Several C/Ps will be accepted annually in Japan or other third countries.

ANNEX II

LIST OF JAPANESE EXPERTS

1. Japanese Long-term Experts
   (1) Chief Adviser: Environmental Policy Development, focusing on water quality management
   (2) Team member: Water Quality Management including source inspection, water quality monitoring and laboratory management
   (3) Team member: Assistant for project management

2. Japanese Short-term Experts *
   (1) Specialist: Water Quality Monitoring and its evaluation
   (2) Specialist: Pollution source control
   (3) Specialist: Database and its network development for Water Quality Management
   (4) Specialist: Water Quality Modeling and Information

* Other expert(s) will be dispatched when necessity arises for the effective implementation of the Project.

ANNEX III
LIST OF EQUIPMENT

Part of machinery and equipment necessary for the effective implementation of the Project will be provided by the Japanese side within the budget allocated for technical cooperation. The machinery and equipment to be provided are categorized into three areas as follows:

1. field sampling and measurement including vehicles
2. water laboratories
3. database, information system, IEC and training activities

ANNEX IV

DENR SPECIAL ORDER

LIST OF PHILIPPINE COUNTERPART AND ADMINISTRATIVE PERSONNEL

1. Chairman of the Joint Coordination Committee (Undersecretary for Management and Technical Services)

2. Project Director (Director, Environmental Management Bureau)

3. Project Manager (Chief, Environmental Quality Division)

4. Asst. Project Manager (Chief, Water Quality Management Section)

5. Project members
   The Other EMB Counterparts and Members of the Operational Steering Group

ANNEX V
LIST OF LAND, BUILDING AND FACILITIES

1. Facilities that will house laboratory and equipment necessary for project activities as will be defined in the Inception Report.

2. Office space and facilities necessary for JICA Experts

3. Land, buildings and necessary facilities in the Regional Offices for the project activities

4. Other facilities mutually agreed upon as necessary

ANNEX VI
Joint Coordinating Committee

1. Function

The Joint Coordinating Committee will meet at least once a year and whenever necessary to:

(1) Provide policy directions and oversight of the project
(2) Review the overall progress and annual expenditure of the Project as well as the achievement of the Annual Work Plan mentioned above; and
(3) Review and exchange views on the major issues arising from or in connection with the Project

2. Composition

(1) Chair Person, Undersecretary for Management and Technical Services
(2) Members from Philippine side
- Asst. Secretary, FASPO
- Project Director (Director, EMB)
- Project Manager (Chief, EQD)
- Asst. Project Manager (Chief, WQMS)

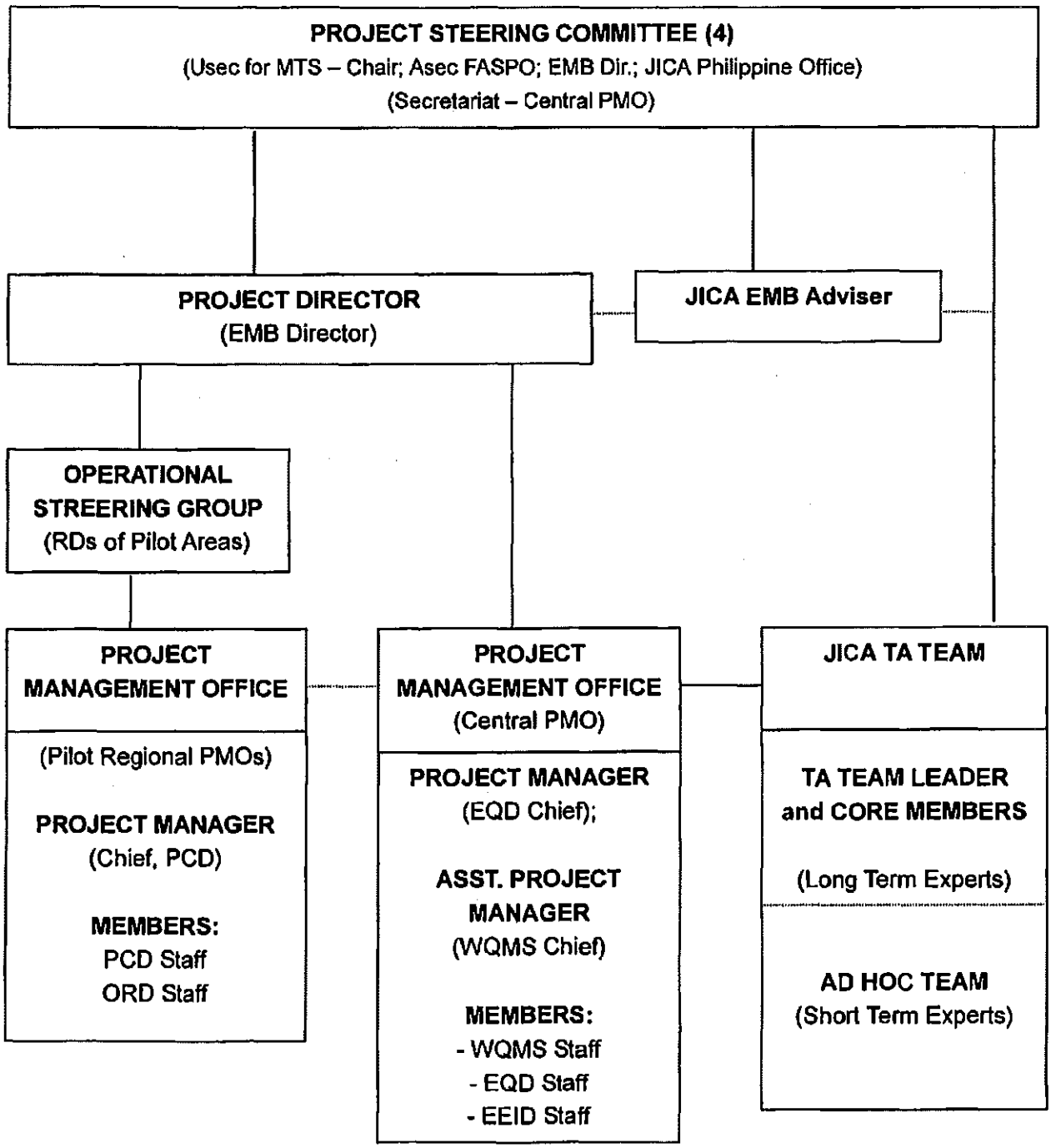
(3) Members from Japanese Side
- Japanese Experts
- Resident Representative, JICA Philippines Office

Note:

(1) Officials of the Embassy of Japan may attend a Joint Coordinating Committee meeting as observers.
(2) Persons who are invited by the Chairperson may attend a Joint Coordinating Committee meeting as observers.

ANNEX VII

Project Management Structure



MINUTES OF MEETING
BETWEEN THE JAPAN INTERNATIONAL COOPERATION AGENCY
AND CONCERNED AUTHORITIES OF THE GOVERNMENT
OF THE REPUBLIC OF THE PHILIPPINES ON THE IMPLEMENTATION
OF THE CAPACITY DEVELOPMENT PROJECT
ON WATER QUALITY MANAGEMENT

On the occasion of the signing of Record of Discussion between the Japan International Cooperation Agency (JICA) and concerned Authorities of the Government of the Republic of the Philippines on the Implementation of the Capacity Development Project on Water Quality Management, JICA and Department of Environment and Natural Resources, Environmental Management Bureau (DENR/EMB) had a series of technical discussions through the Resident Representative of JICA Philippine Office on the detailed project implementation of the Capacity Development Project on Water Quality Management.

As a result of the discussions, JICA and DENR/EMB agreed on the matters referred to in the document attached hereto.

Quezon City, October __, 2005

SHOZO MATSUURA
Resident Representative
Japan International Cooperation Agency
Philippines Office

MICHAEL T. DEFENSOR
Secretary
Department of Environment and
Natural Resources

Attached Document

1. Background

The Minutes of Meeting (M/M) on Japanese Technical Cooperation for the Capacity Development Project on Water Quality Management (the Project) was agreed between Mr. Armando A. De Castro, Undersecretary for Management and Technical Services, Department of Environment and Natural Resources and Mr. Shozo Matsuura, Resident Representative, Japan International Cooperation Agency, Philippines, on July 11, 2005.

Major issues included in M/M were as follows,

I: Summary of Project Document

I-A, Project Design Matrix

I-B, Plan of Operation

II: Project Management Structure

III: Measures to be taken by both Parties

The purpose of this Minutes of Meeting (M/M) attached to the Record of Discussions (R/D) on the Implementation of the Capacity Development Project on Water Quality Management is to supplement the R/D and to clarify technical issues necessary for implementing the Project, although detailed project activities are mentioned in the Project Document, particularly in Chapter 4: Project Strategy and Chapter 5: Project Design.

2. Tentative Schedule of Implementation (TSI)

Tentative Schedule of Implementation (TSI) has been formulated and attached as Annex I herewith.

The project will start in January 2006, when JICA dispatches its technical assistance team (the JICA team) to DENR/EMB, and be continued for five years. The project will be divided into two phases, the first phase is for two years and the second phase is for three years. As indicated in the Plan of Operations (PO) which is attached to the previous M/M agreed on 11 July 2005.The first phase activities focus on assistance to the EMB central office, while the second phase focuses on the regional offices, particularly the pilot regions.

The first phase contract of the JICA team made between JICA and the Japanese

consultant firm will be therefore for two years. At the end of the first phase, JICA will undertake the critical review and evaluation of the project activities and Japanese consultants' outputs, taking account of the opinions of DENR/EMB, and may improve the project document, when required. The second phase of the project will be started following the full agreement between DENR/EMB and JICA.

3. Project Operation

a) Plan of Operation (PO)

In principle, the Project Operations will be made according to the Plan of Operation (PO) attached in the previous M/M of July 11.

b) Pilot Regions

The pilot regions, where intensive project activities addressed to regional offices are to be held, are Region III, VI and XII in principle. However, visits of the Japanese members of the JICA team to Region XII are regulated, due to security reasons. Thus, local consultants of the JICA team will be deployed in Region XII. It is expected that the situation will be resolved and JICA's personnel will be able to visit Region XII, when the intensive project activities are undertaken in phase two.

c) Inception Report

The JICA team will submit its inception report to DENR/EMB and JICA on January 2006. The Report will be finalized after discussions among parties concerned.

d) Contract with local consultants or firms

In implementing the various project activities necessary for attainment of the project outputs, individual Philippine consultants or consulting firms (local consultants or local consultant firms) will be contracted by JICA, following JICA's regulation. DENR-EMB may recommend a short-list of some local consultants or firms for the specific contract to JICA.

e) Development of TOR

The Terms of Reference (TOR) of each contract for local consultants or firms which include its activities, contract duration, number of consultants and their specific expertise will be drafted by the JICA team, in close consultation with DENR/EMB. The TOR agreed will be sent to the JICA Philippine Office in advance for procurement of contracts.

f) Supervision and Evaluation of Local Contractors

DENR-EMB and the JICA team are responsible for supervising the local contractors to secure the quality of their activities, and for evaluating their reports

from the technical point of view. The result of the reviews will be sent to JICA Philippines Office.

g) Project Management Structure

The Project Management Structure, which was tentatively agreed by both parties in the previous M/M was concluded and attached in the document on R/D on implementation project.

4. Project Work plan

The inception report, which the JICA team will prepare and submit to DENR-EMB and JICA, should include the detailed work plan for the first phase. The work plan will be developed, taking into account the following issues:

a) Timeline for development of various guidelines, standards and reports according to CWA and its IRR

The guidelines and procedural manuals which are produced in the course of project implementation have to be completed according to the timelines as mentioned in CWA and its IRR. However, it is recognized that some activities may not be able to follow the timeline. Nevertheless, DENR/EMB and the JICA team have to try their utmost efforts in completing development of such guidelines as soon as possible.

b) Order of Activities

According to CWA and its IRR, some frameworks, plans or procedures have to be developed in due order. One of example is that the Integrated Water Quality Management Framework (IWQMF) is to be developed according to the scientific information written in the National Water Quality Status Report (NWQSR). Therefore, NWQSR has to be developed before IWQMF is formulated. Another example is the development of the Water Quality Management Area Action Plan, which is produced referring to IWQMF.

c) Grouping of Project Activities

Some specific project activities in the list of 39 activities in the Project Document are directly related to the others. When the procedural guideline for WQMAs is developed, guidelines for development of WQMA Action Plan and its implementation, designation of the non-attainment area and development of measures to upgrade the water quality have to be considered simultaneously.

Therefore, some activities in the list of 39 activities may be combined into one contract.

5. Input from JICA

JICA will provide the following input, based on Japanese single year budgetary system.

a) JICA Technical Assistance Team (JICA Team)

The JICA team consisting of three Japanese long-term experts, four Japanese short-term experts and Philippine local consultants or firms will be assigned to DENR-EMB for five years during the project implementation.

The backgrounds of three long-term experts are as follows,

- ✧ Chief Adviser: Environmental Policy Development, focusing on water quality management
- ✧ Team member: Water Quality Management including source inspection, water quality monitoring and laboratory management
- ✧ Team member: Assistant for project management

Each team member may be assigned for seven to eleven months per year for the first phase. However, the assignment and its timing of the Team members will be carefully scheduled not to cause the delay of the project activities through the first phase contract.

The team members will composed of the four Japanese short-term experts, who will be contracted for three to six months with JICA as follows,

- ✧ Specialist: Water Quality Monitoring and its evaluation
- ✧ Specialist: Pollution source control
- ✧ Specialist: Database and its network development for Water Quality Management
- ✧ Specialist: Water Quality Modeling and Information

The above specialists identified in the processes of the project development may be replaced with other specialists, or other specialists may be added, when required due to flexibility required for the five year project implementation.

The team members will include Philippine consultants or firms who will be

contracted by JICA. Total man/months of the total contract for the local consultants or firms may be reached to almost eighty per year.

The JICA team may also employ a local administrative officer and a secretary as well as a driver for an official vehicle of the team.

b) Provision of Equipment

JICA provides equipment and materials which are to be used by the EMB central office and the selected three pilot regions for the purpose of the project implementation. Since the project objective is overall capacity development on water quality management, equipment and materials provided are limited to the minimum.

The equipment and materials provided include three categories such as field sampling and measurement including vehicles; water laboratories, and database, information system; IEC and training activities. The details of equipment list will be agreed later.

c) Training opportunities in Japan or third countries

JICA provides opportunities for trainings taking place in Japan or other third countries to DENR-EMB staff, who are directly engaged in the project. The fields of training, periods, training places and trainees are decided in the course of project implementation, and after full examination on the necessity and effectiveness.

6. Input from DENR/EMB

a) Counterpart Staff

DENR/EMB designates appropriate staff as counterparts as shown below. The designated staff members jointly work as the counterparts of the JICA team to implement the Project whenever necessary.

- ✧ Chairman of the Joint Coordination Committee
- ✧ Project Director
- ✧ Project Manager
- ✧ Asst. Project Manager
- ✧ Project members
- ✧ Operational Steering Group

b) Facilities for the JICA team

DENR/EMB provides an appropriate size of office space for JICA team. The total number of the JICA team members is estimated at least 12 persons including local consultants. The facilities are equipped with desks, meeting tables, air conditioners, communication equipment, etc.

c) Equipment and Materials

DENR-EMB provides equipment and materials necessary for the project implementation other than the ones to be provided by JICA.

d) Budget for Project Operation

DENR-EMB provides the salary allowance for the staff of the Philippine side, budget for travel expenses, and operation expenses required for the mobilization and project implementation. DENR-EMB also allocates operation and maintenance costs for the equipment provided by JICA during and after the term of cooperation.

End of Document

Republic of the Philippines
Department of Environment and Natural Resources
Visayas Avenue, Diliman, Quezon City 1110
Tel Nos : (632) 929-66-26 to 29 • (632) 929-65-52
929-66-25 • 929-66-33 to 35
929-70-41 to 43

DENR SPECIAL ORDER NO. 851
Series of 2005

OCT 24 2005

SUBJECT: **CREATION OF THE PROJECT MANAGEMENT STRUCTURE ON JICA-DENR CAPACITY DEVELOPMENT PROJECT ON WATER QUALITY MANAGEMENT**

In the interest of the service, and in order to effectively implement the Japanese International Cooperation Agency-DENR Capacity Development Project on Water Quality Management, the Project Management Structure is hereby created.

The Project Steering Committee is composed of the following:

1. USec. Armando A. de Castro - Chair
2. Asec. Analiza Rebuelta Teh - Member
3. Director Lolibeth R. Medrano - Member
4. JICA Philippines - Member

The Project Steering Committee shall perform the following functions:

1. Provide policy directions and oversight of the project
2. Review the overall progress and annual expenditure of the Project as well as the achievement of the Annual Work Plan; and
3. Review and exchange views on the major issues arising from or in connection with the Project.

Further, a Central Project Management Office is hereby created, composed of the following:

1. Renato T. Cruz - Project Manager
2. Marcelino N. Rivera, Jr. - Asst. Project Manager
3. Vizminda A. Osorio - Member
4. Ella S. Deocadiz - Member
5. Elenida R. Basug - Member
6. Ma. Victoria V. Abrera - Member
7. Herbert Narisma - Member
8. Nicanor E. Mendoza - Member
9. Leza A. Acorda - Member
10. Michico Venus A. Navaluna - Member
11. Elinor D. Malano - Member
12. Nolan B. Francisco - Member
13. Vilma T. Cabading - Member
14. Sonia R. Barlis - Member

DENR HEA-0010935

15.	Damian P. Rubio	- Member
16.	Renato D. Vengco, Jr.	- Member
17.	Rowena D. Gersalia	- Member
18.	Dominic F. Gonzales	- Member
19.	Zenaida N. Manuel	- Member
20.	Fernando C. Natnat	- Member

The Regional Directors of the pilot DENR/EMB Regional Offices will actively participate in the implementation of project activities. An Operations Steering Group composed of concerned Regional Directors will be formed to provide operational directions in the implementation of the project at the regional level.

The above structure shall oversee the implementation of the project and shall function within the context of the Unified Project Management Office (UPMO) of the Department. Other DENR/EMB personnel may be called upon as the need arise.

Related expenses to be incurred during the implementation of the project shall be charged to EMB funds subject to the usual accounting and auditing rules and regulations, except those which will be borne by JICA in accordance to the Record of Discussion and the Minutes of the Meeting for Project Implementation.

This Order shall take effect immediately.

MICHAEL T. DEFENSOR
Secretary

MINUTES OF MEETING

BETWEEN THE JAPAN INTERNATIONAL COOPERATION AGENCY AND AUTHORITIES CONCERNED OF THE GOVERNMENT OF THE REPUBLIC OF THE PHILIPPINES ON JAPANESE TECHNICAL COOPERATION FOR THE CAPACITY DEVELOPMENT PROJECT ON WATER QUALITY MANAGEMENT

In response to the official request for Japanese Technical Cooperation from the Government of Republic of the Philippines, the Japan International Cooperation Agency (hereinafter referred to as 'JICA') conducted Ex-ante Evaluation Study for the Capacity Development Project on Water Quality Management (hereinafter referred to as 'the Project') headed by Mr. Shozo Matsuura, Resident Representative of JICA Philippines Office to assess feasibility of the Project and to discuss the scope and implementation arrangement of the Project with the Philippine authorities concerned.

As a result of the discussions, both parties agreed on the Project Document and matters referred to in the documents attached hereto.

Quezon City, July 11, 2005

SHOZO MATSUURA
Resident Representative,
Japan International Cooperation Agency
Philippines

ARMANDO A. DE CASTRO
Undersecretary for Management and Technical Services,
Department of Environment and Natural Resources
Philippines

THE ATTACHED DOCUMENT

1. Project Design

Project design was formulated with close discussion between EMB and JICA as described in the Project Document and summarized as Annex I though participatory approaches such as Focus Group Discussions and Workshop with the EMB Regional Directors. The project design will be further elaborated and finalized in the Record of Discussions (R/D) taking account of important aspects in implementation such as role and capacity of EMB in each activity. During the discussion, both sides agreed to change the initial title of 'Environmental Management Capacity Building' to 'the Capacity Development Project on Water Quality Management.'

2. Project Management Structure

The general Project Management Structure was temporarily agreed as Annex II. In addition, a Joint Coordinating Committee is established for the discussion and resolution of any important issues regarding implementation of the Project. The functions and composition will be decided in further discussions.

3. Other Preparations for the Project

(1) Record of Discussions

The Record of Discussions (R/D) will be concluded between both parties as an official agreement to commence the Project. The R/D also includes the measures to be taken by both parties for smooth implementation of the Project as described in Annex III.

(2) Allocation of Counterpart Personnel

In order to implement the Project which comprises many activities, adequate number of counterparts needs to be assigned to both EMB Central Office and EMB Regional Offices. During discussion, EMB agreed to due consideration of allocating additional personnel to this project for its smooth implementation.

(3) Necessary Process and Timeline

The Record of Discussions will be signed between both parties after completion of appraisal within JICA. The project will commence in November at the earliest, if the said appraisal and recruitment of the experts will be done as scheduled.

Annex	I.	Summary of Project Document
Annex	I-A.	- Project Design Matrix
Annex	I-B.	- Plan of Operations
Annex	II.	Project Management Structure
Annex	III.	Measures to be Taken by Both Parties

Annex I

Executive Summary of the Project Document

Rationale for Project

The Philippine Clean Water Act (CWA) of March 2004 established a comprehensive approach to water quality management, and combined into one package all existing water quality management systems together with new market-based instruments. It also broadened the management system to include the role of other agencies, local government units, and the public.

