

ベトナム国  
全国水環境管理能力向上プロジェクト  
中間レビュー報告書

平成 24 年 2 月  
(2012年)

独立行政法人国際協力機構  
地球環境部

環 境
J R
12-038

ベトナム国  
全国水環境管理能力向上プロジェクト  
中間レビュー報告書

平成 24 年 2 月  
(2012年)

独立行政法人国際協力機構  
地球環境部

## 目次

略語一覧

<b>第1章 中間レビューの概要</b> .....	1
1-1 調査団派遣の経緯と目的 .....	1
1-2 調査団の構成 .....	2
1-3 調査日程 .....	2
1-4 主要面談者 .....	3
1-5 調査方法 .....	3
<b>第2章 プロジェクト概要</b> .....	5
<b>第3章 プロジェクトの実績</b> .....	6
3-1 投入実績 .....	6
3-2 プロジェクト実施体制の整備状況 .....	7
3-3 活動進捗状況 .....	8
3-4 活動の実績 .....	12
<b>第4章 評価結果</b> .....	16
4-1 妥当性 .....	16
4-2 有効性 .....	16
4-3 効率性 .....	17
<b>第5章 まとめ及びプロジェクト目標達成に向けた提案</b> .....	18
5-1 プロジェクト全体に対する提案 .....	18
5-2 各成果に関連する提案 .....	19

### 【別添資料】

1. Report of Mid-term Review on The Project for Strengthening Capacity of Water Environmental Management in Vietnam・評価結果要約表
2. Minutes of Meeting on the Joint Coordinating Committee(案)
3. ワークプラン
4. ベトナム側主要面談者リスト
5. PDM
6. 投入実績

略語一覧

CECTT	Center for Environmental Consultancy and Technology Transfer	環境コンサルティング・技術移転センター
CEID	Center for Environmental Information and Data	環境情報センター
CEM	Center for Environmental Monitoring, VEA	環境モニタリングセンター
CETC	Center for Environment Training and Communication	環境研修・コミュニケーションセンター
C/P	Counterpart	カウンターパート
DAEIA	Department of Appraisal and Environmental Impact Assessment, VEA	環境影響評価部
DONRE	Department of Natural Resources and Environment	天然資源環境局
DWMEP	Department of Waste Management and Environmental Promotion, VEA	廃棄物管理・環境保全推進部
DWRM	Department of Water Resource Management	水資源管理局
EIA	Environmental Impact Assessment	環境アセスメント
EPA	Environmental Protection Agency	環境保護局
EPC	Environmental Protection Commitment	環境保護公約
GIS	Geographical Information System	地理情報システム
GPS	Grobal Positioning System	全地球測位システム
HASEM	Hai Phong Center for Environmental Monitoring	ハイフォン市環境モニタリングセンター
HEPA	Ho Chi Minh City Environment Protection Agency	ホーチミン市環境保護局
ID	Inspection Department, VEA	インスペクション部
ISD	Department of International Cooperation and Science, Technology, VEA	国際協力・科学技術部
ISEM	Institute of Science for Environmental Management	環境管理科学
JCC	Joint Coordination Committee	合同調整委員会
LEP	Law on Environmental Protection	環境保護法
MONRE	Ministry of Natural Resources and Environment	天然資源環境省
NTP	National Target Program on Pollution Remedies and Environment Improvement	汚染対策と環境改善にかかる国家目標プログラム
PCD	Pollution Control Department, VEA	汚染管理部
PDM	Project Design Matrix	プロジェクト・デザイン・マトリックス
PMB	Project Management Board	プロジェクト・マネジメント委員会
PPC	Provincial People's Committee	地方省人民委員会
PSI	Pollution Source Inventory	汚染源インベントリー
PST	Pollution Source Table	汚染源テーブル
QA/QC	Quality Assurance/Quality Control	品質保証・品質管理
SEA	Strategic Environmental Assessment	戦略的環境アセスメント
VEA	Vietnam Environment Administration	ベトナム環境総局
WG	Working Group	ワーキンググループ

## 第1章 中間レビューの概要

### 1-1 調査団派遣の経緯と目的

ベトナム国においては、近年の飛躍的な経済成長に伴う工業化、都市化により、ハノイ、ホーチミン等の主要都市並びに地方都市において、未処理の産業排水、生活排水等の流入による河川、湖、運河等の汚染が深刻な問題となっている。