The new market-based instruments will be initially implemented through a system for charging fees on amounts of pollutants present in the wastewater. For EMB, it will be a new task given that its personnel are mainly exposed to conventional regulatory-driven approaches. Even the conventional approaches have not yet been perfected. The Act also expands the scope of water quality management to include domestic wastewater, for which EMB coordination with local government units and other agencies will be necessary. This requires formulation of an integrated and multi-agency policy framework and action plan. Management of groundwater quality is yet another new challenge for EMB, starting with classification of groundwater resources. This will put a strain on EMB resources, since the classification of surface waters has not been completed yet.

Furthermore, the CWA sets out to empower citizens to be involved in water quality management through creation of Water Quality Management Areas (WQMAs) managed by local governing boards. Tasked to support these new management bodies, EMB will have to develop new skills to act as institution-builders and technical secretariats to governing boards under the WQMA system.

CWA's new mandates to EMB come at a time when the organization is already saddled with considerable responsibilities for implementing two other landmark laws prior to the CWA: the Philippine Clean Air Act of 1999 and the Ecological Solid Waste Management Act of 2000. EMB recognized that, without assistance, it will be difficult for the organization to comply with its new mandates under the CWA.

Following EMB's request to JICA for technical assistance, JICA provided a team to conduct an assessment of capacity and weaknesses of EMB's water quality management system. Based on the capacity assessment and problem analysis, a participatory approach was followed in preparing the Project Document. Together with JICA consultants, EMB

Central and Regional Office staff identified and prioritized the various CWA implementation actions needed to be supported by the Project.

Problem Assessment and Considerations for Project Strategy

The CWA's goal is to comprehensively change the way water quality management is performed. This can only be achieved over the long term and, within the CWA's far-reaching context, there is a wide range of activities in need of support. However, a single project cannot realistically aim to tackle the entire support needs of the CWA implementation. The Project is not designed to support the strengthening needs of all agencies with specific mandates under the Act, such as DPWH for sewerage management. The Project focuses on supporting EMB. Nonetheless, the support will include assisting EMB in aligning the role of other agencies in integrated water quality management through a policy framework development and coordination mechanism.

The project strategy was, therefore, developed to specifically address EMB's capacity constraints in implementing its CWA mandates. Based on the previous assessments of EMB's capacity conducted by JICA and EMB, and supplemented by findings from related studies (e.g., SEECTA), four major areas of weaknesses were identified:

- Lack of an integrated policy framework and coordination system for water quality management, including lack of procedures and guidelines for implementing such framework and management system;
- Inadequate capability of the EMB Central Office to lead and support the regional offices in integrated WQM and CWA implementation;
- Lack of experience and capability among regional offices to facilitate establishment and support the operation of water quality management areas and their associated participatory mechanisms and institutions; and
- Overall lack of technical and management capability among regional offices in water quality management, and specifically in implementing new regulatory mandates under the CWA IRR (i.e., discharge permitting and wastewater charge system).

The four groups/categories of EMB's weaknesses above are summarized in **Figure ES-1** in the form of a cause-and-effect diagram. The problems and causes shown in the diagram were validated by EMB Central Office staff and EMB regional directors.

Project Strategy and Design

The problem assessment was used to formulate the project strategy. The Project strategy does not attempt to address all relevant capacity problems of EMB identified in the problem assessment. During the course of the focus group discussions with EMB, it was agreed that the CWA implementation activities to be supported by the Project should be prioritized based on each activity's urgency in order to comply with CWA/IRR implementation timelines, as well as on the activity's importance for long term capacity development.

In supporting EMB, the capacity development strategy goes beyond technical assistance in the form of expert advice on technical and engineering aspects of water quality management. The support includes institutional and organizational development.

Within EMB itself, CWA implementation tasks are divided between the Central Office and the Regional Offices. Aside from assisting the EMB Central Office in developing an integrated policy framework and implementation procedures, the Project will strengthen the CO to become an effective supporter to the EMB Regional Offices where the policy and procedures will actually be used.

The Project design is summarized in **Figure ES-2** in the form of a "means-to-end" hierarchy connecting the project objective with outputs/results, and main activity items. It is emphasized that the items in the project design are from the standpoint of EMB as the main actor, not the Project technical assistance team. This is to highlight the ownership of the project by EMB and the latter's commitment to its successful outcome. The Project's role is to provide support in accomplishing EMB's capacity strengthening through the outputs and activities included in the project design.

The project *goal* is "under initiatives of the WQMA Governing Board, industries and commercial entities, LGUs, and other public organizations take necessary actions for achieving the water quality goal established in the WQMA Action Plan". The specific project *purpose* is "capability strengthening of Central and Regional EMB offices to implement priority actions mandated to the agency by the CWA and its Implementing Rules and Regulations". This purpose will be attained if, through the Project assistance, EMB becomes capable of implementing its mandates under the CWA through: (i) an integrated WQM policy framework and clear procedures; (ii) trained staff; (iii) adequate equipment and information systems, and (iv) effective linkage with related agencies and stakeholders.

Figure ES-1. Problem Assessment

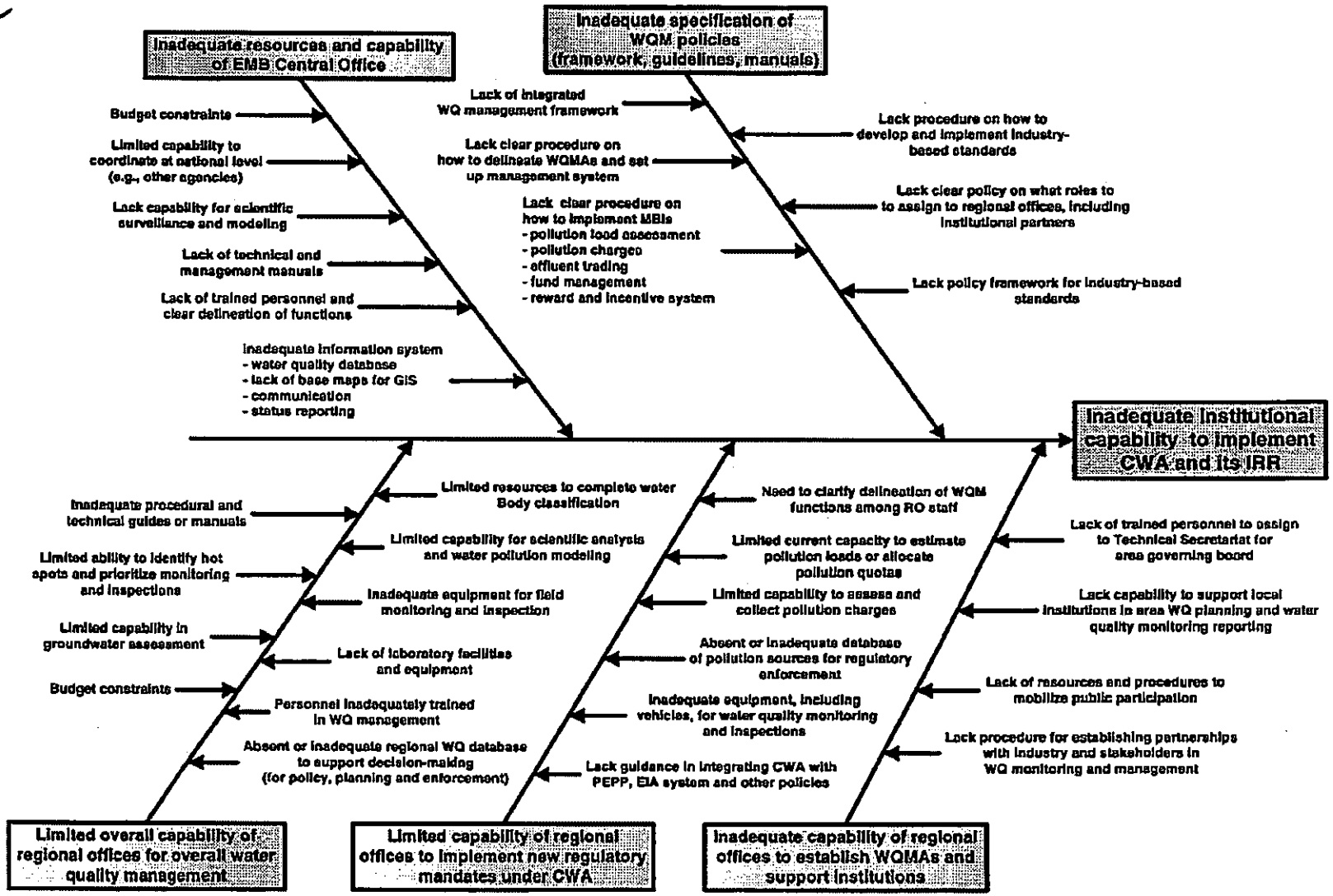
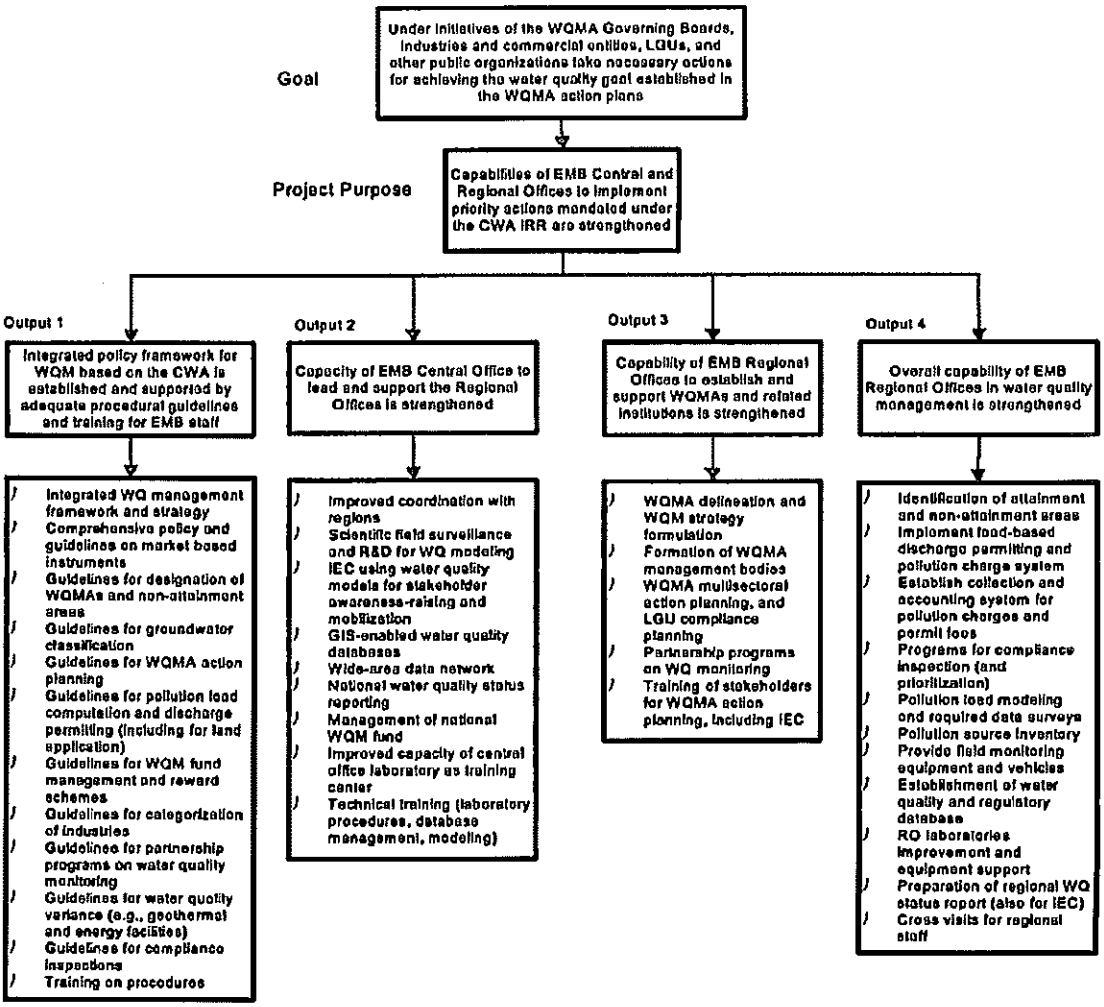


Figure ES-2. Project Strategy Elements



As shown above, the Project is structured into four main activity groups, each group associated with an *Output* or key result. The activity groups include:

- Formulating an integrated water quality policy framework and providing procedural guidelines for implementation of EMB's role within such framework;
- Strengthening the Central Office's capability to lead and support the regional offices;
- Assisting the Regional Offices in establishing and sustaining Water Quality Management Areas and their institutions; and
- Supporting the Regional Offices in WQM, particularly in enforcing the discharge permitting and wastewater charge system as well as in compliance monitoring.

The specification of Project Outputs and the main activities under each, including key performance indicators are summarized in Table ES-1.

Table ES-1. Summary of Project Outputs and Activities

Outputs	Output 1: Integrated policy framework for WQM based on the CWA is established and supported by adequate procedural guidelines and training for EMB staff	Output 2: Capacity of EMB Central Office to lead and support the Regional Offices is strengthened.	Output 3: Capability of EMB Regional Offices to establish and support WQMAs and related institutions is strengthened in 3 pilot regions.	Output 4: Overall capability of EMB Regional Offices in water quality management is strengthened in 3 pilot regions.
Scope of Activities	There are three types of activities under this output: policy formulation, development of procedural guidelines, and training. The policy activity will produce an integrated water quality management framework to guide CWA IRR implementation. Within such framework, procedural guidelines for specific provisions of the CWA IRR will be prepared, covering: market-based instruments, water classification, WQMA designation and area planning, identification of non-attainment areas, industry categorization, compliance monitoring and enforcement.	The activities for this output cover strengthening coordination between CO and ROs for CWA IRR implementation; water quality modeling; public information; development of database systems and data network; preparation of water quality status report; management of the national WQM fund; support for training programs of the EMB CO laboratory; management system training for CO staff, and initiatives for mobilizing additional resources from other donors to support non-pilot regions.	The main activities are patterned after the steps specified for establishing area-based management system under the CWA. These cover the designation of WQMAs, setting up area management bodies, formulating area-based action plans and LGU-based compliance plans, managing area water quality funds, and initiating collaborative water quality monitoring arrangements. The Project Team's support for the activities under this output will be provided through the WQMA Technical Secretariat based at the EMB RO.	The activities are designed to support ROs in the pilot regions to implement the procedures and support systems developed under Outputs 1 and 2. Activities to be supported include the identification of non-attainment areas, classification of water bodies and their monitoring, implementation of the discharge permitting and wastewater charge system, accounting of revenues from permitting and wastewater charges, conduct of pollution source inventories, use of such inventories for area planning and prioritizing regulatory operations, data surveys and database development including use of water quality models for analysis.
Output Indicators	Publication of the policy framework and supporting procedural guidelines and training. Adoption and testing of these procedures in three pilot regions, including	Tools for scientific analysis, database management, public education and reporting system. CO WQMS staff provided with equipment and training, and effectively coordinating the CWA implementation of CWA in regions	At least one WQMA in each pilot region is established, with governing and support bodies activated and action plans completed.	Major pollution sources in pilot regions are complying with the discharge permitting/charge system. All principal/priority rivers in pilot regions classified, and equipment of EMB regional laboratories in pilot regions upgraded.

Strategy for Project Implementation

Selection of Pilot Regions. The project is designed as a comprehensive strengthening package that will benefit the whole of the EMB organization—the Central Office as well as all the Regional Offices. Even though only three regions will be selected as pilot areas for testing and refinement of the CWA policy implementation procedures as well as management support systems (e.g., standardized data systems) developed at the Central Office, all regions will benefit from project-sponsored training on the application of these guidelines and management tools. The pilot Regional Offices will serve as learning areas where the procedural and system tools will initially be implemented, while at the same time providing opportunity for EMB managers in the other regions to observe and draw lessons.

The pilot regions will be selected so that each of the major island groupings (Luzon, Visayas and Mindanao) will have a pilot region represented, and so that the regions chosen provide representative settings for water quality management, i.e., the first pilot region characterized by having highly urbanized cities wherein water clean water and sanitation are paramount issues; a second region faced with water quality management issues that threaten eco-tourism and fisheries; and a third pilot region characterized by having substantial industrial activity (e.g., mining). Finally, the selected region must have adequate staff available to perform the WQM activities that will be strengthened.

Collaboration with Other Donors. Although the project will focus on three pilot regions, it is also important to extend the output of the Project to other regions. The role of other funding agencies will be crucial in replicating the strengthening activities beyond the three pilot regions that will be directly assisted by the Project. The choice of these regions is based on their usefulness as testing areas for the procedures and systems developed under the project, as well as their value as learning areas for the other regions.

A concerted support by JICA and other donors in strengthening EMB using common procedures and systems developed under this Project will ensure a more efficient and effective strengthening process. It will avoid potential for introducing incompatible procedures in different regions if support systems are developed under separate technical assistance projects of different donors lacking coordination. An activity has been included in the Project to generate additional funding from other agencies so that the strengthening activity can be extended to other regions.

General Timetable for Implementation. Outputs 1 and 2 of the strategy are required in order to support CWA implementation actions in the regions. Output 1 consists of the integrated policy framework and the procedures and systems that EMB regional offices need in order to guide their CWA implementation activities. Output 2, in addition, will provide the management tools to enable efficient implementation of procedures, e.g., scientific analysis tools, equipment, database management, financial accounting, and reporting system.

Therefore, the implementation of the Project will generally follow two phases. Phase 1 (first 2 years) will focus on Outputs 1 and 2. Phase 2 (years 3 to 5) will focus on Outputs 3 and 4, starting with the 3 pilot regions under the Project and expanding to the other regions through replication support from other funding agencies. However, this is only a general phasing. Activities related to Outputs 1 and 2 will continue beyond the second year--for instance, to revise procedures and upgrade tools during the 4th or 5th year based on results of their application in the regions. Some activities in Outputs 3 and 4, on the other hand, will be initiated during the first 2 years--for instance, coordination activities with regional offices in developing the procedures/systems, and the data surveys needed for water quality status reporting and modeling. The general timeline of activities is shown in **Table ES-1**.

Table ES-1. General Timeline of Implementation

	Years 1 and 2	Years 3 to 5
Output Activities (Based at Central Office)	• Set up of multi-agency coordination system for policy formulation • Formulation of Integrated WQM Policy Framework • Development of procedures, operating guidelines and manuals to implement EMB's roles in the integrated policy framework • Orientation and training of regional staff on the policy framework and implementing procedures	• Coordination of multi-agency roles in integrated policy implementation • Policy review and refinement • Revision and updating of procedures, including guidelines and manuals • Continuation of training for regional staff in procedure implementation
Output 2 Activities (Based at Central Office)	• Coordination with EMB regions on procedures development • Development of scientific tools (e.g., modeling) and information system (database and network) • Development of fund management system • Water quality status reporting system, including data gathering • IEC approaches and mechanics • Streamlining of laboratory procedures and training of regional staff	• Coordination with EMB regions on procedures testing and refinement • Refinement and updating of various management tools (models, databases, reporting system) • Adjustment of IEC approaches
Output 3 Activities (Based in Regions)	• Initial delineation of Water Quality Management Areas (WQMAs) • Coordination with area-based stakeholders to create local management bodies • Training of EMB Technical Secretariats to support area governing boards	• Additional delineation of WQMAs • Orientation-training of area stakeholders in WQM planning and management • Multi-sectoral planning by area governing boards and stakeholders • Action planning by LGUs • Implementation of area water quality improvement projects • Establishment of cooperation programs in water quality monitoring
Output 4 Activities (Based in Regions)	• Data surveys/assembly • Water quality status reporting • Equipment acquisition and training (WQ sampling and monitoring equipment, laboratory equipment, vehicles)	• Water body classification • Identification of non-attainment areas • Pollution source inventories and categorization • Discharge permitting system and wastewater charge system • Financial accounting and reporting (for WQ fund management) • Regulatory compliance inspections • Water quality modeling to manage non-attainment areas • Database build-up • Cross-visits to share lessons from the pilot regions

Inputs and Project Management

Inputs from Japanese Side. JICA will provide a technical assistance team consisting of three long-term experts and four short term experts during the project implementation. The role of the team is mainly to assist and advise the staff of EMB CO and ROs to perform specific project activities identified in the Project Document.

The JICA technical assistance team will also engage local consultants. Implementing the capacity development project requires knowledge of local policy, institutional and management systems that local consultants can provide. The Japanese and Filipino consultants will work together with staff of EMB CO and ROs to produce the expected outputs. They are also expected to design and implement training-workshops together.

JICA will also provide equipment related to the project's objectives for the EMB Central Office and the three pilot regions. Given that the main objective of the Project is capacity development, provision of hardware is not the focus and the equipment will be provided on the basis of necessity.

JICA will also provide the opportunities for the training in Japan or in other countries for EMB staff engaged in water quality management functions.

Input from Philippine Side. EMB/DENR designates appropriate personnel as counterparts. The designated staff will work together with the Japanese and Filipino consultants in implementing the Project. EMB and DENR will also provide an appropriate size of office space for JICA technical assistance team and local consultants. The office space will be equipped with desks, meeting tables, air conditioners, communication equipment, and other basic furnishings. EMB/DENR will also provide materials and equipment needed for project implementation other than the ones provided by the Japanese side.

EMB/DENR will be responsible for providing salary and allowances for the personnel of the Philippine side, including budget for travel expenses and operation expenses required for the mobilization of the counterpart staff during project implementation.

Project Management. The proposed Project Management structure is shown in **Figure ES-3.** A Joint Coordinating Committee will be formed. Its function is to provide policy guidance for project implementation. The committee will facilitate linkages with other agencies, particularly their involvement in preparing the integrated WQM policy framework. It will also facilitate linkage with other donors to generate support for replicating project activities in the other regions.

Project implementation is the responsibility of EMB. The EMB Director will act as the overall Project Director. The Project Director will be responsible for overall project supervision as well as inter-agency and intra-DENR coordination in implementing various project-related activities.

The Project Management Office (PMO) will be based at the EMB CO's Environmental Quality Division (EQD). On a concurrent capacity, the EQD Chief will act as the Project Manager (or Head of the PMO). The Project Manager shall be responsible for directing project operations according to agreed annual work and financial plans. He will coordinate project activities with the EMB Regional Directors in the three pilot regions. He will also serve as the EMB counterpart to the technical assistance Team Leader (Japanese Expert). The Japanese and local consultants/subcontractors will work under the supervision of the technical assistance Team Leader. Day-to-day activities of project management, including coordination of joint activities involving EMB staff and the technical assistance team, will be the responsibility of the Chief of the EQD's Water Quality Management Section (WQMS) who will be designated as Assistant Project Manager for the PMO. He will also monitor the overall performance of the Project on behalf of EMB.

Each of the three pilot regions will have their respective project management units based at the RO Water Quality Management Section. These units will be under the supervision of a Regional Director, the head of the RO Pollution Control Division. These regional project management offices are considered as sub-units of the Project's PMO to ensure coordination.

Pre-Evaluation of Project

The Project is well consistent with the environment policy in the Philippine and the aid policy of the Japanese Government, and sufficiently reflects the needs of the Philippine side derived from a series of focus group discussions. The PDM is logically constructed to attain the capacity development of EMB with the project designed to efficiently implement the Project by using local resources. The beneficial spill-over effect of capacity building beyond three pilot regions is expected to be significant. Consideration for sustainability was adequately paid in the design.

Thus, the Project is evaluated to be adequate for the technical cooperation project assisted by the Japanese Government. It, however, should be noted that the efficiency and the sustainability are expected to become secure, when EMB are successfully prepared to receive this big-scale project in the course of the preparation and implementation stage.

Annex I-A

(Revised on: July 6, 2005)

Project Design Matrix for EMB-JICA Capacity Development Project on Water Quality Management

Project Name: Capacity Development Project on Water Quality Management

Duration: January 1, 2006 to December 31, 2010

Target Area: Whole of the Philippines (Particularly EMB-Central Office and EMB-Regional Offices)

Target Group: Staff of EMB, local area stakeholders in water quality management

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Goal: Under initiatives of the WQMA Governing Board, industries and commercial entities, LGUs, and other public organizations take necessary actions for achieving the water quality goal established in the WQMA Action Plan.	The area requiring water conservation and improvement is designated as Water Quality Management Area or Non- Attainment area. In the designated areas above, Water Quality Management Area Governing Board and other related organizations are established and water quality management including public awareness-raising based on CWA and IRR is implemented. The assistance and advice of EMB Central Office to regional offices are provided continuously.	Annual activity reports and records of EMB Annual survey of achievement using interview and questionnaire	National government maintains strong support for the objectives of CWA.

Project Purpose: Capabilities of EMB Central and Regional Offices to implement priority actions mandated under the CWA IRR are strengthened	EMB Central Office and 3 pilot ROs assisted by the Project are evaluated using the following indicators: • EMB staff has adequate knowledge and skills on the procedures of water quality management. • EMB Central Office and Regional Offices have adequate organizational ability (numbers of staff, equipment and materials, information management system, guideline/manuals, activity plans, etc.) to implement the integrated water quality management. • The cooperation with EMB and related organizations/stakeholders is established. The pilot regions are serving as valuable learning areas for the other regions.	Annual survey of performance using interviews and questionnaires. Project monitoring and interim evaluation, including completion reports.	Other development assistance agencies are willing to support the non-pilot regions in replicating the strengthening, specifically in applying the procedures and systems developed under the Project.

Outputs:			
1.0 Integrated policy framework for WQM based on the CWA is established and supported by adequate procedural guidelines and training for EMB staff	Integrated Water Quality Framework is developed. A series of procedural guidelines are developed. Dissemination and training of policy framework and procedural guideline are conducted.	Policy documents; proceedings of policy deliberations and inter-agency coordination activities DENR policy documents Training materials and course proceedings	Other agencies mandated to perform specific roles under the CWA (e.g., DPWH, DOH, DILG) are cooperative and have funds to implement their roles EMB CO personnel trained under the project are given regular positions so they do not leave their jobs.
2.0 Capacity of EMB Central Office to lead and support the Regional Offices is strengthened	EMB Central Office takes actions for the effective implementation of CWA and guidelines. The standard-type of water quality management modeling is established. The information management system including database system and information communication system is developed. The first national water quality status report is published.	Intra-organizational documents Project activity and completion reports	EMB will facilitate access of the Project Team to existing records and databases, including base maps and shapefiles for developing the GIS interface (from DENR and NAMRIA). EMB will facilitate coordination by the Project Team with other agencies holding important data/information needed for the modeling work (e.g., hydrologic data from NWRB).

3.0 Capability of EMB Regional Offices to establish and support WQMAs and related institutions is strengthened in 3 pilot regions	At least one WQMA in each pilot region is established, with action plans completed Action Plan and Compliance Plan are established before the deadline specified in CWA. Organizations to manage the designated area are set. The activities of water quality governing board and other organizations are conducted.	Interviews or questionnaire surveys Process documentation of WQMA activities	EMB will be able to designate at least one WQMA in each of the pilot regions in a timely manner so that institution-building support activities under the Project will not be delayed or be subject to undue time pressure. The RO in each pilot region has adequate number of staff who can be assigned to work in the Technical Secretariat, and if necessary, the Regional Executive Director will designate staff in other units for Secretariat work. Relevant government agencies and LGUs in the WQMAs will be prepared to perform their roles—with their own budgets--so that area management plans are properly prepared and actually implemented.

4.0 Overall capability of EMB Regional Offices in water quality management is strengthened in 3 pilot regions.	Principal/priority rivers in pilot regions classified (or re-classified as needed). Pollution control including the issuance of wastewater discharge permit, wastewater charge collection, self-monitoring report is conducted adequately. First regional water quality status report is published Information system with database and communication system is constructed and operated. Water sampling and monitoring equipment are provided and regional WQMS staff has adequate knowledge and skill on how to use them.	Regional Office performance reports to EMB Project monitoring and interim evaluation reports	Adequate and timely budget is provided for regional EMB operations so that new WQM mandates can be performed effectively EMB RO personnel trained under the project are given regular positions so they do not leave their jobs

Main Activities:		
1.1 Set up multi-agency coordination system to formulate an integrated water quality management framework and implementation plan. 1.2 Prepare procedural guidelines for designating Water Quality Management Areas (including identification of non-attainment areas as defined under the CWA). 1.3 Formulate a comprehensive policy on use of market-based instruments for water quality management, including procedural guidelines for implementation. 1.4 Prepare procedural guidelines for classifying inland and marine water bodies as well as groundwater, including guidelines for conducting groundwater vulnerability mapping. 1.5 Prepare procedural guidelines for facilitating WQMA action planning (by the Area Governing Board) and follow-on compliance planning (by LGUs). 1.6 Prepare procedural guidelines, including system and procedures, for pollution load and charge computation in support of the discharge permitting system. 1.7 Prepare procedural guidelines for managing the National Water Quality Management Fund. 1.8 Prepare procedural guidelines for	**Input from Japanese Side:** (1) *Long-Term Experts*: The following tree long-term experts will be provided. The total man-hours of these long-term experts are estimated at about 150 M/M over 5 years. • Team Leader (specialist in environmental policy development and implementation) • Team Member (specialist in water quality management, industrial pollution control, and plant inspections) • Project Control Assistant (2) *Short-Term Experts*: JICA will provide 4 short-term experts to assist and advise in special technical fields. The total man-hours of the short-term expert are estimated at about 30 M/M over 5 years. • Specialist in water quality monitoring • Specialist in pollution source control • Specialist in environmental information systems • Specialist in water quality modeling	Counterpart staff and support facilities are provided by EMB in a timely manner (Identify specifically how many staff and the counterpart support facilities required) **Preconditions:** Additional staff from other DENR units will be detailed to the PMO and TWGs as needed in both CO and ROs, thru formal orders.

categorization of industries, including point and non-point sources of water pollution. 1.9 Develop approach and prepare guidelines for establishing cooperation programs with other agencies and civic groups in water quality monitoring. 1.10 Prepare guidelines and initiate coordination arrangements for allowing flexibility in enforcing discharge standards for specific types of industry sources. 1.11 Prioritize pollution sources and in prepare an operations manual on conducting compliance inspections for various types of polluting facilities. 1.12 Review water quality guidelines to provide basis for water re-classification and revision of effluent standards. 1.13 Design and implement a training program for EMB CO and RO staff in all regions for each set of procedural guidelines; prepare training materials and conduct the training. 2.1 Establish coordination system with EMB Regional Offices in implementing the guidelines developed under Output 1. 2.2 Select or develop appropriate water quality modeling techniques, including calibration, testing and demonstration in selected regions. 2.3 Design, develop, trial implement a national information campaign for raising public awareness of water quality management issues.	(3) *Local Consultants and Local Sub-Contractors*: Will assist EMB in formulating plans and guidelines and providing the training through workshops and OJT training in pilot regional offices (4) *Local Assistant and Secretaries*: to provide general assistance in implementing the Project. (5) *Equipment and Materials*: The categories of equipment and materials to be provided are shown in the following table. The actual items will be decided after a precise survey on needs. • Equipment for field sampling, monitoring, and measurement, and vehicle • Equipment and materials for water laboratory • Equipment for water quality information system (6) *Technical Training in Japan or Third Countries*: This is intended for EMB staff engaged in water quality management. The fields of training, periods, training places and trainees will be decided in the course of the project implementation.	

2.4 Design and develop a water quality and pollution source database management and reporting system for use by ROs, with capability for mapping pollution sources using GIS. 2.5 Design and develop an Internet-based WQM information and communication system to link the EMB CO with the ROs. 2.6 Integrate regional reports and publish the first national status report on water quality. 2.7 Implement procedures for managing the national water quality management fund (based on procedural guidelines developed under Activity 1.7). 2.8 Procure sampling equipment for WQMS staff, and streamline operations of the EMB central lab as a reference laboratory and training center for RO laboratory personnel. 2.9 Design and implement a training program for EMB CO staff on use of the information and communication system developed, including fund management. 2.10 Conduct activities to generate resources for non-pilot ROs, e.g., planning workshops with other donor agencies (e.g., World Bank, ADB). 3.1 Implement the guidelines for WQMA delineation. 3.2 Set up the Governing Board and Technical	**Input from Philippine Side:** (1) Counterpart Staff: Designated counterpart staff shall work as the counterparts of the Japanese side to implement the Project whenever requested. • Chairman of the Joint Coordination Committee • Project Director • Project Manager • Project Chief • Project members • Members of National Technical Working Group • Members who work jointly in the pilot regional offices (2) Facilities for Japanese side: The Philippine side will provide office space under the secure conditions. The facilities will be equipped with desks, meeting tables, air conditioners, communication equipment, etc. (3) Equipment and Materials: The Philippine side will	

Secretariat for the designated WQMAs. 3.3 Facilitate the formulation of WQMA GB action plans and LGU compliance plans based on guidelines developed under Activity 1.5. 3.4 Assist WQMA GBs in establishing and managing the area water quality management fund and the activities of multi-sectoral monitoring groups. 3.5 Assist in establishing area-based cooperation arrangements in water quality monitoring based on procedures developed under Activity 1.9. 4.1 Identify attainment and non-attainment areas based on the procedures developed under Activity 1.2. 4.2 Classify or re-classify water bodies as needed based on guidelines developed in Activities 1.4 and 1.12. 4.3 Implement the discharge permitting and wastewater charge system based on procedures developed under Activity 1.6. 4.4 Set up collection and accounting systems for permitting fees and wastewater charges. 4.5 Conduct pollution source inventories and water quality field surveys. 4.6 Apply the water quality model developed under Activity 2.2, for example, in allocating pollution quotas in non-attainment areas. 4.7 Implement procedures (developed under Activities 1.8 and 1.11) for pollution source	provide other necessary equipment and materials necessary for project implementation. (4) Budget for Project Operation: The Philippine side will provide salary and allowance for the staff of the Philippine side, including budget for travel expenses and operation expenses required under the project.	

categorization, prioritization and compliance inspections. 4.8 Manage the database of pollution sources and WQ data survey results, and link the regional database to the national database at the EMB CO. 4.9 Procure equipment for sampling and analysis, and develop training materials to enhance capability of EMB regional laboratories; also assist ROs in initiating laboratory partnerships. 4.10 Prepare and disseminate the first regional water quality status reports. 4.11 Design and implement a program for RO staff in the non-pilot regions to visit and observe WQM procedures being implemented in the pilot regions		

Annex I-B

Plan of Operations (Year-Quarter)

Output 1: Integrated policy framework for WQM based on the CWA is established and supported by adequate procedural guidelines and training for EMB staff	Year 1				Year 2				Year 3				Year 4				Year 5			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Prepare for project implementation: work and financial plan, operating policy guidelines, consultants and staff recruitment, performance management system																				
1.1 Set up multi-agency coordination system to formulate an integrated water quality management framework and implementation plan																				
1.2 Prepare procedural guidelines for designating Water Quality Management Areas (including identification of non-attainment areas as defined under the CWA)																				
1.3 Formulate a comprehensive policy on use of market-based instruments for water quality management, including procedural guidelines for implementation																				
1.4 Prepare procedural guidelines for classifying inland and marine water bodies as well as groundwater, including guidelines for groundwater vulnerability mapping																				
1.5 Prepare procedural guidelines for facilitating WQMA action planning (by the Area Governing Board) and follow-on compliance planning (by LGUs)																				
1.6 Prepare procedural guidelines, including system and procedures, for pollution load and charge computation in support of the discharge permitting system																				
1.7 Prepare procedural guidelines for managing the National Water Quality Management Fund																				
1.8 Prepare procedural guidelines for categorization of industries, including point and non-point sources of water pollution																				
1.9 Develop approach and prepare guidelines for establishing cooperation programs with other agencies and civic groups in water quality monitoring																				
1.10 Prepare guidelines and initiate coordination arrangements for allowing flexibility in enforcing discharge standards for specific types of industry sources																				
1.11 Prioritize pollution sources and in prepare an operations manual on conducting compliance inspections for various types of polluting facilities																				
1.12 Review water quality guidelines to provide basis for water re-classification and revision of effluent standards																				
1.13 Design and implement a training program for EMB CO and RO staff in all regions for each set of procedural guidelines; prepare training materials and conduct the training.																				

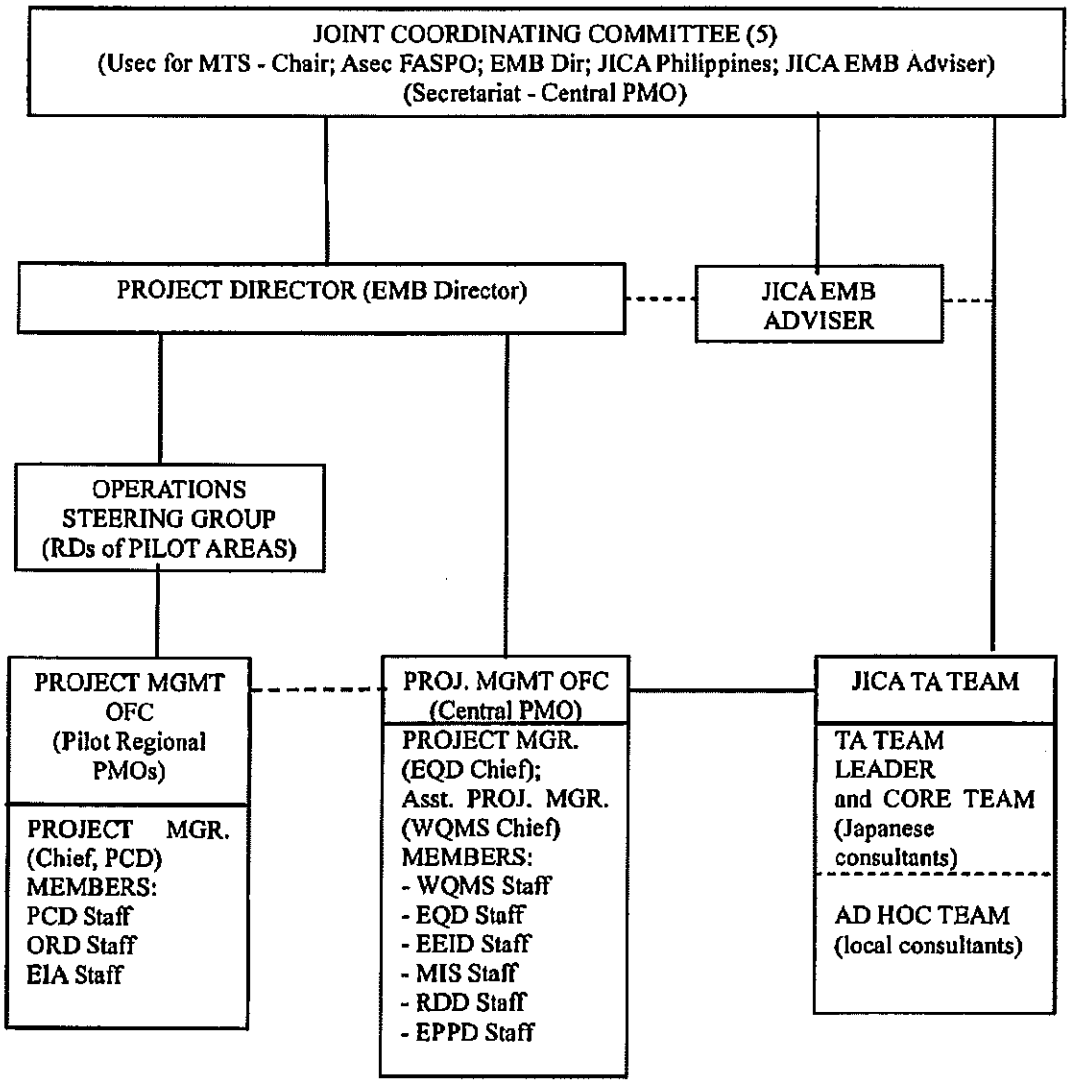
Output 2: Capability of EMB Central Office to lead and support Regional Offices strengthened	Year 1				Year 2				Year 3				Year 4				Year 5			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
2.1 Establish coordination system with EMB Regional Offices in implementing the guidelines developed under Output 1																				
2.2 Select or develop appropriate water quality modeling techniques, including calibration, testing and demonstration in selected regions																				
2.3 Design, develop and trial implement a national information campaign for raising public awareness of water quality management issues																				
2.4 Design and develop a water quality and pollution source database management system for use by ROs, with capability for mapping pollution sources using GIS																				
2.5 Design and develop an Internet-based WQM information and communication system to link the EMB CO with the ROs																				
2.6 Integrate regional reports and publish the first national status report on water quality																				
2.7 Implement procedures for managing the national water quality management fund (based on procedural guidelines developed under Activity 1.7)																				
2.8 Procure sampling equipment for WQMS staff, and streamline operations of the EMB central laboratory as a reference laboratory and training center for RO staff																				
2.9 Design and implement a training program for EMB CO staff on use of the information and communication system developed, including fund management																				
2.1 Conduct activities to generate resources for non-pilot ROs, e.g., planning workshops with other donor agencies such as World Bank and ADB																				

Output 3: Capability of EMB Regional Offices to establish and support WQMAs and related institutions is strengthened in 3 pilot regions	Year 1				Year 2				Year 3				Year 4				Year 5			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
3.1 Implement guidelines for WQMA delineation																				
3.2 Set up the Governing Board, Technical Secretariat and multi-sectoral working groups for the designated WQMAs																				
3.3 Facilitate the formulation of WQMA GB action plans and LGU compliance plans based on guidelines developed under Activity 1.5																				
3.4 Assist WQMA GBs in establishing and managing the area water quality management fund and the activities of multisectoral monitoring groups																				
3.5 Assist in establishing area-based cooperation arrangements in water quality monitoring based on procedures developed under Activity 1.9																				

Output 4: Overall capability of EMB Regional Offices in water quality management is strengthened in 3 pilot regions	Year 1				Year 2				Year 3				Year 4				Year 5			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
4.1 Identify attainment and non-attainment areas based on the procedures developed under Activity 1.2																				
4.2 Classify or re-classify water bodies as needed based on guidelines developed in Activites 1.4 and 1.12																				
4.3 Implement the discharge permitting and pollution charge system based on procedures developed under Activity 1.6																				
4.4 Set up collection and accounting systems for permitting fees and wastewater charges																				
4.5 Conduct pollution source inventories and water quality field surveys																				
4.6 Apply the water quality model developed under Activity 2.2, e.g., for allocating pollution quotas in non-attainment areas																				
4.7 Implement procedures (developed under Activities 1.8 and 1.11) for pollution source categorization, prioritization and compliance inspections																				
4.8 Manage the database of pollution sources and WQ data survey results, and link the regional database to the national database at the EMB CO																				
4.9 Provide equipment and develop training materials to enhance capability of EMB laboratories, and assist ROs in initiating laboratory partnerships																				
4.10 Prepare and disseminate the first regional water quality status report																				
4.11 Design and implement a program for RO staff in the non-pilot regions to visit and observe WQM procedures being implemented in the pilot regions																				

Annex II

Tentative Project Management Structure



Annex III

Measures to be Taken by Both Parties

I. Measures to be Taken by JICA

In accordance with the laws and regulations in force in Japan, JICA will take, at its own expense, the following measures according to the normal procedures under the Colombo Plan Technical Cooperation Scheme.