このような状況下、ベトナム政府は1994年に環境保護法（LEP）を施行（2006年改正）し、水、大気、廃棄物等に係る環境基準を整備した他、環境・資源に係る国家的管理を強化することを目的に、2002年に天然資源環境省（MONRE）を設立した。翌2003年には、2010年までに取り組むべき環境課題と、2020年に向けた環境課題解決の方向性を示す「国家環境保全戦略」を策定するとともに、排水課徴金に係る政令（Decree No.67）や重点汚染企業の汚染対策に係る首相決定（Decision No.64）を制定する等、対策執行のための制度整備も進めている。また、2006年に国家支出の最低1%を環境保護予算に割り当てることを決定する等、財源確保にも努めている。さらに、2008年12月には水環境保全と水資源管理を含めた総合的な流域管理に関する政令（Decree No.120）を制定し、国家として流域管理に重点を置くことを明確にしており、水環境の総合管理に向けたMONRE及び地方省（DONRE）の責務はますます増えている。

その一方で、環境管理の責任機関であるMONREが、法制度執行の現場である地方の環境問題の特質、地方政府の環境部門の力量を十分把握せず実態と乖離した理想的・理論的な制度を策定する傾向があり、また法制度の執行に必要な実施細則の整備が不十分で実際の執行につながっていないという状況がある。また、急速な制度整備に起因する諸問題も顕在化しつつあり、水環境管理政策の効果的な実施が困難となっている。さらに、地方省のトップ、企業経営者は短期的な経済的利益を追求しがちで、環境保全及び法律遵守への認識が十分でないという根本的な課題も存在し、DONREにおいては、一般的に、人員、人材、予算、経験、技術力不足等、水環境管理行政を執行していく上での能力の強化が遅れている。

こうした背景からベトナム政府は我が国に対し、技術協力を要請し、JICAは2010年6月より2013年6月までの3年間の予定で、MONRE及びDONREをカウンターパート（C/P）機関とした水環境管理行政に係る能力強化支援を実施中であり、現在、2名の長期専門家及び各技術分野の業務実施契約による専門家を派遣中である。

プロジェクトの中間地点にあたり、以下の目的で本中間レビューが実施され、その結果ベトナム側と別添1の内容に合意し、JCCにて承認された（別添2 Minutes of Meetings（案））。

- (1) ベトナム側と日本人専門家チームにより作成されたワークプラン（別添3）に基づいた活動の進捗を把握し、活動の実績をレビューする。
- (2) 必要なアクションを検討し、プロジェクトの今後の業務への提案を行う。
- (3) プロジェクトの現時点での妥当性、有効性、効率性を簡潔に分析する。

## 1-2 調査団の構成

本中間レビュー調査団の構成は次のとおりである。

担当	氏名	所属
総括	今井 千郎	JICA 国際協力専門員
環境行政	山本 充弘	社団法人海外環境協力センター 参与
環境技術	西宮 康二	社団法人海外環境協力センター 業務部長
環境管理	肥田野 るり	JICA 地球環境部環境管理第一課 副調査役
評価分析	房前 理恵	財団法人国際開発高等教育機構 主任

## 1-3 調査日程

調査日程は次のとおりである。プロジェクト・マネジメント委員会（PMB）のメンバーである MONRE 環境保護総局（VEA）国際協力・科学技術局（ISD）の Dr. Chu Ngoc Kien が専門家チームへのインタビューを除くすべてのインタビューに参加した。