1. Dispatch of Japanese Experts

JICA will provide the services of the Japanese experts as listed in PDM in Annex I-A.

2. Provision of Machinery and Equipment

JICA will provide materials and equipment and/or necessary expense for the implementation of the Project

II. Measures to be Taken by the Government of the Philippines

1. The Government of the Republic of the Philippines will take necessary measures to ensure that the self-reliant operation of the Project will be sustained during and after the period of Japanese technical cooperation, through full and active involvement in the Project by all related authorities, beneficiary groups and institutions.

2. The Government of the Republic of the Philippines will ensure that the technologies and knowledge acquired by the Philippine nationals as a result of Japanese technical cooperation will contribute to the economic and social development of the Philippines.

3. The Government of the Republic of the Philippines will grant in Philippine privileges, exemptions and benefits to the Japanese experts referred to in I-1 above and their families, which are no less favorable than those accorded to experts of third countries working in the Philippines under the Colombo Plan Technical Cooperation Scheme.

4. The Government of the Republic of the Philippines will ensure that the Equipment referred to in I-2 above will be utilized effectively for the implementation of the Project in consultation with the Japanese experts.

5. In accordance with the laws and regulations in force in the Philippines, the Government of the Republic of the Philippines will take necessary measures to provide at its own expense :

   (1) Services of the Philippines counterpart personnel and administrative personnel as listed in PDM in Annex I-A;
   (2) Land, buildings and facilities for project activities;
   (3) Supply or replacement of machinery, equipment, instruments, vehicles, tools, spare parts and any other materials necessary for the implementation of the Project other than the Equipment provided by JICA under I-2 above;
   (4) Assistance to find suitably furnished accommodation for the Japanese experts and their families.

6. In accordance with the laws and regulations in force in the Philippines, the Government of the Republic of the Philippines will take necessary measures to meet:

   (1) Expenses necessary for transportation within the Philippines of the Equipment referred to in I-2 above as well as for the installation, operation and maintenance thereof;
   (2) Customs duties, internal taxes and any other charges, imposed in the Philippines on the Equipment referred to in I-2 above; and
   (3) Running expenses necessary for the implementation of the Project.

PROJECT DOCUMENT

CAPACITY DEVELOPMENT PROJECT ON WATER QUALITY MANAGEMENT

Department of Environment and Natural Resources
And
Japan International Cooperation Agency

August 2005

Foreword

Intensified development activities have put the country's water resources under serious pollution threat. Studies on the impact of water pollution put its cost to the national economy at P67B every year due to adverse effects on public health, fisheries and ecotourism, among others. Poor water quality also threatens the safety of the country's existing water supply sources. It increases the cost of new water supply development programs at a time when demand for water is intensifying due to the combined effects of population and economic growth.

The Clean Water Act, passed in 2004, was a concerted effort of government, private sector and civil society to control water pollution and prevent its further deterioration. This law represents a landmark change in national policy based on the principle that economic development will be sustainable only if accompanied by concern for environment protection. Clean water is vital to a keep the economy growing. As experience in other countries clearly shows, economic growth increases the national capacity to protect the environment.

The Clean Water Act, together with its Implementing Rules and Regulations issued by the DENR recently, integrates into one strategy the existing command-and-control measures for controlling water pollution with new management approaches that make use of economic instruments based on the polluters-pay-principle, promote greater self-regulation on the part of industry, and expand the role of other agencies and the public in water quality management. The Act mandated the DENR, through the Environmental Management Bureau, to lead the implementation of such comprehensive water quality management strategy.

Recognizing its present technical capability constraints in implementing Clean Water Act mandates, the Bureau has requested assistance from the Government of Japan through JICA. Japan has many and varied experiences in managing water quality that can be of great value to EMB in strengthening its management capacity. EMB appreciates JICA's willingness to provide such assistance.

This Project Document was prepared as a collaborative effort between DENR/EMB and JICA. The activities represent priorities for assistance that were identified by the EMB itself. Through JICA's support for these activities, we are confident that the Bureau will be able to develop a strong capacity to perform its mandates under the Clean Water Act.

I look forward to starting this Project soonest.

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Armando A. De Castro
Undersecretary for Management and Technical Services
Department of Environment and Natural Resources

Foreword

Following the enactment of the Clean Water Act (CWA) by the Philippine Congress, JICA was given an opportunity to assist EMB in developing the Implementation Rules and Regulations (IRR) to carry out the mandates assigned by the Act to DENR. In the process of formulating the IRR, it became evident that the task of implementing the new policy instruments and water quality management approaches mandated under the Act will be difficult for the EMB to perform, given present limitations in resources and technical capability.

In the course of JICA's support to the IRR preparation, we have recognized that strengthening EMB's overall capacity in water quality management is an urgent necessity in order to enable EMB to perform its specific mandates under the Clean Water Act. Such assistance is also of long term importance to the Philippine economy in order to protect public health and the environment from the growing threat of worsening water pollution.

The project proposal which was developed through a joint effort between EMB and JICA covers a number of activities that are grouped under four result areas as follows:

1. Formulating an integrated water quality policy framework and providing procedural guidelines for implementation of EMB's roles within such framework;
2. Strengthening the Central Office's capability to lead and support the Regional Offices;
3. Assisting the Regional Offices in establishing and sustaining Water Quality Management Areas and their institutions; and
4. Supporting the Regional Offices in WQM, particularly in enforcing the discharge permitting and wastewater charge system as well as in compliance monitoring.

We hope that, through this project, the EMB will be effectively positioned to carry out its mandates under the Clean Water Act, and that this will lead to a strong national capacity for water quality management.

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Shozo Matsuura
Resident Representative in the Philippine
Japan International Cooperation Agency

PROJECT DOCUMENT

CAPACITY DEVELOPMENT PROJECT ON WATER QUALITY MANAGEMENT

8 July 2005

Japan International Cooperation Agency

ENVIRONMENTAL MANAGEMENT BUREAU

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Abbreviations

A&D	Alienable and Disposable
ADB	Asian Development Bank
ARMM	Autonomous Region in Muslim Mindanao
AWQMF	Area Water Quality Management Fund
BFAR	Bureau of Fisheries and Aquatic Resources
BOD	Biochemical Oxygen Demand
BOI	Board of Investments
BPO	Business pricing outsourcing
CAA	Clean Air Act
CAR	Cordillera Autonomous Region
CD	Compact Disc
CHED	Commission of Higher Education
CM	Compliance Monitoring
CO	Central Office
COD	Chemical Oxygen Demand
CST	Communal Septic Tank
CWA	Clean Water Act
DA	Department of Agriculture
DANIDA	Danish International Development Assistance
DAO	Department Administrative Order
DBP	Development Bank of the Philippines
DEENR	Department of Environment, Energy, and Natural Resources
DENR	Department of Environment and Natural Resources
DepED	Department of Education
DILG	Department of Interior and Local Government
DO	Dissolved Oxygen
DOH	Department of Health
DOST	Department of Science and Technology
DP	Discharge Permit
DPWH	Department of Public Works and Highways
DTI	Department of Trade and Industry
ECC	Environmental Compliance Certificate
ECONA	Environmental Consent Agreement
EIS	Environmental Impact Statement
EMB	Environmental Management Bureau
EM-PC	Environmental Management and Pollution Control
EO	Executive Order
EQD	Environmental Quality Division
FASPO	Foreign Assisted and Special Projects Office
FDI	Foreign Direct Investment
FGD	Focus Group Discussion
GAA	General Appropriations Act
GB	Governing Board
GDP	Gross Domestic Product
GEF	Global Environment Fund
GFI	Government Financing Institutions
GIS	Geographic Information System
GNP	Gross National Product
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
GVA	Gross Value Added
GW	Ground Water
HAB	Harmful Algal Blooms
IEC	Information and Education Campaign

IMO	International Maritime Organization
IRR	Implementing Rules and Regulations
IWQMF	Integrated Water Quality Management Framework
IWRM	Integrated Water Resources Management
JBIC	Japan Bank For International Cooperation
JICA	Japan International Cooperation Assistance
LGU	Local Government Unit
LISCOP	Laguna de Bay Institutional Strengthening and Community Participation
LLDA	Laguna Lake Development Authority
LWUA	Local Water Utilities Administration
MAP	Minerals Action Plan
MBI	Market-Based Instrument
MCM	Million Cubic Meters
MGB	Mines and Geosciences Bureau
MIS	Management Information System
MMDA	Metropolitan Manila Development Authority
MT	Metric Ton
MTPDP	Medium Term Philippine Development Plan
MTSP	Manila Third Sewerage Project
MWCI	Manila Water Company, Inc
MWSI	Maynilad Water Services Inc.
MWSS	Metropolitan Waterworks and Sewerage System
NAA	Non-Attainment Areas
NAMRIA	National Mapping and Resources Information Authority
NCR	National Capital Region
ND	Not Detectable
NEDA	National Economic and Development Authority
NEPC	National Environmental Protection Council
NEUF	National Environmental User Fee
NGO	Non-government Organization
NMTT	Navotas-Malabon-Tullahan-Tenejeros River Revival Campaign
NOAA	National Oceanic and Atmospheric Administration
NPCC	National Pollution Control Commission
NSSMP	National Sewerage and Septage Management Plan
NWAPCC	National Water and Air Pollution Control Commission
NWIN	National Water Information Network
NWQMF	National Water Quality Management Fund
NWQSR	National Water Quality Status report
NWRB	National Water Resources Board
O&M	Operations & Management
ODA	Overseas Development Assistance
OECF	Overseas Economic Cooperation Fund
OFW	Overseas Filipino Worker
OPP	Organic Persistent Pollutant
PAB	Pollution Adjudication Board
PCB	Polychlorinated Biphenyls
PCD	Pollution Control Division
PCG	Philippine Coast Guard
PCM	Project Cycle Method
PCMARD	Philippine Council for Marine and Aquatic Research and Development
PD	Project Document
PDM	Project Design Matrix
PEENRA	Philippine Environmental Economics and Natural Resources Accounting
PEM	Philippine Environment Monitor
PEPP	Philippine Environmental Partnership Program

PEZA	Philippine Economic Zone Authority
PhP	Philippine Peso
PIA	Philippine Information Agency
R&D	Research and Development
PMO	Project Management Office
RA	Republic Act
RBO	River Basin Organization
RO	Regional Office
SARS	Severe Acute Respiratory Syndrome
SAS	Sanitation and Sewerage
SBMA	Subic Bay Metropolitan Authority
SEECCTA	Strengthening Environmental Enforcement and Compliance Capacity Technical Assistance Project
SIDA	Sweden International Development Agency
SMICZMP	Southern Mindanao Integrated Coastal Zone Management Project
SMR	Self-Monitoring Report
STP	Sewage Treatment Plant
TDS	Total Dissolved Solids
TFP	Total Factor Productivities
TS	Technical Secretariat
TSS	Total Suspended Solids
TWG	Technical Working Group
UN	United Nations
USAEP	U.S. Asia Environmental Partnership
USD	United States Dollars
WB	World Bank
WQ	Water Quality
WQM	Water Quality Management
WQMA	Water Quality Management Area
WQMAAP	Water Quality Management Area Action Plan
WQMAGB	Water Quality Management Area Governing Boards
WQMS	Water Quality Management Section
WRRC	Water Resources Regional Council

Executive Summary

Rationale for Project

Water pollution has been estimated to cost the economy around PhP67 billion (US$1.3 billion) annually due to adverse effects on public health, fisheries production, and tourism (World Bank, 2003). In 2004, the Philippine Clean Water Act (CWA) mandated a comprehensive approach to address water quality problems by combining into one package all existing water quality management systems together with new policy instruments (e.g., market-based instruments). The CWA also broadened the management system to include the role of other agencies, local government units, and the public.

New market-based instruments will be initially implemented through a system for charging fees on amounts of pollutants present in the wastewater. For EMB, it will be a new task given that its personnel are mainly exposed to conventional regulatory-driven approaches. Even the conventional approaches have not yet been perfected. The Act also expands the scope of water quality management to include domestic wastewater, for which EMB coordination with local government units and other agencies will be necessary. This requires formulation of an integrated and multi-agency policy framework and action plan. Management of groundwater quality is yet another new challenge for EMB, starting with classification of groundwater resources. This will put a strain on EMB resources, since the classification of surface waters has not even been completed yet.

Furthermore, the CWA sets out to empower citizens to be involved in water quality management through creation of Water Quality Management Areas (WQMAs) managed by local governing boards. Tasked to support these new management bodies, EMB will have to develop new skills to act as institution-builders and technical secretariats to governing boards under the WQMA system.

CWA's new mandates to EMB come at a time when the organization is already saddled with considerable responsibilities for implementing two other landmark laws prior to the CWA: the Philippine Clean Air Act of 1999 and the Ecological Solid Waste Management Act of 2000. EMB recognized that, without assistance, it will be difficult for the organization to comply with its new mandates under the CWA.

Following EMB's request to JICA for technical assistance, JICA provided a team to conduct an assessment of capacity and weaknesses of EMB's water quality management system. Based on the capacity assessment and problem analysis, a participatory approach was followed in preparing the Project Document. Together with JICA consultants, EMB Central and Regional Office staff identified and prioritized the various CWA implementation actions needed to be supported by the Project.

Problem Assessment and Considerations for Project Strategy

The CWA's goal is to comprehensively change the way water quality management is performed. This can only be achieved over a long term and, within the CWA's far-reaching context, there is a wide range of activities in need of support. However, a single project cannot realistically aim to tackle the entire support needs of the CWA implementation. The Project is not designed to support the strengthening needs of all agencies with specific mandates under the Act, such as DPWH for sewerage management. The Project focuses on supporting EMB. Nonetheless, the support will include assisting EMB in aligning the role of other agencies in integrated water quality management through a policy framework development and coordination mechanism.

The project strategy was, therefore, developed to specifically address EMB's capacity constraints in implementing its CWA mandates. Based on the previous assessments of EMB's capacity conducted by JICA and EMB, and supplemented by findings from related studies (e.g., SEECTA), four major areas of weaknesses were identified:

- Lack of an integrated policy framework and coordination system for water quality management, including lack of procedures and guidelines for implementing such framework and management system;
- Inadequate capability of the EMB Central Office to lead and support the regional offices in integrated WQM and CWA implementation;
- Lack of experience and capability among regional offices to facilitate establishment and support the operation of water quality management areas and their associated participatory mechanisms and institutions; and
- Overall lack of technical and management capability among regional offices in water quality management, and specifically in implementing new regulatory mandates under the CWA IRR (i.e., discharge permitting and wastewater charge system).

The four groups/categories of EMB's weaknesses above are summarized in **Figure ES-1** in the form of a cause-and-effect diagram. The problems and causes shown in the diagram were validated by EMB Central Office staff and EMB regional directors.

Project Strategy and Design

The problem assessment was used to formulate the project strategy. The Project strategy does not attempt to address all relevant capacity problems of EMB identified in the problem assessment. During the course of the focus group discussions with EMB, it was agreed that the CWA implementation activities to be supported by the Project should be prioritized based on each activity's urgency in order to comply with CWA/IRR implementation timelines, as well as on the activity's importance for long term capacity development.

In supporting EMB, the capacity development strategy goes beyond technical assistance in the form of expert advice on technical and engineering aspects of water quality management. The support includes institutional and organizational development. Within EMB itself, CWA implementation tasks are divided between the Central Office and the Regional Offices. Aside from assisting the EMB CO in developing an integrated policy framework and implementation procedures, the Project will strengthen the CO to become an effective supporter to the EMB Regional Offices where the policy and procedures will actually be used.

The Project strategy is summarized in **Figure ES-2** in the form of a "means-to-end" hierarchy connecting the project objective with outputs/results, and main activity items. It is emphasized that the items in the project design are from the standpoint of EMB as the main actor, not the Project technical assistance team. This is to highlight the ownership of the project by EMB and the latter's commitment to its successful outcome. The Project's role is to provide support in accomplishing EMB's capacity strengthening through the outputs and activities included in the project design.

The project *goal* is development of national capacity to implement an integrated water quality management system within the context of the Clean Water Act. The specific project *purpose* is capability strengthening of Central and Regional EMB offices to implement priority actions mandated to the agency by the CWA and its Implementing Rules and Regulations. This purpose will be attained if, through the Project assistance, EMB becomes capable of implementing its mandates under the CWA through: (i) an integrated WQM policy framework and clear procedures; (ii) trained staff; (iii) adequate equipment and information systems, and (iv) effective linkage with related agencies and stakeholders.

Figure ES-1. Problem Assessment

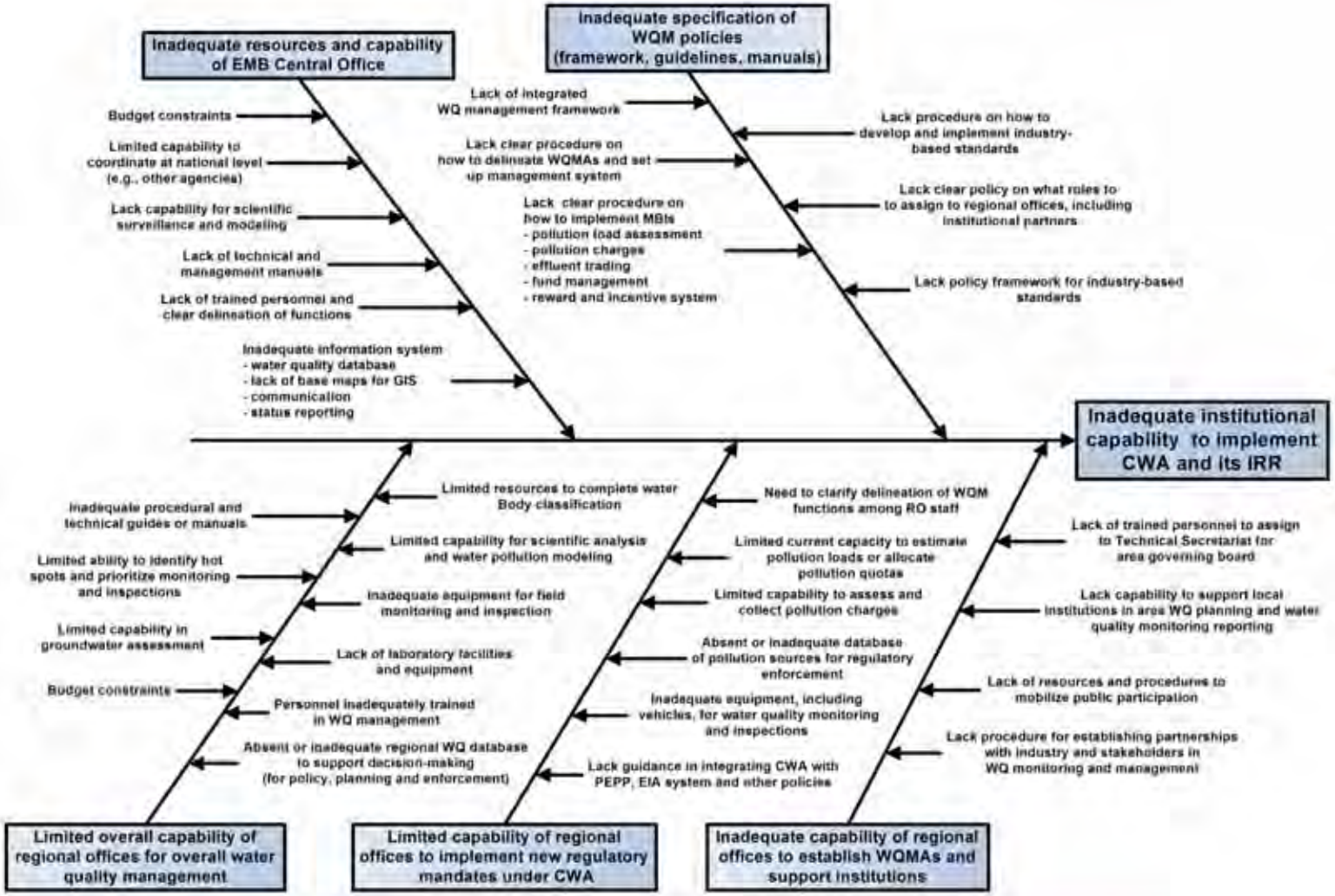
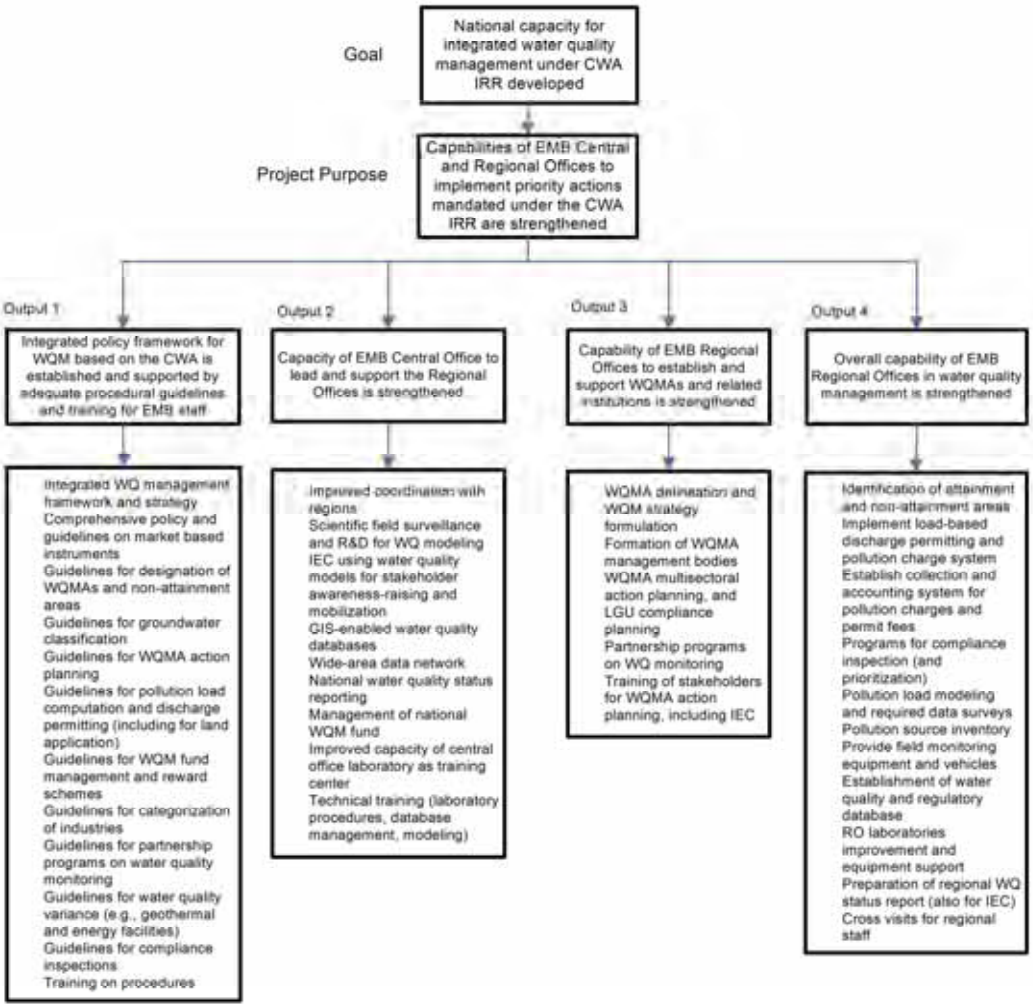


Figure ES-2. Project Strategy Elements



As shown above, the Project is structured into four main activity groups, each group generating an *Output* or key result. The activity groups include:

- Formulating an integrated water quality policy framework and providing procedural guidelines for implementation of EMB's role within such framework;
- Strengthening the Central Office's capability to lead and support the regional offices;
- Assisting the Regional Offices in establishing and sustaining Water Quality Management Areas and their institutions; and
- Supporting the Regional Offices in WQM, particularly in enforcing the discharge permitting and wastewater charge system as well as in compliance monitoring.

The specification of Project Outputs and the main activities under each, including key performance indicators are summarized in **Table ES-1**.

Table ES-1. Summary of Project Outputs and EMB Activities to be Supported by the Project

Outputs	Output 1: Integrated policy framework for WQM based on the CWA is established and supported by adequate procedural guidelines and training for EMB staff	Output 2: Capacity of EMB Central Office to lead and support the Regional Offices is strengthened.	Output 3: Capability of EMB Regional Offices to establish and support WQMAs and related institutions is strengthened in 3 pilot regions.	Output 4: Overall capability of EMB Regional Offices in water quality management is strengthened in 3 pilot regions.
Scope of Activities	There are three types of activities under this output: policy formulation, development of procedural guidelines, and training. The policy activity will produce an integrated water quality management framework to guide CWA IRR implementation. Within such framework, procedural guidelines for specific provisions of the CWA IRR will be prepared, covering: market-based instruments, water classification, WQMA designation and area planning, identification of non-attainment areas, industry categorization, compliance monitoring and enforcement.	The activities for this output cover strengthening coordination between CO and ROs for CWA IRR implementation; water quality modeling; public information; development of database systems and data network; preparation of water quality status report; management of the national WQM fund; support for training programs of the EMB CO laboratory; management system training for CO staff, and initiatives for mobilizing additional resources from other donors to support non-pilot regions.	The main activities are patterned after the steps specified for establishing area-based management system under the CWA. These cover the designation of WQMAs, setting up area management bodies, formulating area-based action plans and LGU-based compliance plans, managing area water quality funds, and initiating collaborative water quality monitoring arrangements. The Project Team's support for the activities under this output will be provided through the WQMA Technical Secretariat based at the EMB RO.	The activities are designed to support ROs in the pilot regions to implement the procedures and support systems developed under Outputs 1 and 2. Activities to be supported include the identification of non-attainment areas, classification of water bodies and their monitoring, implementation of the discharge permitting and wastewater charge system, accounting of revenues from permitting and wastewater charges, conduct of pollution source inventories, use of such inventories for area planning and prioritizing regulatory operations, data surveys and database development including use of water quality models for analysis.
Output Indicators	Publication of the policy framework and supporting procedural guidelines and training. Adoption and testing of these procedures in three pilot regions, including	Tools for scientific analysis, database management, public education and reporting system. CO WQMS staff provided with equipment and training, and effectively coordinating the CWA implementation of CWA in regions	At least one WQMA in each pilot region is established, with governing and support bodies activated and action plans completed.	Major pollution sources in pilot regions are complying with the discharge permitting/charge system. All principal/priority rivers in pilot regions classified, and equipment of EMB regional laboratories in pilot regions upgraded.

Strategy for Project Implementation

Selection of Pilot Regions. The project is designed as a comprehensive strengthening package that will benefit the whole of the EMB organization—the Central Office as well as all the Regional Offices. Even though only three regions will be selected as pilot areas for testing and refinement of the CWA policy implementation procedures as well as management support systems (e.g., standardized data systems) developed at the Central Office, all regions will benefit from project-sponsored training on the application of these guidelines and management tools. The pilot Regional Offices will serve as learning areas where the procedural and system tools will initially be implemented, while at the same time providing opportunity for EMB managers in the other regions to observe and draw lessons.

The pilot regions will be selected so that each of the major island groupings (Luzon, Visayas and Mindanao) will have a pilot region represented, and so that the regions chosen provide representative settings for water quality management, i.e., the first pilot region characterized by having highly urbanized cities wherein water clean water and sanitation are paramount issues; a second region faced with water quality management issues that threaten eco-tourism and fisheries; and a third pilot region characterized by having substantial industrial activity (e.g., mining). Finally, the selected region must have adequate staff available to perform the WQM activities that will be strengthened.

Collaboration with Other Donors. The project's goal is nation-wide capacity-building in water quality management. Focusing on three pilot regions will not achieve this goal. The role of other funding agencies will be crucial in replicating the strengthening activities beyond the three pilot regions that will be directly assisted by the Project. The choice of these regions is based on their usefulness as testing areas for the procedures and systems developed under the project, as well as their value as learning areas for the other regions.

A concerted support by JICA and other donors in strengthening EMB using common procedures and systems developed under this Project will ensure a more efficient and effective strengthening process. It will avoid potential for introducing incompatible procedures in different regions if support systems are developed under separate technical assistance projects of different donors lacking coordination. An activity has been included in the Project to generate additional funding from other agencies so that the strengthening activity can be extended to other regions.

General Timetable for Implementation. Outputs 1 and 2 of the strategy are required in order to support CWA implementation actions in the regions. Output 1 consists of the integrated policy framework and the procedures and systems that EMB regional offices need in order to guide their CWA implementation activities. Output 2, in addition, will provide the management tools to enable efficient implementation of procedures, e.g., scientific analysis tools, equipment, database management, financial accounting, and reporting system.

Therefore, the implementation of the Project will generally follow two phases. Phase 1 (first 2 years) will focus on Outputs 1 and 2. Phase 2 (years 3 to 5) will focus on Outputs 3 and 4, starting with the 3 pilot regions under the Project and expanding to the other regions through replication support from other funding agencies. However, this is only a general phasing. Activities related to Outputs 1 and 2 will continue beyond the second year--for instance, to revise procedures and upgrade tools during the 4^{th} or 5^{th} year based on results of their application in the regions. Some activities in Outputs 3 and 4, on the other hand, will be initiated during the first 2 years--for instance, coordination activities with regional offices in developing the procedures/systems, and the data surveys needed for water quality status reporting and modeling. The general timeline of activities is shown in **Table ES-2**.

Table ES-2. General Timeline of Project Implementation

	Years 1 and 2	Years 3 to 5
Output Activities (Based at Central Office)	• Set up of multi-agency coordination system for policy formulation • Formulation of Integrated WQM Policy Framework • Development of procedures, operating guidelines and manuals to implement EMB's roles in the integrated policy framework • Orientation and training of regional staff on the policy framework and implementing procedures	• Coordination of multi-agency roles in integrated policy implementation • Policy review and refinement • Revision and updating of procedures, including guidelines and manuals • Continuation of training for regional staff in procedure implementation
Output 2 Activities (Based at Central Office)	• Coordination with EMB regions on procedures development • Development of scientific tools (e.g., modeling) and information system (database and network) • Development of fund management system • Water quality status reporting system, including data gathering • IEC approaches and mechanics • Streamlining of laboratory procedures and training of regional staff	• Coordination with EMB regions on procedures testing and refinement • Refinement and updating of various management tools (models, databases, reporting system) • Adjustment of IEC approaches
Output 3 Activities (Based in Regions)	• Initial delineation of Water Quality Management Areas (WQMAs) • Coordination with area-based stakeholders to create local management bodies • Training of EMB Technical Secretariats to support area governing boards	• Additional delineation of WQMAs • Orientation-training of area stakeholders in WQM planning and management • Multi-sectoral planning by area governing boards and stakeholders • Action planning by LGUs • Implementation of area water quality improvement projects • Establishment of cooperation programs in water quality monitoring
Output 4 Activities (Based in Regions)	• Data surveys/assembly • Water quality status reporting • Equipment acquisition and training (WQ sampling and monitoring equipment, laboratory equipment, vehicles)	• Water body classification • Identification of non-attainment areas • Pollution source inventories and categorization • Discharge permitting system and wastewater charge system • Financial accounting and reporting (for WQ fund management) • Regulatory compliance inspections • Water quality modeling to manage non-attainment areas • Database build-up • Cross-visits to share lessons from the pilot regions

Inputs and Project Management

Inputs from Japanese Side. JICA will provide a technical assistance team consisting of three long-term experts and four short term experts during the project implementation. The role of the team is mainly to assist and advise the staff of EMB CO and ROs to perform specific project activities identified in the Project Document.

The JICA technical assistance team will also engage local consultants. Implementing the capacity development project requires knowledge of local policy, institutional and management systems that local consultants can provide. The Japanese and Filipino consultants will work together with staff of EMB CO and ROs to produce the expected outputs. They are also expected to design and implement training-workshops together.

JICA will also provide equipment related to the project's objectives for the EMB Central Office and the three pilot regions. Given that the main objective of the Project is capacity development, provision of hardware is not the focus and the equipment will be provided on the basis of necessity.

JICA will also provide the opportunities for the training in Japan or in other countries for EMB staff engaged in water quality management functions.

Input from Philippine Side. EMB/DENR designates appropriate personnel as counterparts. The designated staff will work together with the Japanese and Filipino consultants in implementing the Project. EMB/DENR will also provide an appropriate size of office space for JICA technical assistance team and local consultants. The office space will be equipped with desks, meeting tables, air conditioners, communication equipment, and other basic furnishings. EMB/DENR will also provide materials and equipment needed for project implementation other than the ones provided by the Japanese side.

EMB/DENR will be responsible for providing salary and allowances for the personnel of the Philippine side, including budget for travel expenses and operation expenses required for the mobilization of the counterpart staff during project implementation.

Project Management. The proposed Project Management structure is shown in **Figure ES-3**. A Joint Coordination Committee will be formed whose function is to provide policy guidance for project implementation. The committee will facilitate linkage with other agencies, particularly their involvement in preparing the integrated WQM policy framework. It will also facilitate linkage with other donors to generate support for replicating project activities in the other regions.

Project implementation is the responsibility of EMB. The EMB Director will act as the overall Project Director and direct counterpart of the JICA Adviser. The Project Director will be responsible for overall project supervision, and for managing coordination with other agencies and with EMB Regional Directors in implementing various project-related activities.

The Project Management Office will be based at the EMB CO's Environmental Quality Division (EQD). The EQD Chief will act as the Project Manager (or PMO head) responsible for directing project operations according to agreed annual work and financial plans. He will coordinate project activities with the EMB directors in the three pilot regions. He will also serve as the direct EMB counterpart of the technical assistance Team Leader (Japanese Expert). The Japanese and local consultants/subcontractors will work under the supervision of the technical assistance Team Leader. Day-to-day activities of project management, including coordination of joint activities involving EMB staff and the technical assistance team, will be the responsibility of the Chief of the EQD's Water Quality Management Section (WQMS) who will be designated as Project Coordinator for the PMO. He will also monitor the overall performance of the Project on behalf of EMB.

Each of the three pilot regions will have their respective project management units based at the RO Water Quality Management Section. These units will be under the supervision of a Regional Project Coordinator, the head of the RO Water Quality Management Section. These regional project management units are considered as sub-units of the Project's PMO to ensure coordination. Therefore the Project Coordinator based at the EMB CO will coordinate directly with his counterpart Regional Project Coordinators.

Pre-Evaluation of Project

The Project is well consistent with the environment policy in the Philippine and the aid policy of the Japanese Government, and sufficiently reflects the needs of the Philippine side derived from a series of focus group discussions. The PDM is logically constructed to attain the capacity development of EMB with the project designed to efficiently implement the Project by using local resources. The beneficial spill-over effect of capacity building beyond three pilot regions is expected to be significant. Consideration for sustainability was adequately paid in the design.

Thus, the Project is evaluated to be adequate for the technical cooperation project assisted by the Japanese Government. It, however, should be noted that the efficiency and the sustainability are expected to become secure, when EMB are successfully prepared to receive this big-scale project in the course of the preparation and implementation stage.

Chapter 1 Background

1.1 Significance of the Clean Water Act and Challenges for DENR-EMB

The Philippine Clean Water Act (CWA) was signed into law on 22 March 2004 and took effect on 6 May 2005, 15 days after its publication. The CWA is an important legislation because it aims to institutionalize a comprehensive approach to water quality management, and combines into one package all the water quality management systems devised since the mid-1970s together with new non-conventional approaches. The Act also introduced new players in water quality management, notably local area stakeholders (local government executives and citizenry) who will constitute governing boards to plan and direct water quality management activities in their designated areas.

Previous water quality-related laws, e.g., PD 984 of 1976, had relied on traditional regulation using "command-and-control" systems based on fixed standards and imposition of penalties for violation. The CWA goes farther by adding to the traditional regulatory system new "market-based" instruments that provide polluting establishments with economic dis-incentives for polluting activities. These market-based instruments are based on the "polluter-pays" principle and will initially be implemented through a system for charging fees on specific pollutants discharged with wastewater.

Further ahead, the CWA mandates the use of other market-based instruments, such as trading of effluent permits within a given area. DENR, through EMB, is mandated under the Act to devise the specific steps to implement these new management instruments. It will be a challenging task given that the personnel of EMB have no prior exposure to tools other than the conventional regulatory-based approaches. Even these conventional approaches have not yet been perfected. Procedures to combine traditional and new approaches mandated by the CWA will have to be developed to supplement the general guidelines provided by the Act and its Implementing Rules and Regulations (IRR).

The Act also expands the scope of water quality management beyond regulation of traditional industrial and commercial point sources, to now include area-wide sources particularly from households that are equally responsible for polluting water bodies. As such, the CWA is not addressed exclusively to DENR as the executing agency of the law. The mandate for controlling area-wide pollution sources, including the improvement of sanitation and sewerage systems, is assigned to local governments and public works agencies. Nevertheless, the DENR (through EMB) is mandated to set up the coordination system with local government units (LGUs) and other government agencies. This requires formulation of an integrated policy framework for water quality management with involving various agencies, and within the context of an integrated water resources management (IWRM) system.

Water quality management mandates to DENR have also been expanded by the CWA to include groundwater. Like economic instruments, conjunctive management of surface and groundwater quality is yet another new challenge for EMB. Current water quality standards and procedures are designed mainly to regulate quality of surface water bodies. Under the Act, groundwater systems are to be classified and then mapped to identify areas vulnerable to pollution. This new mandate, which falls on EMB, comes at a time when not all the surface water bodies have even been classified. EMB's resources for water classification will be under pressure to include groundwater.

Furthermore, the CWA sets out to build institutions by empowering citizens and multiple stakeholders to be involved in water quality management. This is to be accomplished through creation of Water Quality Management Areas (WQMAs) that are to be managed by local area

governing boards whose members include local government units, related institutions and people's organizations. To achieve this aim, DENR (through EMB) is mandated by the CWA to initiate the establishment of these management areas (by formally designating them) as well as to support the operation of the governing boards. This mandate has created an even more challenging role for EMB, since the organization has neither the capacity yet, nor the personnel trained, to function as institution-builders under the WQMA system.

The task of seeing to it that the ultimate goal of the CWA is attained—that is, improved water quality—will fall on the regional EMB offices. These offices are already saddled with responsibilities for implementing two other landmark laws that preceded the CWA: the Philippine Clean Air Act of 1999 (RA 8749) and the Ecological Solid Waste Management Act of 2000 (RA 9003).

The implementation approaches of these earlier laws are similar to that of the CWA (e.g., the formation of area governing boards in designated air-sheds under the Clean Air Act, and preparation of integrated policy frameworks and master plans). EMB's experience with implementing these laws will aid in their performance of new mandates under the CWA. Still, in the context of the far reaching scope of the CWA, the new mandates assigned to EMB require immediate support if these are to be performed within the timetable set in the CWA, and with effective and sustainable water quality impacts.

1.2 JICA Assistance

Cognizant of the challenges faced in the impending passage of the CWA during 2002, the EMB officially requested the Japanese Government for assistance in terms of a Capacity Development Project on Water Quality Management.

1.2.1 First JICA Draft Project Document

In response, JICA sent a mission team to develop the project document. The team, consisting of four Japanese consultants prepared a design document and submitted it in January 2005 ("Project Document (Draft) of the Technical Cooperation Project for Capacity Development of EMB for Environmental Quality Management by JICA.") Both EMB and JICA agreed then that the project would be developed in order to provide support to EMB in implementing its roles as specified in the Clean Water Act and its implementing rules and regulations (IRR).

However, the original draft Project Document was completed prior to the actual preparation and issuance of the IRR. Therefore the original PD could not fully reflect specific requirements of the IRR--for example, on the priorities and the timeline for implementation. The IRR was also prepared to allow for "room to grow", that is, the specific details and procedures to guide implementation are not yet described in detail. This means that additional procedural guidelines and operating manuals have to be developed in order to support implementation activities in the field, especially for the regions. The need for these additional guidelines and procedural manuals were not anticipated in the original Project Document. Thus this original document remains in draft.

Also, the comments on the document provided by the EMB Water Quality Management Staff and comments from the JICA adviser made it necessary to make substantial revisions to the draft document.

1.2.2 Revision of Draft Project Document

JICA decided to engage new consultants (Filipino and Japanese) to gather necessary information and review the project strategy and framework so that the Project Document can be finalized which will justify the project and clarify its purpose and elements. This is intended to be accomplished through substantial participation in selection of project strategy (and specific activities) by the EMB staff, both in the Central Office and in the regions.

The objective of the ongoing revision of the EMB-JICA Project Document, therefore, is to review and revise the existing draft Project Document prepared by the previous JICA mission in close consultation with EMB and the JICA Philippine Office including the JICA Senior Adviser to the Director of EMB, and together with counterpart staff of WQMS, the consultant team has reviewed the earlier problem assessment contained in the draft Project Document.

The assessment has been revised by incorporating findings from the World Bank-assisted SEECTA report, the capacity baseline assessment earlier conducted also by JICA, as well as the regional assessment recently done as part of the IRR preparation process.

Chapter 2 presents the institutional setting for water quality management in the Philippines, describing the context in terms of national development objectives and the current Medium Term Development Plan. This chapter also discusses the state of water quality, the causes of pollution, and the impact of the latter on the economy, public health, and protection of the environment.

Chapter 3 provides an assessment of the water quality management weakness, with the core problem identified as the inadequate capability of EMB, particularly in the regions, to implement the new water quality management mandates assigned to it under the CWA and its IRR.

Chapter 4 describes the strategy for addressing EMB's need for capacity strengthening to implement the CWA, and the four main elements of support proposed to be included in the project. Chapter 5 gives the details of the project design, describing the outputs (results) of the project and the activities that will be undertaken to deliver these outputs. Chapter 6 describes the project management structure and performance management system, while Chapter 7 presents an ex-ante evaluation of the project to justify its implementation.