日付	活動内容
2011年12月8日（木）	MONRE の環境保護総局（VEA）の以下の部署・機関へのインタビュー - Department of International Cooperation and Science, Technology (ISD) - Centre for Environmental Information and Documentation (CEID)
12月9日（金）	VEA の以下の部署・機関へのインタビュー - Department of Pollution Control (PCD) - Department of Environmental Appraisal and Impact Assessment (EIA) - Department of Waste Management and Environment Promotion (DWMEP) - ISD - Inspection Department (ID) - Center for Environmental Monitoring (CEM) MONRE の以下の部署へのインタビュー - Department of Water Resources Management (DWRM)
12月10日（土）	JICA 専門家へのインタビュー
12月11日（日）	移動（ハノイ～ホーチミン～バリアブントウ）
12月12日（月）	バリアブントウ DONRE へのインタビュー 移動（バリアブントウ～ホーチミン）
12月13日（火）	ホーチミン DONRE へのインタビュー 移動（ホーチミン～フエ）
12月14日（水）	フエ DONRE へのインタビュー 移動（フエ～ハノイ）
12月15日（木）	移動（ハノイ～ハイフォン） ハイフォン DONRE 移動（ハイフォン～ハノイ）
12月16日（金）	ハノイ DONRE へのインタビュー Institute of Science for Environmental Management (ISEM)へのインタビュー
12月17日（土）	報告書作成
12月18日（日）	報告書作成
12月19日（月）	VEA（ISD）との協議
12月20日（火）	報告書作成
12月21日（水）	JICA 事務所報告
12月22日（木）	中間レビュー結果共有／対象 DONRE・MONRE 活動報告会合

#### 1-4 主要面談者

##### 【JICA 専門家】

##### (1) 長期専門家

大林 重信	プロジェクト・リーダー／水環境政策
牛見 さおり	業務調整／環境管理

##### (2) 短期専門家

岩井 陽一	総括
檜枝 俊輔	水環境モニタリング
白根 義治	水質分析／品質保証・品質管理
居林 昌宏	環境啓発
細野 智之	環境啓発

##### 【ベトナム側】

別添4の通り

#### 1-5 調査方法

調査団は、VEA/MONRE 及び5つの対象 DONRE の関係者、JICA 専門家に対する質問票及びインタビュー調査、プロジェクトの各種報告書等の文献調査に基づき、活動の進捗状況と実績を確認し、続いて評価5項目（妥当性、有効性、効率性、インパクト、持続性）のうち、プロジェクトの中間地点で重要な視点となる妥当性、有効性、効率性について簡潔に評価分析を行った。3項目の定義は以下のとおりである。

##### (1) 妥当性（relevance）

プロジェクトの目標は、受益者のニーズと合致しているか、問題や課題の解決策としてプロジェクトのアプローチは適切か、相手国の政策や日本の援助政策との整合性はあるか等、プロジェクトの正当性や必要性を確認する。

##### (2) 有効性（effectiveness）

プロジェクトの実施によって、プロジェクトの目標が達成され、受益者や対象社会に便益がもたらされているか、またはもたらされるかを確認する。

##### (3) 効率性（efficiency）

プロジェクトの投入と成果の関係に着目し、投入した資源が効果的に活用されているか、プロジェクト運営は適切になされているか等を確認する。

さらに、調査結果に基づき、プロジェクトに対する提案を行い、それらを報告書案に取りまとめた。報告書案の内容については、VEA/MONRE のプロジェクト関係者と議論し、また DONRE に対し

でも案を送付した。案はベトナム側からのコメントを受け、必要な修正を加えたうえで、VEA/MONRE、5DONRE のプロジェクト関係者に対して発表し、最終的な報告書として 2011 年 12 月 22 日開催の会合にて JCC に報告を行い JCC の承認を受けた。

なお、プロジェクト・デザイン・マトリックス (PDM) (別添 5) の指標については一部確定していない部分があるため、これらについてベトナム側と協議し決定することとなった。



## 第2章 プロジェクト概要

現行の PDM に記載されたプロジェクトの概要は以下のとおりである。

### (1) 協力期間

2010年6月～2013年6月（3年間）

### (2) 対象地域

ハノイ、ハイフォン、ホーチミン、バリアブントウ、フエの5省

### (3) 実施機関

MONRE 及び対象地域の DONRE

### (4) 目標及び成果

#### 上位目標

MONRE 及び全国の DONRE の水環境管理に係る執行能力\*が強化される。

\* MONRE の能力とは、政策・制度の執行能力を含む。

#### プロジェクト目標

MONRE 及び対象 DONRE の水環境管理にかかる行政執行能力\*が強化される。

\*本能力が包含する意味は以下のとおりである。

MONRE：政策・制度立案能力ならびに情報管理・活用能力

DONRE：基礎的な水汚染対策執行能力、対策策定能力、環境啓発活動実施能力、情報管理・活用能力

#### 成果

- 1) 執行性の高い水環境管理政策・政策手段を立案する MONRE の能力が向上する。
- 2) 対象各 DONRE における基本的な水汚染対策執行能力（環境モニタリング、汚染源インベントリー、汚染源インスペクション）が強化される。
- 3) 対象 DONRE における効果的な水汚染対策を策定する能力が強化される。
- 4) 対象 DONRE の市民、産業界に対する水環境の啓発能力が強化される。
- 5) MONRE・DONRE の情報の管理・活用能力が強化される。

## 第3章 プロジェクトの実績

### 3-1 投入実績

2010年6月から2011年11月末まで、日本側、ベトナム側双方の投入は下記の通り実施された。

#### 3-1-1 日本側

##### (1) 専門家派遣

これまでに2名の長期専門家（プロジェクト・リーダー/水環境政策 17.4M/M、業務調整/環境管理 15.3M/M）、16名の短期専門家（総括、副総括/水環境管理、水環境モニタリング、水質分析/QAQC、汚濁源インベントリー、汚濁源インスペクション、水汚濁対策、環境啓発、業務調整の各分野 合計 47.8M/M）が派遣されている<sup>1</sup>（詳細は別添6を参照）。

##### (2) 機材供与

これまでに、プロジェクト事務所のオフィス機材、ソフトウェアの他、各対象 DONRE にパソコン、ソフトウェア等が供与された<sup>2</sup>。総額は約 4,010 千円（51,439USD）<sup>3</sup>である（詳細は添付資料4を参照）。

##### (3) ローカルコンサルタント雇用／ローカルコンサルタントへの業務委託

現在までに、各分野のローカルコンサルタント（モニタリング、分析、インベントリー、インスペクション/水汚濁管理、啓発の各分野）が雇用されている。

VEA 及び MONRE の各関係部署・機関による政策・政策手段レビューの支援、ハイフォン、ホーチミン、バリアブントウにおけるインベントリー作成活動の支援、また、啓発活動の支援のため、ローカルコンサルタントと業務委託契約を締結済みである。

##### (4) ローカルコスト

2011年11月末までに 20,811 千円（266,985USD）<sup>4</sup>がローカルコストとして支出され（上記(2)の機材分は除く）、プロジェクト活動、ローカルコンサルタント雇用、プロジェクトスタッフ雇用などに充てられた（内訳は別添6を参照）。

#### 3-1-2 ベトナム側

##### (1) カウンターパート配置

中央レベルでは、MONRE 副大臣、VEA 副総局長（プロジェクト・ダイレクター）の他、VEA の各部署・機関（ISD、PCD、ISEM、CEID、ID、DAEIA、DWMEP、CEM、CECTT、CETC）、MONRE の国際協力局（ICD）、DWRM から計 15 名がプロジェクト運営のために配置されている。各 DONRE