1.3 Steps in Project Document Preparation

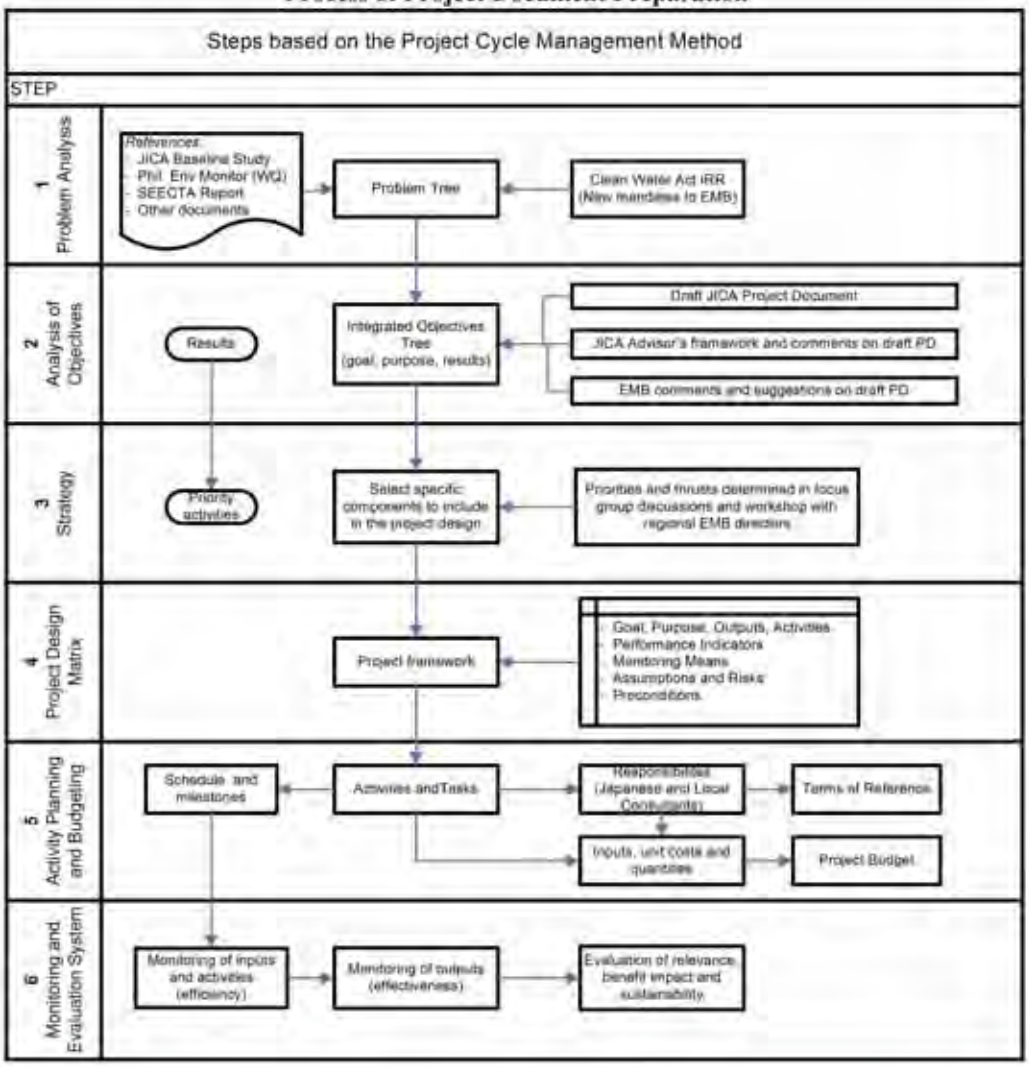
A participatory approach using the Project Cycle Management (PCM) method—similar to Logical Framework Analysis--was adopted in revising the draft Project Document. Participatory in the sense that the EMB Central and Regional Offices were involved in the process of identifying and prioritizing activities to be implemented under the Project through a series of focus group discussions with EMB and FASPO staff, including a policy workshop attended by the Regional EMB Directors.

The PCM method is summarized in **Figure 1-1.** There are two phases followed: a situation analysis and the project design. The analysis phase ensured that the project developed is specifically targeted to the core problem, i.e., the weaknesses in the current WQM system of EMB, on which additional demands have been added as a result of new mandates assigned to it by the CWA.

The situation analysis was used to generate the strategy to address the core problem. During the design phase, the selected project strategy was developed into a project design. The process of developing the Project document from problem analysis to the logical framework specification is shown in **Figure 1-2**.

Figure 1-1
Project Cycle Management (PCM) Method

Figure 1-2
Process of Project Document Preparation



Chapter 2 Institutional Setting and Water Quality Situation

2.1 National Development Strategy

The ten-point agenda of the present national administration was formulated mainly to fight poverty and attain sustainable development. This is the basis of the Medium-Term Philippine Development Plan (MTPDP) for 2004-2010. By opening up economic opportunities, maintaining sociopolitical stability, and promoting good stewardship the MTPDP aims to ensure better quality of life for the population.

One major cause of poverty, particularly in the countryside is the under-utilization and mismanagement of the country's abundant natural resources. For one, productive use of the country's mineral resources has been affected by environmental and social distrust. In addition, legal issues continue to besiege the constitutionality of some of the provisions of the Mining Act. Similarly, the proper and sustainable management of watersheds has not been given attention resulting to water supply shortages for irrigation, industrial and domestic uses and thus, is likely to have a negative effect on future development plans. Improper management has also affected the function of watersheds as carbon sinks in cleansing the air, preventing soil erosion, and mitigating floods.

The MTPDP recognizes the need to properly manage, utilize, and protect the following resources to attain its goals:

Forest Ecosystem and its Resources. Massive reforestation program to reclaim denuded mountains and strengthen protection of remaining forests. Jobs are to be generated by promoting timber production and agro-forestry in production forest areas.

Alienable and Disposable (A&D) Land Resources. Equitable access to land will encourage agricultural productivity resulting in higher rural incomes. Increased rural incomes hasten rural development, which, in turn, leads to overall economic growth and social well-being.

Biodiversity. The country's biodiversity resources offer many economic opportunities such as ecotourism, raw materials for pharmaceutical and industrial products, and genetic materials for the research.

Mineral Resources. A national policy to rebuild the industry is expected to open its enormous economic potential and employ hundreds of thousands of people. The revival of the mining sector is being pursued through a recent National Policy Agenda on Revitalizing Mining and its accompanying Minerals Action Plan (under EO 270).

Coastal and Marine Ecosystem. Coastal and marine ecosystems include coral reefs, sea grass and algal beds, mangroves, fisheries, beach systems, estuaries and lagoons. These ecosystems are considered an important source of livelihood for about 70 percent of the country's municipalities.

Water Resources. Increasing water demand for industrial and domestic uses necessitates adoption of a holistic approach to managing water resources, exemplified through Integrated Water Resources Management (IWRM).

The Environment and Natural Resources Sector of the MTPDP will pursue five major thrusts, consistent with the 10-Point Agenda of the national government:

- Sustainable and more productive utilization of natural resources to promote investment and entrepreneurship;
- Promotion of responsible mining that adheres to the principles of sustainable development: economic growth, environmental protection and social equity;
- Strengthened protection of vulnerable and ecologically fragile areas, especially watersheds and areas where biodiversity is threatened;
- Provision of a healthier living environment for the population, and
- Mitigation of occurrence of natural disasters to prevent the loss of lives and property.

2.2 Socio-Economic Context

Poverty combined with insufficient economic growth are the major socioeconomic problems besetting the country. This section describes the current situation with emphasis on these problems.

2.2.1 Income and Distribution

Although the proportion of people living in poverty significantly decreased in between 1995 and 1997, poverty remains a serious problem. A third of the population was living on less than two dollars a day in 2000. There was no improvement from 1997 to 2000 because the growth of GNP per capita was lower during these years compared to previous years. As such, achieving the GDP growth targeted in the Medium-Term Development Plan (2004-2010) is an important factor in the fight against poverty.

The average percentage of the population affected by poverty was 34 % in 2000. While it was 7.6% in the National Capital Region (NCR), it was as high as 50% in Mindanao (Regions 12 and 13), showing the huge disparity between NCR and the rural areas. This gap is attributable to the extremely low productivity and wage levels in agriculture, which accounts for 40% of national employment. In addition to the absolute level of poverty, the disparity in income distribution is also a serious problem.

Reforms to improve rural productivity (e.g., improvement of infrastructure, crop varieties and livestock breeds) are being implemented in order to fight poverty. Other measures being pursued are the upgrading of education and vocational training, provision of healthcare, greater emphasis on economic development in rural areas, and the restoration of security in Mindanao.

The problem of poverty has aggravated environmental problems over a wide range of ecosystems. Slums, often located along river banks, have become a significant source of solid and liquid wastes. This confirms the observations that environmental problems are inextricably linked to the poverty and income distribution disparities -- the most important socio-economic problem currently facing the country.

Table 2-1 summarizes the data for the regional socio-economic situation in the Philippines. In particular, the proportion of the population affected by poverty is high in Regions 5 to 13, in the south. There are considerable disparities between the regions in the proportion of poor. Rectifying these disparities is also a major socio-economic issue.

2.2.2 Economic Situation

The Philippine economy showed decent growth from 2001-2003 (Table 2-2). It continues to overcome problems arising from the growing fiscal deficit, peace and order issues resulting from global repercussions of 9/11, the occurrence of pandemics which greatly affected the tourism sector, and the continuing increase in oil prices.

Table 2-1
Regional Socio-Economic Indices

Region	Population (1000 Person) May 2000	Pop. Density (Person/km^2) May 2000	Pop. Growth (% annually) (1990 - 2000)	Pop. Rate in Poverty (%) (2000)	Un-employment Rate (%) (2003)	GDP (1000 Peso/capita) (2003)
NCR	9,933	16,091	2.25	7.6	17	144
CAR	1,365	70	1.76	38.0	7	68
Region I	4,200	318	1.69	35.5	10	28
Region II	2,813	90	1.86	29.7	5	28
Region II	8,030	437	2.62	20.9	11	39
Region IV	11,793	239	3.62	25.9	10	42
Region V	4,687	258	1.83	56.2	7	23
Region VI	6,211	301	1.42	45.7	8	44
Region VII	5,706	359	2.19	37.4	12	49
Region VIII	3,610	155	1.68	45.4	8	27
Region IX	3,091	161	2.31	44.5	6	32
Region X	2,748	170	2.26	38.7	6	52
Region XI	5,189	183	2.62	36.5	9	47
Region XII	2,598	144	2.48	55.3	9	41
Region XIII	2,095	98	1.73	50.2	9	25
ARMM	2,412	95	2.76	62.9	5	12
Others	3	-	-	-	-	-
Nationwide	76,488	255	2.34	34.0	10	52.24

Source: 2004 Philippines Statistical Yearbook

As the economy is still beset by by structural problems, it is not easy to maintain more than 5% annual economic growth rate. The Country Report of the World Bank (Report No. 23829-PH) recommends the following measures to solve the economic concerns facing the country: (1) reduction of the budgetary deficit, (2) improvement of governance and efficiency in the public sector, (3) strengthening of the private sector development, (4) strengthening of the financial sector, and (5) protection of the poor and development of their capabilities (measures in education and health). It also states that, unless all these problems are solved, it will be impossible to achieve the GDP growth rate indicated in the Medium-Term Development Plan. The report also states that the fundamental risk factor remains the lack of government reforms bearing on these problems.

The average annual GDP growth rate in the past ten years was 3%, the lowest figure of the Asian countries. The primary factor in the low growth was the low investment rate (the ratio of the amount of investment to GDP). In the 1990's, while many Asian countries maintained their investment rate at 30% to 40%, it was around 20% in the Philippines. The rate has further fallen since the financial crisis in Asia. The low investment rate is attributed to a low saving rate. Thus, FDI will also play an important role in the future. The second factor was the low productivity growth rate. The Total Factor Productivities (TFP) in the Philippines in the 1990's was around zero or negative, considerably lower than the other Asian countries. These figures seem to indicate that industrialization did not progress much during this period.

The industry growth, however, showed slowed growth, expanding at 2.8 percent over the same period, although strengthening to 5.6 percent in the first semester of 2004. Growth has been hampered by the steep cuts in public construction and the difficulty of some manufacturing industries to compete in the global market. The gross value added (GVA) growth by sector have

shown a positive growth from 2001 to 2004[2] translating to an increase in wastewater discharges of various strengths.

It is a general observation in other countries that if the GDP is less than USD1,000.00 per capita, water quality is not given focus by the government. On the other hand, water quality becomes a part of government attention if the GDP is equal to or greater than USD2,000.00 per capita[3].

Table 2-2
Major Socio-Economic Indices of the Philippines

		2000	2001	2002	2003
Nominal Gross Domestic Product (GDP, $ in billion)		74.7	71.4	77.1	80.4
Nominal Gross National Product (GNP, $ in billion)		79.0	75.7	82.0	86.4
GNP per capita ($)		1,051	978	1034	864
Actual GDP growth rate (%)		4.4	3.2	4.6	4.5
Actual GNP growth rate (%)		4.8	3.4	5.2	5.5
	Agriculture (%)	3.4	3.7	3.3	3.9
	Manufacturing (%)	4.9	0.9	3.7	3.0
	Service (%)	4.4	4.3	5.4	5.9
Increase in consumer price index (%)		4.4	6.0	3.1	3.1
Unemployment rate (%) (Annual average)		11.2	11.1	11.4	11.4
Trade balance ($ in 100 million)		3.59	-0.91	-0.22	-1.70
	Exports ($ in billion)	38.08	32.15	35.20	35.75
	Imports ($ in billion)	34.49	33.06	35.43	37.45
Population (million)		76.3	77.9	79.5	81.1
	Population density (people/km^2)	254	260	265	270
	Population growth rate (%)	2.1	2.1	2.0	2.0
	Proportion of urban population (%)	48.1	-	-	61
	Proportion of people in poverty (%)	34			
Exchange rate (Peso/$)		44.2	51.0	51.1	54.2
Balance of foreign debts ($ in billion)		52.06	52.355	53.874	56.347

Sources: The Central Bank, National Statistics Bureau, "Economic Outlook, 2004" (The Asia Development Bank)

2.3 Economy and Environment Interactions

Development comes with environmental impacts of varying intensities. Although development, if undertaken with caution, is generally beneficial for the environment, some effects can be adverse. One negative impact is the deterioration of water quality. Unsightly color, reduced clarity, obnoxious odor, and the presence of toxic elements and substances, and harmful microorganisms make water unfit for drinking and other uses.

The World Bank has reported that in the Philippines, water pollution has caused considerable economic losses. The World Bank estimated that water-borne diseases like diarrhea, cholera, typhoid and paratyphoid, and hepatitis A have resulted in direct income losses of about PhP2.3

[2] Statistical Indicators on Philippine Development 2004, National Statistics Coordination Board
[3] Observations of Mr. Masahiro Ohta in other countries.
[4] World Bank, Philippines Environment Monitor-Water Quality, 2003

billion annually (**Table 2-3**). Also, medical and hospital costs due to these diseases were about PhP1.0 billion every year.

Estimated direct income losses are shown in **Table 2-3**. Income losses due to morbidity were based on 10 lost work days per capita for typhoid, and 3 lost work days per capita for other water-borne diseases. Income loss due to mortality was estimated based on economic opportunity loss to the economy over a 12-year lost production per capita due to early death.

Table 2-3
Direct Income Losses

Water Related Diseases	Morbidity Cases (15-65 years old)	Mortality Cases (15-65 years old)	Losses in GDP (PhP million)
Diarrhea	512,527	2,978	1,649.23
Cholera	179	-	0.04
Typhoid and Paratyphoid	7,710	663	348.53
Hepatitis A	-	571	296.01
Total			**2,293.81**

Source: WB PEM 2003

Water pollution also reduces fish production. From 1997 to 2004, the municipal and commercial fisheries' average annual production loss was PhP15 billion and PbP2.0 billion, respectively[8]. Being archipelagic in nature, the country has numerous beautiful beaches. Pollution in the form of domestic sewage threatens many tourist attractions. In 1997, the widely publicized water pollution in Boracay Island due to high coliform count caused a 60-percent decline in resort occupancy. According to the World Bank, from 2001 to 2004, the average annual tourism losses were PhP5.3 billion and PhP2.5 billion, respectively.

In summary, annual economic losses caused by water pollution are estimated at PhP67 billion (US$1.3 billion) for health, fisheries production, and tourism[10].

2.4 Description of the Current Water Resources and Quality Situation

2.4.1 Water Resources and Availability

The Philippines has abundant water resources. It has 421 principal rivers, with drainage areas ranging from 40 to 25,469 square kilometers, 59 natural lakes (a recent study has placed the number of lakes at 72[11]), numerous streams and four major groundwater reservoirs.

There are 19 major river basins. The longest river is the Cagayan River in Region II and the largest lake is the Laguna de Bay with an area of 922 km^2. Manila Bay is the country's busiest commercial bay. The country has bays and coastal waters covering an area of 266,000 km2 and oceanic waters covering 1,934,000 km2. About 60 percent of the country's municipalities and cities are coastal, with 10 of the largest cities located along the along the 36,289-km coastline.

Groundwater is used by 50% of the country's population for drinking. Data from the National Water Resources Board (2003) showed that the country has a groundwater potential of 20,200 MCM which is about 14% of the total available water resource potential (**Table 2-4**). The domestic sector is the highest consumer of groundwater at 49 percent, while the remainder is shared by agriculture (32 percent), industry (15 percent), and other sectors (4 percent)[12]. About 60 percent of the groundwater extraction is without water-right permits resulting in

[10] World Bank, Philippines Environment Monitor-Water Quality, 2003
[11] SEAFDEC-PCMARD-DA/BFAR Conversation and Ecological management of Philippine Lakes in relation to Fisheries and Agriculture, 2001.
[12] Based on the water rights granted by the National Water Resources Board (NWRB) since 2002.

indiscriminate withdrawal. A high percentage (86 percent) of piped-water supply systems uses groundwater. In terms of demand, the agricultural sector has the highest (85 percent), while industry and domestic sectors only account for 15 percent (**Table 2-5**).

Table 2-4
Groundwater Availability (in MCM)

Water Resources Region	Groundwater Potential	Surface Water Potential	Total Water Resources	Percent Groundwater to Total Potential
X Northen Mindanao	2,116	29,000	31,116	6.8
VI Western Visayas	1,144	14,200	15,344	7.45
IX Western Mindanao	1,082	12,100	13,182	8.21
XII Southern Mindanao	1,758	18,700	20,458	8.59
XI Southeastern Mindanao	2,375	11,300	13,675	17.37
III Central Luzon	1,721	7,890	9,611	17.91
IV Southern Tagalog	1,410	6,370	7,780	18.12
VIII Eastern Visayas	2,557	9,350	11,907	21.47
II Cagayan Valley	2,825	8,510	11,335	24.92
V Bicol	1,085	3,060	4,145	26.18
I Ilocos	1,248	3,250	4,498	27.75
VII Central Visayas	879	2,060	2,939	29.91
Total	**20,200**	**125,790**	**145,990**	**13.84**

Source: NWRB, 2003.

Table 2-5
Water Demand in the Philippines (MCM/year)

Water Demand	1996	2025		% of total (1996)
		Low	High	
Municipalities	2,178	7,430	8,573	7.27
Industrial	2,233	3,310	4,997	7.46
Agriculture	25,533	51,920	72,973	85.27
Irrigation	18,527	38,769	53,546	61.87
Livestock	107	224	309	0.36
Fishery	6,899	14,437	19,939	23.04
Total Demand	**29,944**	**62,660**	**86,543**	**100**
Groundwater (GW) Recharge	20,200	20,200	20,200	
% GW Potential/Total Demand	67.46	32.24		

Sources: NWRB(2003) and JICA, Master Plan Study on Water Resources Management in the Republic of the Philippines

Examination of the demand-potential relationship shows an apparent abundant supply of water in the country. But this is misleading because it masks the impact of the growing demand and factors such as temporal and geographic variations, changes in the land use patterns, e.g., conversion of watersheds, rapid urbanization, and increasing discharges of untreated wastewater. These factors cause water unavailability and seasonal water shortages.

2.4.2 Current Situation on Water Pollution and Mitigation

(1) Water Qnality

Generally, there are two sources of water residuals: point and non-point. The knowledge to monitor and control point sources is well-established. However, non-point sources are difficult to monitor and control. Solid wastes have become a major source of non-point source pollution because it generates high loads of organic and inorganic pollution when dumped in water bodies.

The major parameters currently monitored for water pollution in the country are biochemical oxygen demand (BOD) and dissolved oxygen (DO), total suspended solids (TSS), total dissolved solids (TDS), coliform, nutrients (nitrates and phosphates), heavy metals like mercury and chromium, and toxic organics like pesticides. Extensive data has been compiled for BOD and DO, especially from 1995 to 2001, while data for the other highly toxic pollutants are still incomplete. Following are the environmental and public health dimensions of water quality in the country (World Bank, 2003):

- Thirty-six percent of the river sampling points have been classified as public water supply sources;
- About 60 percent of the country's population live along coastal areas and contribute to the discharge of untreated domestic and industrial wastewater;
- Preliminary data indicate that up to 58 percent of groundwater intended for drinking water are contaminated with coliform bacteria; and
- Thirty-one percent of illnesses over a five-year period were water-related

The EMB monitored 141 rivers from 1996 to 2001. During that period, about 29 percent had minimum DO values less than 5 mg/l, a condition where aquatic life are affected; 64 percent had maximum values of BOD that exceeded the criterion for Class A waters, indicating presence of organic pollution.

EMB has also monitored 39 bays and coasts in the Philippines since 1996. Manila Bay has BOD levels that are generally within fishery water quality criterion. However, seasonal high organic loadings from rivers draining into the bay result in harmful algal blooms (HABs) that pose a threat to marine resources and public health. Except for Puerto Galera Bay, which is a protected seascape, monitoring data indicated that 64 percent of these bays and coastal waters had DO levels below 5 mg/l, the minimum criterion set for waters suitable as a tourist zone, fishery spawning area, and contact recreation or swimming area. Along the coasts of Mandaue in Cebu, DO levels ranged from 0 to 14 mg/l.