<sup>1</sup> 現地業務のみの従事人月。

<sup>2</sup> 5つの DONRE への供与分については、専門家携行機材として購入済み。

<sup>3</sup> 2011年度の JICA 為替レート表（12月：1USD=¥77.95、1VND=¥0.0037）に基づき計算。

<sup>4</sup> 同上

においては、DONRE 及び環境保護局（EPA）やモニタリング機関から合計 2～3 名、合計 12 名が配置されている。

(2) 施設の提供等

VEA オフィスの近くに VEA の負担によりプロジェクト事務所が提供されている（光熱費も VEA の負担）。

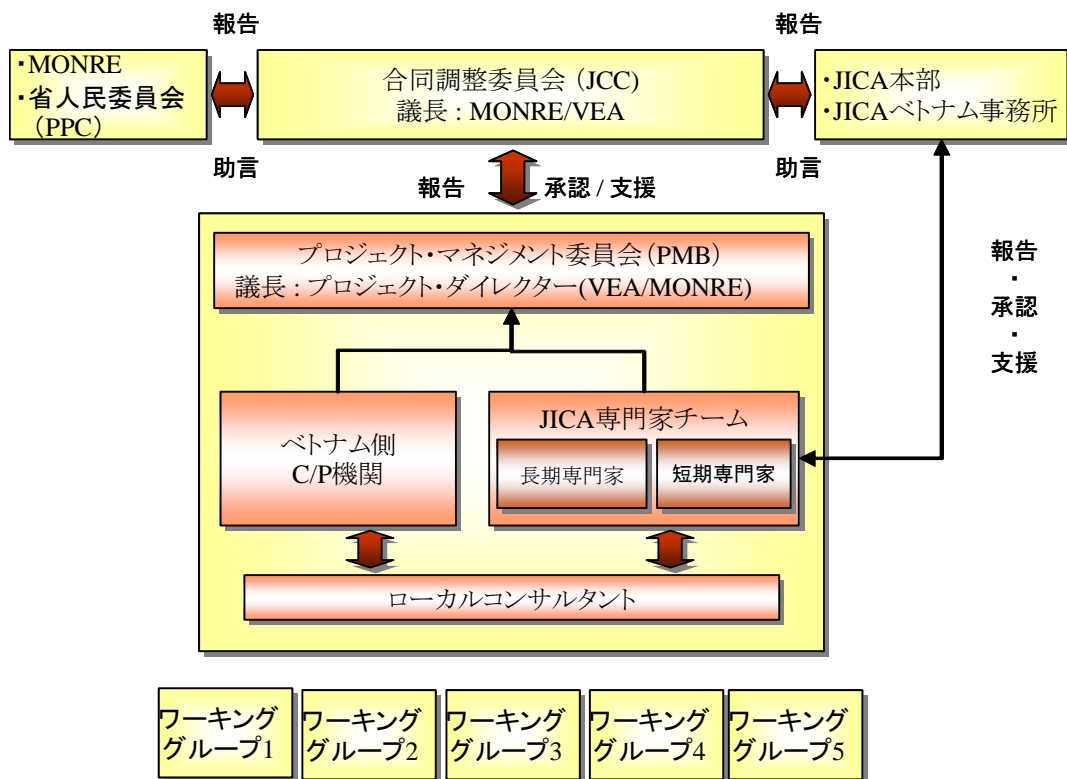
(3) ローカルコスト

ベトナム側のプロジェクト文書承認<sup>5</sup>が 2011 年 12 月まで遅れたため、MONRE、各 DONRE 共にローカルコストの負担は一部の経常経費に限定されていたが、2012 年はプロジェクトの予算が付くことが想定される。

3-2 プロジェクト実施体制の整備状況

本プロジェクト実施のため、合同調整委員会（JCC）、プロジェクト・マネジメント委員会（PMB）、複数のワーキンググループ（WG）から成る実施体制が整備されている（図 1）。

図 1 プロジェクト実施体制



出所：JICA 専門家（調査団が和訳）

<sup>5</sup> ベトナム政府内にてプロジェクト独自の予算配賦をするための手続きの一つ。これらの手続きをもってベトナム政府内でプロジェクトが正式に認可されることとなる。

JCCはプロジェクト実施をモニタリングし、プロジェクトの全般的方向性を決める役割を担う。これまで2度のJCC会合が開催され(2011年4月及び6月)、インセプションレポート案について議論された。

PMBは、プロジェクト活動を管理し、JCCにその進捗を報告するために設立された。PMBの構成について関係者間の合意に時間がかかり、最初の会合開催は2011年11月となった。同会合ではプロジェクトの進捗レポート(No.1)の内容について議論された。

### 3-3 活動進捗状況

プロジェクトでは活動計画表(Plan of Operation)を基に、詳細活動とそのスケジュールを示したワークプランを各成果に対し作成している(成果2の場合はさらに活動分野ごとに作成)。ワークプランに照らした成果ごとの活動の進捗状況は以下の通りである。

#### 3-3-1 成果1(政策・政策手段立案能力向上)

成果1(執行性の高い水環境管理政策・政策手段を立案するMONREの能力が向上する)に関する活動進捗状況は以下のとおりとなっている。

##### (1) 全般的状況

国レベルでの水環境管理政策及び政策手段につき、MONREの関係各部署と日本人専門家がレビューを実施した。8つの部署それぞれからさらなる政策レビューの対象となる課題の候補が提示され、環境保護法(LEP)<sup>6</sup>や政令(Decree)、決定(Decision)、通達(Circular)に直接関係するものから、技術に関するものまで多岐にわたる課題が選定された。喫緊の政策課題を選択した3部署は、すでに政策案として、VEAの汚染管理部(PCD)がLEPの一部改定案、同インスペクション部(ID)がDecree 117の改定案、同ISDが「排水処理技術の評価のための一般手続き」("A Generic Protocol for Assessment of Waste Water Treatment Technology")の案を作成した。