Domestic wastewater is the main contributor of bacterial contamination to the groundwater supplies. Limited data on the bacteriological content of groundwater from 129 wells indicated a high level of Coliform bacteria in 58% of the wells. Overall, the domestic sector contributes 50% of the organic load, followed by the agricultural and industrial sectors at 37% and 15%, respectively. On a regional basis, Metro Manila has the highest total share of BOD loading (15%), followed by Region IV (14%). CAR has the lowest BOD contribution at 1.8%.

The volume and characteristics of industrial effluents vary by industry type and depend on the production processes used and production capacity. Industrial wastewater may contain organic or inorganic residuals. Industries that are water intensive are usually large generators of wastewater. Examples of these are food and dairy manufacturing, pulp and paper, textile products. Metro Manila and Region IV generate the highest amount of industrial BOD at 43 and 14 percent, respectively (57% of the country's total).

Absence of facilities to intercept surface runoff from agricultural farms aggravates water pollution problem. Major sources of agricultural effluents aside from farming are livestock and poultry raising. Regions I and IV generate the highest agricultural BOD load (**Table 2-6**).

To assess overall water quality in the country, the WB devised a "scorecard" method for surface and ground waters. "Hotspots" for surface water quality were assessed by province using Dissolved Oxygen (DO) and Biochemical Oxygen Demand (BOD). Groundwater quality was assessed based on levels of Total Dissolved Solids (TDS) and coliform. The ratings used the following guide for surface water quality (fresh surface waters and coastal and marine waters):

RATING	DO (mg/l)	RATING	BOD (mg/l)
SATISFACTORY (S)	>5	SATISFACTORY (S)	<5
MARGINAL (M)	5	MARGINAL (M)	5
UNSATISFACTORY (U)	<5	UNSATISFACTORY (U)	>5
Minimum Requirement	5	Minimum Requirement	5

The ratings resulted in the identification of water quality "hotspots" in the country shown in **Figure 2-1. Annex C** shows the water quality scorecards for surface water quality.

(2) Situation of Wastewater Disposal and Treatment Infrastructure[14]

Sanitation and sewerage (SAS) ranked as high-priority in the Philippines Agenda 21 of 1996. However, actual investments for SAS are small compared to that in water supply[15]. Only seven percent of the country's population is served with sewer systems. It is estimated that the country will need to invest PhP250 billion (US$5 billion) in physical infrastructure for SAS alone.

Many local government units recognize the growing water quality problems in their jurisdictions. However, the high investment and operating costs, limited willingness-to-pay hy users, and restricted available space in low-income urban areas are serious obstacles.

In the early 1980s, Metro Manila provided sewerage collection and treatment facilities in a few areas through the MWSS. Programs to upgrade sewerage and sanitation facilities were already in place but its implementation was postponed due to a lack of funds. Only the Makati Sewage Treatment Plant (STP) has been upgraded and the proposed six to eight STPs are in the bidding process. Eaeh STP will have a capacity of 0.002 to 0.004 MCM/day or a total of .012 to 0.048 MCM. To date, about 0.06 - 0.08 MCM/day is covered by the existing facilities of MWCI and MWSI. To cover the MWSS area, a capacity of more than 2.4 MCM/day is necessary[16]. **Table 2-7** shows the sanitation and sewerage history of the country.

2.5 Environmental Management Strategy of the Government

The MTPDP recognizes the problem of water pollution in the country's water resources. The Plan also explains the importance of more integrated water resources management in preparation for the expected increase in the demand for water in the future. It states that an integrated water resources management of river basins should be adopted to help iu the alleviation of poverty and lists the following specific needs:

- The establishment of Water Resources Regional Councils (WRRCs)/River Basin Organizations (RBOs) as well as the strengthening of the existing RBOs to promote coordination at the level of local authorities and communities.

[14] World Bank, Philippine Environmental Monitor-Water Quality, 2003
[15] C. Aucheta, WPEP: Urban and Sanitation-3 years of Experience and Lessons, 2000
[16] WB PEM 2003

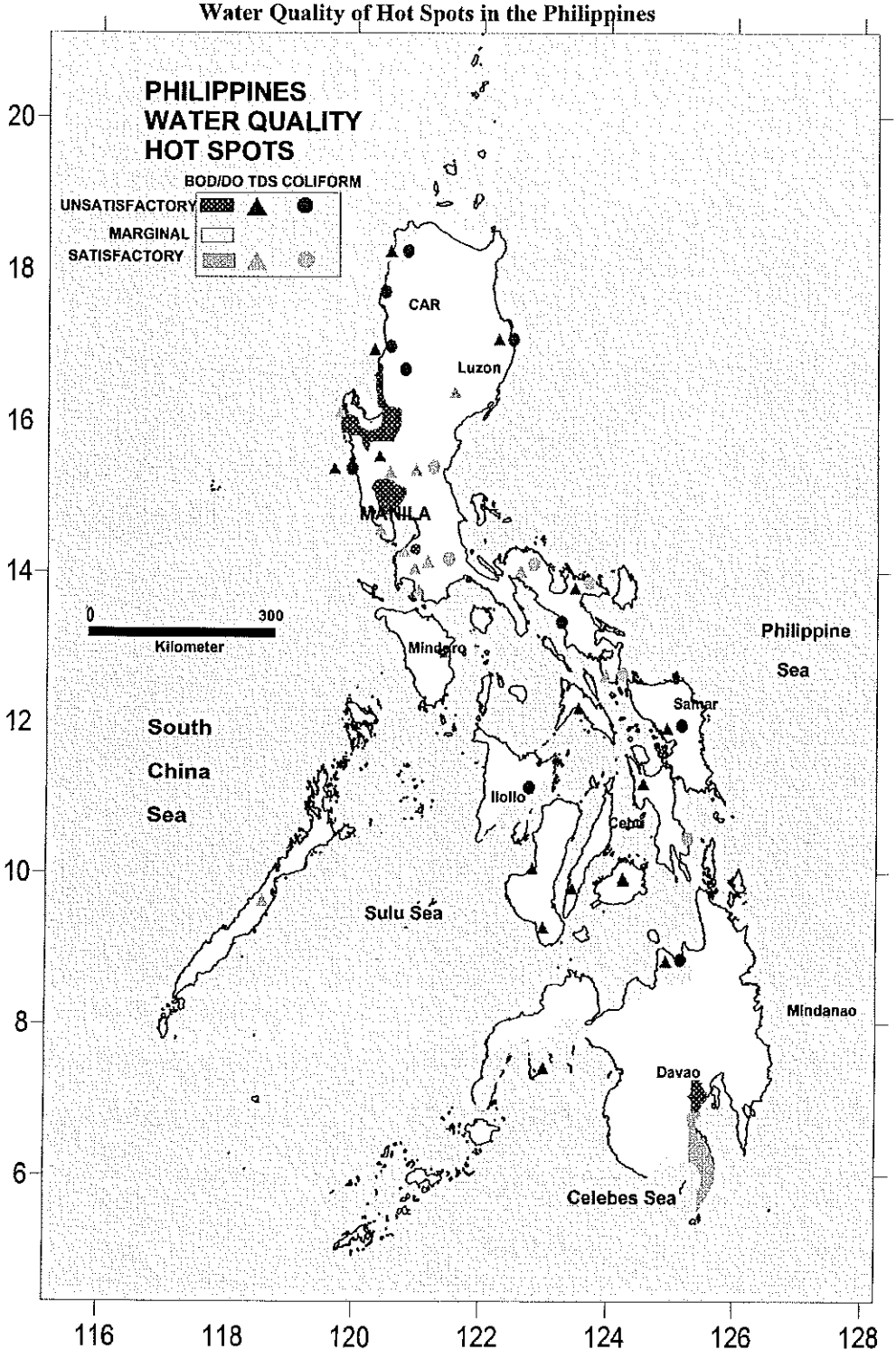
- The collection of discharge fees from business concerns affecting the environment, so that the cost of environmental protection is borne fairly.
- The collection of data on water resources, such as amounts of rainfall, flow rates, groundwater and water quality, and the maintenance of a database.
- An assessment of water supply and demand in areas identified in 1998 as having severe water shortages.

Table 2-6
Wastewater Discharges by Source

Region	Volume of Wastewater in Region			% Share of BOD Generation in Sector			BOD Generation in Sector			Total BOD Generation	% Share of Total BOD Generation in Sector
	Domestic 2000	Industrial 1998	Agricultural 1999	Domestic 2000	Industrial 1998	Agricultural 1999	Domestic 2000	Industrial 1998	Agricultural 1996		
	In '000 m^3 per year			Percent			In '000 metric tons per year				
NCR Metro Manila	430,046	272	-	17.6%	42.5%	0.0%	192	138	-	330	14.8%
IV Southern Tagalog	406,696	80	7,499	14.6%	14.1%	13.3%	159	46	109	314	14.0%
III Central Luzon	272,471	49	4,646	9.9%	9.0%	9.1%	108	29	75	213	9.5%
VI Western Visayas	188,042	55	4,574	7.7%	5.1%	8.1%	84	17	67	167	7.5%
VII Central Visayas	180,065	57	6,394	7.1%	7.4%	10.6%	77	24	87	189	8.4%
XI Southern Mindanao	160,025	47	4,888	6.4%	6.6%	8.6%	70	22	70	162	7.2%
V Bicol	128,849	22	3,036	5.8%	3.1%	5.4%	63	10	44	117	5.2%
I Ilocos	121,268	24	7,260	5.2%	3.3%	11.5%	57	11	95	162	7.3%
X Northern Mindanao	87,085	15	5,568	3.4%	2.2%	9.1%	37	7	75	119	5.3%
IX Western Mindanao	88,734	24	3,058	3.8%	3.3%	5.2%	42	11	43	95	4.3%
II Cgayan Valley	74,556	1	3,541	3.5%	0.2%	6.1%	38	1	50	89	4.0%
VII Eastern Visayas	101,307	8	1,236	4.5%	1.1%	2.6%	49	4	21	73	3.3%
XII Central Mindanao	74,964	4	2,346	3.2%	0.5%	3.9%	35	2	32	69	3.1%
ARMM	64,402	0.07	1,905	3.0%	0.0%	3.0%	33	0.05	25	57	2.6%
CARAGA	62,311	6	539	2.6%	0.9%	1.2%	28	3	9	41	1.8%
CAR	40,614	4	1,379	1.7%	0.6%	2.3%	18	2	19	39	1.8%
TOTAL	**2,481,435**	**668**	**57,869**	**100%**	**99.9%**	**100.0%**	**1,090**	**327**	**821**	**2,236**	100%

Source: WB PEM 2003

Figure 2-1
Water Quality of Hot Spots in the Philippines



Source: Philippines Environmental Monitor 2003-Water Quality Report, WB

Table 2-7
Inventory of Domestic Sewerage Experiences and Practices

Location/Age of System	Population Served	Technology Legend: STP- sewage treatment plant CST- communal septic tank	Performance Legend: M-Manage, O-Oversight
Metro Manila 100 + years (undergoing rehabilitation in the '80s upto the present)	1,010,000 (8% of the system coverage)	Collection- conventional Treatment- several levels (STP)/ partial treatment (CST/Imhoff tank) Disposal- Marine Outfall	Environmental Performance: On-going rehabilitation & meeting the standards for effluent quality; CSTs being upgraded to STPs. Institutional Performance: O & M by private concessionaires (MWCI & MWSI); collection rate is about 97% (50% of the water bill).
Baguio City 75 years (rehabilitated in 1994)	5,300 (2% of the system coverage)	Collection- conventional Treatment- STP (oxidation ditch & sludge drying beds) Effluent Disposal- River Outfall (Balili River); sludge disposal- agricultural use	Environmental Performance: Treatment- 94% BOD removal (but with low load), with effluent testing prior to discharge. Institutional Performance: LGU (M/O); 45 staff; collection rate = 22% of the connected households (flat rate).
Zamboanga City 70 years (not much improvements)	3,700 (1% of the system coverage1)	Collection- conventional Treatment- None Disposal- effluent by marine outfall (Basilan Strait); sludge- none	Environmental Performance: Raw sewage discharged 40 m. offshore & no effluent testing. Institutional Performance: Water District (M)/LWUA (O); 14 staff; collection rate= 99% of the connected households (50% of the water bill).
Vigan City 70 + years (not many improvements)	1,360 (3% of the system coverage)	Collection - conventional Treatment- 5 CSTs Disposal- effluent to rivers/fields; sludge is not collected	Environmental Performance: Partially treated effluent prior to river/field disposal & no sludge treatment & disposal (No effluent testing). Institutional Performance: Water District (M)/ LWUA (O); no devoted staff; collection rate= 96% of the connected households (percentage billed to water supply varies according to category).
Bacolod City 39 years in Bgys. 29 & 20 years in Montevista (built by National Health Administration)	2,020 (less than 1% of the system coverage)	Collection- conventional Treatment- individual CSTs Disposal- effluent to public drain (Bgy. 29) & creek (Montevista)	Environmental Performance: Partially treated effluent prior to creek/ public drain & no sludge treatment & disposal (No effluent testing). Institutional Performance: Bgy. LGU (M)/ City LGU(O); no devoted staff; collection rate= no user's fee.
Cauayan, Isabela 14 years (built by DPWH)	4,000 (2% of the system coverage)	Collection- small bore sewer Treatment- stabilization pond Disposal-effluent to field	Non-operational. System failed due to lack of funds for operation and maintenance.
Davao City 29 years	1,161 (less than 1% of the system coverage)	Collection- conventional Treatment- STP Disposal- unknown	Non-operational. System failed due to lack of funds for operation and maintenance.

Source: WB PEM 2003

2.6 DENR Environmental Management Framework

2.6.1 Context and History

The Philippines has about 40 years of experience in environmental management starting in 1964 with the creation of the National Water and Air Pollution Control Commission (NWAPCC) by virtue of Republic Act No. 3931 (RA3931)[17]. This first step in environmental protection arose from the existing and continuing degradation of the country's air, water, and land resources due to increasing population and economic growth in the post-World War II era. Twelve years later, the NWAPCC was abolished and replaced by the National Pollution Control Commission (NPCC) as promulgated by Presidential Decree No. 984 (PD984)[18] also known as the Pollution Control Law. The mandate of the NPCC is the prevention, abatement, and control of water, air, and land pollution. However, most of its activities were focused on water quality management, such as industries compliance to water quality standards, water body monitoring and classification, pollution load assessment and inventory, the effluent standard specification, and the promotion of pollution control technology, strategies, and alternatives.

Within two years after PD 984 was passed, the government saw the need to achieve the harmonious existence of socioeconomic growth and environmental protection. In the light of this need, the Philippine Environmental Impact Statement (EIS) System was born by virtue of Presidential Decree No. 1586[19] (PD 1586). The mandate of the EIS System was to "attain and maintain a rational and orderly balance between socioeconomic growth and environmental protection through the sustainable use, development, management, renewal and conservation of the country's natural resources, including the protection and enhancement of the quality of the environment, not only for the present but for the future generation as well." PD 1586 authorized the National Environmental Protection Council (NEPC) as the Secretariat to administer the EIS System, as well as evaluate environmental impact statements prior to the issuance of the Environmental Compliance Certificate (ECC).

In 1987, Executive Order No. 192[20] (EO 192) reorganized the Department of Environment, Energy and Natural Resources (DEENR) into the Department of Environment and Natural Resources (DENR). The latter has two specific mandates: (a) the sustainable use, development, management, and conservation of the country's natural resources (forest, mineral, land, offshore areas, and others) and (b) environmental protection and enhancement. Section 16 of EO 192 created the Environmental Management Bureau (EMB) which absorbed the functions of the NPCC and NEPC. Its major functions are:

- Provision of technical assistance in EIA implementation and monitoring, environmental management and pollution control matters, serve as PAB Secretariat; conduct public hearings in pollution cases, develop environmental research programs, and formulate and disseminate environmental information to the public;
- Advise the Regional Offices on Environmental Management and Pollution Control (EM-PC) policy implementation and the DENR Secretary on legal aspects of EM-PC;

[17] Republic Act No. 3931. 1964. "An Act Creating the National Water and Air Pollution Control Commission".
[18] 1 Presidential Decree No. 984. 1976. "Providing for the Revision of Republic Act No. 3931, commonly known as the Pollution Control Law and for Other Purposes".
[19] Presidential Decree No. 1586. 1978. "Establishing an Environmental Impact Statement System, including other Environmental Management Related Measures and for Other Purposes".
[20] Executive Order No. 192. 1987. "Providing for the Reorganization of the Department of Environment, Energy and Natural Resources

- Formulatiou of environmental media quality standards, implementing rules and regulations on environmental quality, and proper disposal of solid, toxic and hazardous wastes;
- Recommendation of EM-PC legislation, policies and programs, and EIA rules and regulations; and
- Coordinate with inter-agency committees on environmental matters

Four new environmental laws have been passed since the creation of EMB further increasing its functional scope. These are:

- RA 6969 known as the "Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990";
- RA8749 (1999) also known as the ""Philippine Clean Air Act of 1999";
- RA 9003 also known as the "Ecological Solid Waste Management Act of 2000"; and
- RA 9275 also known as the "Philippine Clean Water Act of 2004".

The CWA raised the level of water quality management in the country by combining command control, economic instruments, and self-regulation into one cohesive policy–harmonizing environmental performance and economic attainment. The following are some of the salient points of the CWA:

- Covers all water bodies, including groundwater;
- Abatement and control of pollution from all land-based sources;
- Water quality standards and regulations, civil liabilities and penal provisions is enforceable regardless of pollution source;
- Establishment of Water Quality Management Areas where a multi-sectoral represented body will manage the water quality management area;
- Economic incentives through the Environmental User Fee System, tax breaks, and rewards scheme; and
- Voluntary pollution prevention programs (Self monitoring).

The Implementing Rules and Regulations (IRR) of the CWA was drafted, revised, and refined by undergoing numerous reviews, workshops, seminars, and other public fora. The IRR now is ready for implementation after its approval by the DENR Secretary on May 16, 2005 (published on May 26, 2005).

2.6.2 Legal Framework for Water Quality Management (WQM)

The principal legislation on and water quality management was originally embodied in P.D. 984. It has now been superseded by the CWA. The original P.D. 984 provided for the establishment of an administrative and regulatory system for pollution control. Rules and regulations accompanying the law defined specific air and water quality standards.

Additional legislation was passed to regulate water quality. PD 600 (as amended by P.D. 979) prohibited the discharge of various kinds of harmful substances into water bodies. The Philippine Water Code (PD 1067) contained provisions that prohibit the disposal of sewage and industrial wastes that could pollute water supply sources (including the dumping of mine tailings into waterways).

Other environmental laws that were passed during the 1970s include P.D. 1160, which vested authority in the Barangay Captain to enforce pollution and environmental control laws; and P.D. 1198, issued in 1977, which required entities engaged in the exploration, development and exploitation of natural resources or in the construction of infrastructure projects to restore or rehabilitate the subject areas to their original conditions.

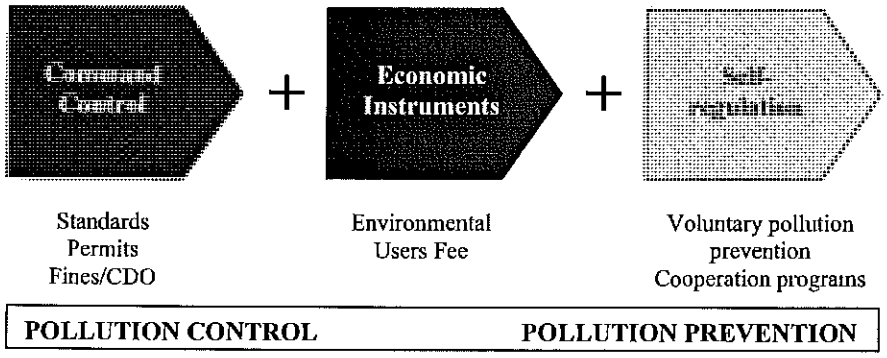
In 1987, E.O. 192 was issued providing for the reorganization of the DENR and creation of attached agencies and bureaus. E.O. 192 provided significant changes with far reaching impacts on environmental administration. This reorganization was significant in that it introduced a new role for DENR as a developmental agency.

DENR Administrative Order 16 of 2002 also known as the National Environmental User Fee (NEUF) was issued in an attempt to move away from traditional command and control WQM enforcement by using a market-based instrument (MBI) and self regulation. The DAO has the following objectives; (a) curb water pollution and improve the ambient quality of water bodies, (b) encourage firms to practice least-cost means of pollution reduction and internalize the philosophy of self-regulation, and (c) implement the concept of Environmental User Fee nationwide. The NEUF covers industrial and commercial establishmeuts and will be applicable to development projects, installations, and activities that discharge wastewater. The implementing rules and regulations of the NEUF were defined in DAO 39 Series of 2003.

Another innovation encouraging participation of the regulated community is the DAO 2003-14 also known as the Philippine Environmental Partnership Program (PEPP). PEPP was made to encourage and support establishments to practice self-regulation towards the improvement of their environmental performance through incentives and regulatory assistance.

The latest and comprehensive legislation for WQM is the CWA. The Act transcended the traditional command-and-control WQM approach by including economic instruments and self regulation. **Figure 2-2** shows the framework of the CWA:

Figure 2-2
CWA Framework



2.6.3 DENR's Organizational Framework of WQM

The EMB Central Office provides the over-all direction in WQM policy development, program/project development, water quality enforcement guidelines, water pollution adjudication, and selective implementation. Implementation of legislation, such as the CWA and its IRR, the DENR Administrative Orders (DAOs) and other guidelines related to WQM, is done by the Regional Offices (RO).

WQM functions are specifically carried out by the Water Quality Management Section (WQMS) under the direct supervision of the Environmental Quality Division (EQD). **Figures 2-3** and **2-4** show the organizational setup of the EMB CO and ROs.

WQM-related functions of the ROs include classification and monitoring of water bodies, enforcement of effluent standards, laboratory analysis, support to the Pollution Adjudication Board (PAB), and awareness campaign.

In addition to its WQM mandate, EMB is also implementing the following, with the same institutional arrangements for WQM:

- Enforcement of the CAA involving monitoring and regulation of air pollution sources;
- Provides guidance in the implementation of RA 9003 to LGUs;
- Implementation of the Philippine EIS System;
- Implementation of RA 6969;
- Environmental monitoring and analysis
- Development, evaluation, and adoption of environmental analysis methods; and
- Information and environmental education.

Other government agencies and administrative bodies have also a part in Philippine WQM. **Table 2-9** summarizes the functions relating to WQM.

Figure 2-3
Organizational Setup of EMB Central Office

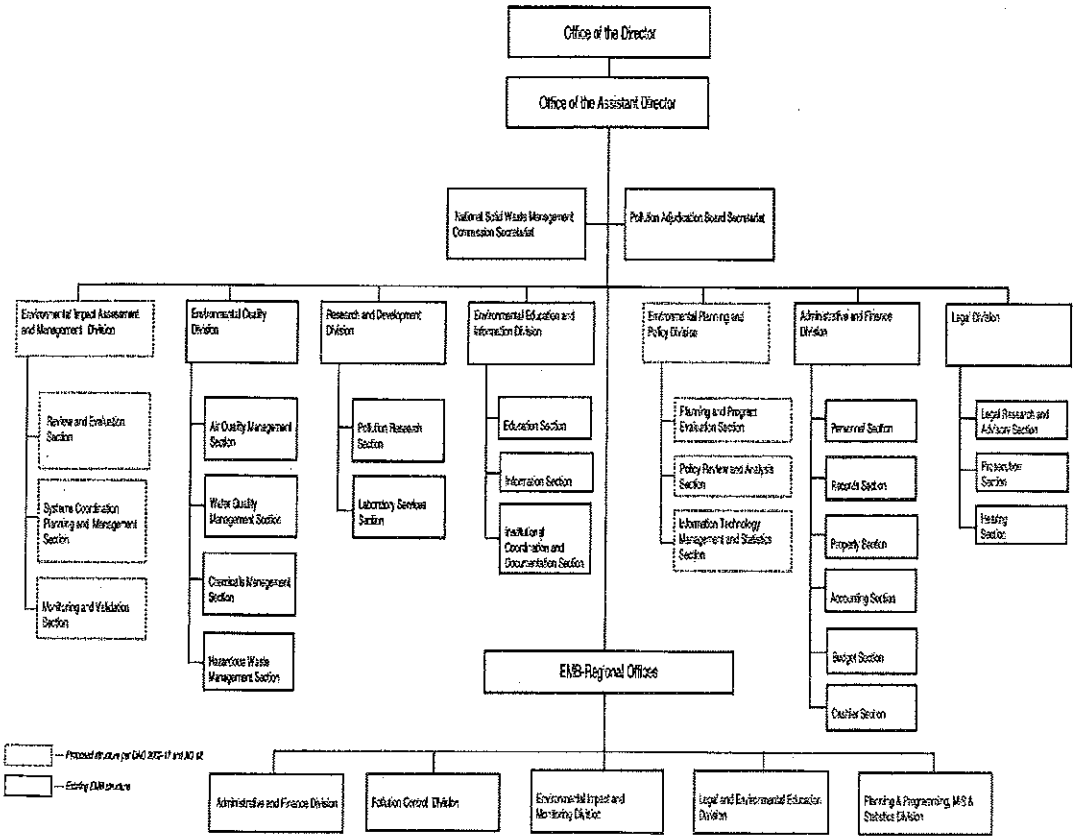
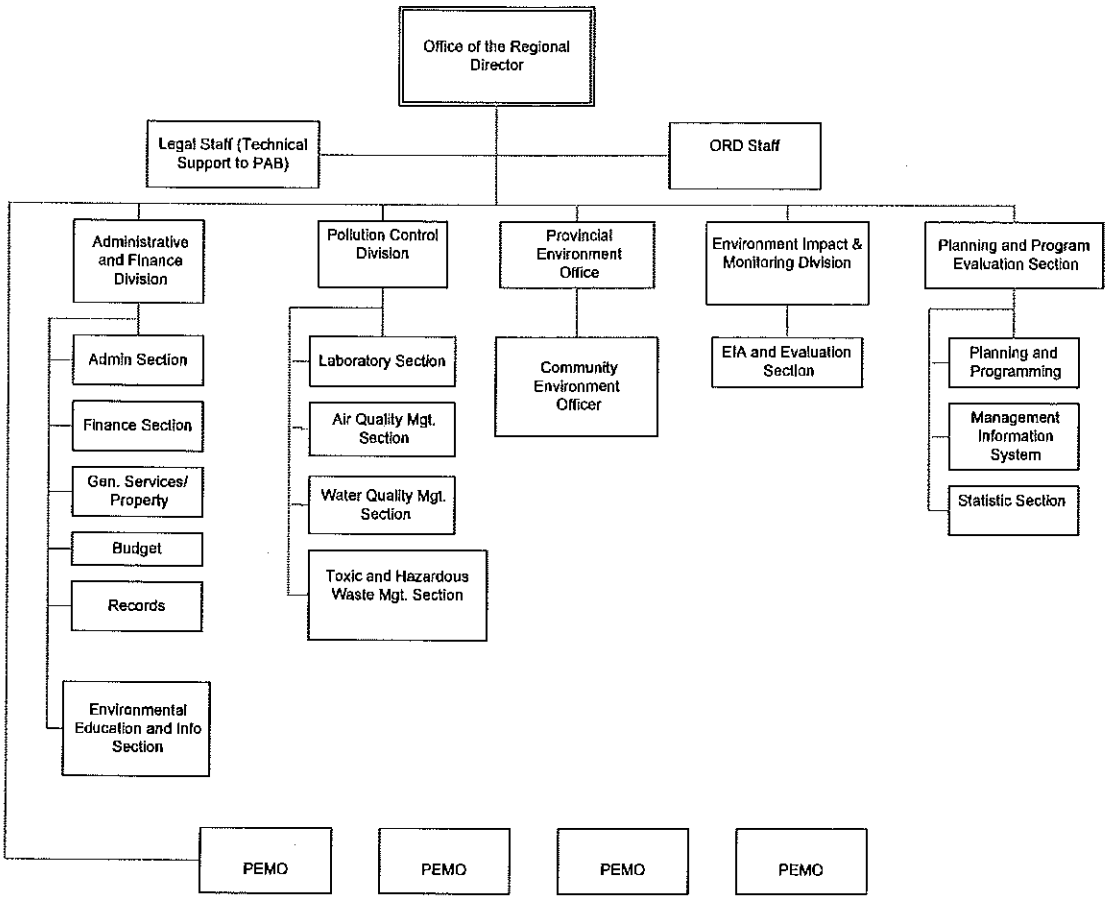


Figure 2-4
Organizational Setup of EMB Regional Offices



2.7 Current EMB Thrusts in Water Quality Management

The EMB has formulated its General Plan of Action on Environmental Management for 2005-2010. It has identified the following flagship and critical programs for implementation (**Figure 2-5** shows these programs in a matrix form). O intensify environmental compliance monitoring for water quality, the emphasis are on the DENR laboratory recognition scheme and upgrading of laboratory facilities and registration of sample collectors.

For the improvement of water quality, the priority activities are the "Sagip Ilog" program, completion of IRR and implementation of the Clean Water Act; implementation of the industrial enforcement program combined with the Industrial Ecowatch Program; the completion of water body classification; Beach Ecowatch and Tapwatch.

Table 2-8
Shared Responsibilities of EMB and Other Government Bodies in WQM

Governmental Agency	Role in WQM
National Economic Development Authority (NEDA)	Responsible for coordination of the national development plans and supports EMB in formulating environmental strategies among the various departments and agencies. It also serves as the contact office for assistance and loans by overseas donors.
National Water Resources Board(NWRB)	Use and management of water resources
National Mapping and Resources Information Authority (NAMRIA)	Mapping and Information in relation to water bodies
Laguna Lake Development Authority (LLDA)	Development in Laguna Lake Basin
Bureau of Fisheries and Aquatic Resources(BFAR)	Fishing rights, Fishery
Department of Agriculture (DA)	Responsible for soil pollution and runoff due to chemicals and fertilizers used in agricultural activities, water pollution from aquaculture, and conservation of mangroves and coral reefs.
Department of Public Works and Highways (DPWH)	Responsible for public infrastructure provision for water supply and sewerage works.
Philippines Coast Guard(PCG)	Water pollution from ships and watercraft.
Metropolitan Manila Development Authority(MMDA)	Waste management, land use, river management, and development plan in Manila metropolitan area
Department of Interior and Local Governments (DILG)	Responsible for building the sewerage system and wastewater control system in the Metro Manila under the Philippine Environment Code (PD1152).
Local Government Units(LGUs)	Management of local water supply and sewerage

Sources: (a) Data adopted from OECF data Environmental Profile in the Philippines, 1993
(b) Project Document (Draft) of the Technical Cooperation Project for Capacity Development of EMB for Water Quality Management, JICA

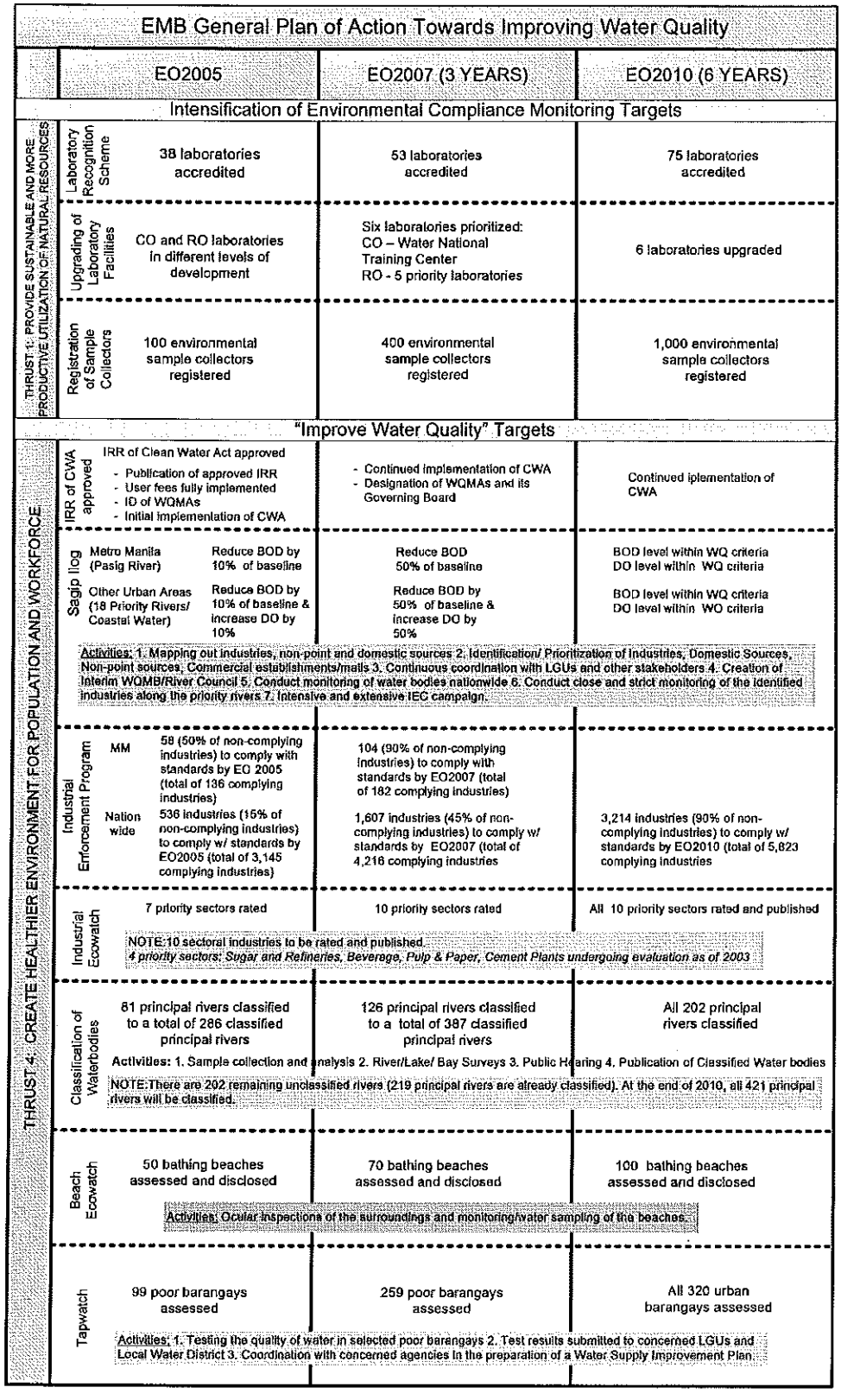
2.8 Prior, Ongoing, and Proposed Project Assistance

At the 1989 G7 summit held in France, member nations saw the need to develop global capacity to reinforce environmental management. Japan made a commitment to increase its assistance on environment by announcing at the 1992 UN Conference on Environment and Development, that it will increase the bilateral and multilateral assistance in the environmental field from 900 billion yen to around one trillion yen over five years, thereby declaring its positive attitude as the world's greatest aid donor. Thus, the Japan's ODA in environmental sector has dramatically increased. It has already undertaken 11 projects which have water quality components.

Table 2-9 summarizes the JICA projects related to water quality management in the country and **Table 2-10** summarizes the on-going foreign assisted projects related to Water Resource Management sponsored by other international organizations.

Examination of these projects showed that majority of the water quality management components of these ODA projects is focused on sewage treatment, improvement of effluent discharges, and overall watershed management. Except for LISCOP, the institutional capacity component for implementing agencies in WQM is absent. This is why the JICA Project on the capacity of EMB to implement the CWA is an urgent necessity. In the process of strengthening the capability of EMB to implement the mandates of the CWA, this project will also fill the gap left by past and existing ODA projects.

Figure 2.5
Major Thrusts of EMB Related to WQM



The following are several proposed ODAs relating to water quality by different foreign institutions[21]:

Project Name	Funding Institution
Tigum-Aganan Water Quality Management Area (WQMA), Iloilo, Region VI	U.S. Asia Environmental Partnership (USAEP)
MTSP 3 for Laguna, Pasig River, Manila Bay Region	GEF
Land-based Nutrient Loading Pollution Project	World Bank

Table 2-9
JICA Projects Relating to Water Quality Management

Project Name	Period	Profile
The Study on Environmental Management with Public and Private Sector Ownership (BOI/DTI) (JICA Development Study)	2002-2003	For the promotion of industrial environmental management among private companies and investors, the following measures are implemented 1) to prepare an action plan and 2) to reinforce the capacity of the Board of Investments (BOI) and other organizations involved in the industrial environment management. One of the components is the Accreditation of Laboratories for Environmental purposes.
The Study on Industrial Hazardous Waste Management in the Philippines (Phase1, 2) (DENR (EMB)) (JICA Development Study)	2000-2002	The Hazardous Industrial Waste Management Master Plan, which specifies the way to establish an administrative system, the measures to promote activities in the private sector bearing the burden of waste disposal, and a short-term action plan by Year 2010 as a target, is formulated. Related to WQM in terms of Hazardous Wastes contamination prevention.
Capacity Building Project for Environmental Management in Mining (DENR (MGB)) (JICA Technical Cooperation Project)	1999-2002	1) The improvement of the mining environmental monitoring function in water and soil pollution, 2) the capacity development in analytical technology in water and soil pollution, 3) the evaluation of environmental protection technology in water and soil pollution, 4) the improvement of the evaluation function of mining environmental impact assessment reports, and 5) the improvement of the educational and training functions in mining environmental management.
Southern Mindanao Integrated Coastal Zone Management Project (DENR (EMB)) (Yen Loans)	1999	This project was implemented on the "Sarangani Bay and Mt.Matutum Basin" and the "Malalag Bay and Balasiao Basin." It was a comprehensive environmental conservation project both from the sea and land areas, based on the concept of river basin management. In the former area, tree planting (mangrove), infrastructure development and improvement (slope erosion prevention work, sediment discharge alleviation work, coastal erosion and sedimentation prevention work and sewage treatment facility construction), construction of environmental conservation center and living standard improvement for minority groups were carried out. In the latter area, tree planting (mangrove), infrastructure development and improvement (installation of water quality monitoring equipment and construction of a water supply plant for support of agroforestry), and living standard improvement for minority groups were carried out.

[21] FASPO and EMB Central Office

Table 2-9
JICA Projects Relating to Water Quality Management (continuation)

Project Name	Period	Profile
Financial Project for Support of Municipalities (Land Bank of the Philippines) (Yen Loan)	1999	The Local Autonomy Act enacted in 1991 placed the waste management, health care, environmental conservation, water/sewerage and public health, and public housing under the authority of LGUs.
Environmental Infrastructure Support Credit Program (Phase II) (DBP) (Yen Loan)	2000	This is a two-step loan program. The aims of this program are to promote investment in the activities for an improvement of the environmental conditions and to contribute to the reduction of industrial pollution by providing private companies, mostly of medium to small size, with mid- to long-term loans through the Development Bank of the Philippines (DBP) and by technically supporting end-users, private financial institutions and DBP.
Special Economic Zones Environment Management Project (PEZA) (Yen Loan)	1997	This project is intended to prevent environmental pollution in and around PEZA and to promote investment through the improvement of effluent disposal and recycling facilities and solid waste disposal facilities in the four Export Processing Zones managed directly by PEZA (Baguio, Bataan, Cavite, and Mactan Economic Zones), the organizational reinforcement of environmental sphere in PEZA, and the support of the preparation the Urgent Development Plan for the special economic zones.
Subic Bay Freeport Environment Management Project (SBMA) (Yen Loan)	1997	The former site of Subic Base of the US Forces returned to the Philippines in 1992, was later designated as 'Subic Bay Freeport Zone.' SBMA and the local governments in the area are developing the area in cooperation. This project is intended for the promotion of investment in the area by improving the disposal facilities of solid waste produced in the City of Olongapo and by implementing activities for the protection of natural environment and forests. The practical activities in the project include the trainings in operation and management of the waste disposal facilities, an examination of the waste collection and disposal system, and the preparation of Land Use and Environment Management Plan for natural environment protection.
Power Plant Environment Measurement Equipment Improvement Project (National Power Corporation) (Yen Loan)	1995	The aim of this project is to improve the environmental monitoring in power plants. The project will upgrade the equipment for the measurement of pollutants in the air, noise, and water quality in and around power plants.
Program for Establishing Environmental Conservation Plan and Promoting Priority Policies of Municipalities (Dasmariñas City, Gen. Trias City, Kawit City, Tanza City) (Development Partner Scheme)	2001-2004	This is an environmental management capacity building program for the environmental administrators of the four municipalities (Dasmariñas, Trias, Kawit, and Tanza) in the Cavite Province of the Calabarzon Region. The support items include the establishment of an environmental management system, formulation of environmental ordinances (drafts) and environmental conservation plans, pre-monitoring on the water quality of rivers around the municipalities, segregation and composting of garbage by residents, creation of O&M manuals for industrial waste water treatment facilities, creation of teaching aids for environmental education, and buildup of an environmental information network .
Urban and Industrial Environmental Management and Handling Capacity Enhancement (DENR (EMB)) (Country-Specific Special Training)	1999-2003	This training was aimed at enhancing the industrial pollution management capacity and provided with such major themes as the mine pollution prevention manager system in Japan, on-side inspection of plants by municipalities, pollution source monitoring and environmental regulation enforcement.

Source: Data supplied by JICA (2004)

Table 2-10
Other ODA Projects Relating to Water Quality Management

Project Title	Funding Agency	Project Duration	Project Cost (USD '000)	Location
Southern Mindanao Integrated Coastal Zone Mgt Project (SMICZMP)	JBIC	1999-2007	30,340	Malalag Bay-Balasiao Watershed, Davao del Sur Sarangani Bay-Mt. Matutum Watershed, General Santos City, Sarangani, and South Cotabato.
Laguna de Bay Institutional Strengthening and Community Participation (LISCOP)	WB/ Netherlands Gov't	2003-2008	12,400	Laguna de Bay (Region IV)
Water Resources Development Project-Watershed Management Improvement Component	WB/ DANIDA	1997-2004	8,440	Tanay, Rizal (Region IV) Gen. Nakar, Quezon (Region IV) Zamboanga del Sur (Region IX)
San Roque Multi-Purpose Project (Itogon Integrated Watershed Mgt Project) – DENR Component	ADB	2001-2007	21,532	Municipality of Itogon, Benguet (CAR)
Southern Philippines Irrigation Sector Project-Watershed Component Subcomponent	ADB	2001-2005	1,633	Cebu ((Region VII) Agusan del Norte and Agusan del Sur (CARAGA)
Partnership in Environmental Mgt. for the Seas of East Asia	ENDP/GEF/ IMO/SIDA/ NOAA	1999-2004	2,639	Region III, IV, NCR
Visayan Sea Coastal Resource and Fisheries Mgt.	GTZ	2003-2005	3,020	Masbate (Region V) Iloilo and Negros Occidental (Region VI) Cebu (Region VII)

Source: FASPO, 2005