また、VEAのDAEIAにより、戦略的環境アセスメント(SEA)<sup>7</sup>、環境影響アセスメント(EIA)、環境保護公約(EPC)<sup>8</sup>に関する政令案、通達案が作成され、DONREや専門家、他の関係省庁から意見を収集するためのワークショップが開催された。各々の案は、Decree No. 29(2011年4月)及びCircular No26(2011年7月)として公布された。

残りの部署はレビューのための課題を選定したばかりであり、具体的なレビュー作業のワークプラ

---

<sup>6</sup> 1993年に国会承認されたベトナムの環境保護法。2005年に改正され、国の上位計画策定・承認段階における戦略的環境評価(SEA)の導入、産業別の環境保護の規定などが盛り込まれた。水環境に関する規定も大幅に強化された。(財団法人地球・人間環境フォーラム「ベトナムにおける企業の環境対策と社会的責任」2007年3月)

<sup>7</sup> 政策やプログラム、計画、地域計画などにおける環境影響の評価。(同上書)

<sup>8</sup> EIA対象事業以外の生産・経営・サービス活動を行う際に、廃棄物の削減措置や処理の実施、環境保護関連法規定の順守の公約で、書面を県レベルの人民委員会に登録する。(同上書)

ンと成果物について議論を開始したところである。

## (2) 特筆すべき点

法律・規制の執行力を確保するためには、作成時における DONRE の参加と貢献が非常に重要である。実際に上述のワークショップでは DONRE から貴重なコメントや提案が出された。

### 3-3-2 成果2（水汚染対策執行能力強化）

#### 3-3-2-1 成果2-1（水質モニタリング）

成果2（対象各 DONRE における基本的な水汚染対策執行能力が強化される）のための活動のうち、水質モニタリングに関する活動は以下のとおりの進捗状況となっている。

##### (1) 全般的状況

水質モニタリング計画の見直しにかかる活動は概ね予定通りに行われている。2011年8月には各 DONRE にて最初のトレーニングが実施され、関係者はモニタリング計画のレビュー方法について学んだ。さらに2011年11月あるいは12月にはモニタリング計画の修正案を作成するためのワークショップが各 DONRE にて実施され、対象地域が選定された。次のステップとして、今後、選定された対象地域のモニタリングの分析、分析結果の年間報告書への反映が計画されている。そのためトレーニングは、DONRE が年間報告書を準備するタイミングに合わせて、2012年2月に行う予定である。

##### (2) 特筆すべき点

フエの DONRE には環境モニタリングデータのマネジメント・システムがないが、現在過去のモニタリングデータをデジタル化する作業に取り組んでおり、プロジェクトの下でそのためのフォーマットが作成された。

#### 3-3-2-2 成果2-2（水質分析）

成果2のための活動のうち、水質分析に関する活動は以下のとおりの進捗状況となっている。

##### (1) 全般的状況

トレーニングに必要な既存の機材の一部が使用可能な状態にないため、全ての対象 DONRE においてトレーニング活動が遅れている。またフエは新たにラボを設立しており、本プロジェクトの下で新しい機材の調達当初より計画されていたが、ベトナム側のプロジェクト承認が2011年12月となったことから、調達手続きが大幅に遅れており、トレーニング実施に支障が出ている。

既存機材については、専門家チームが現状を確認し、当初計画に追加して JICA による調達が必

要な機材のリストを作成し、併せて必要な修理を手配済みである。2011年12月のMONREによるプロジェクト文書承認を受け、JICAは当初供与予定であった機材及び追加機材につき、調達手続きを進める予定である。

## (2) 特筆すべき点

フエのDONREでは、新しいラボの設計に専門家が技術的支援を行った。ラボは2011年8月に完成している。

ホーチミンDONREでは外部ラボにモニタリングの分析を委託しているため、プロジェクトではモニタリング分析結果の品質保証及び品質管理(QA/QC)にかかる能力向上を支援しており、関係者は熱心に取り組んでいる。

### 3-3-2-3 成果2-3 (汚染源インベントリー)

成果2のための活動のうち、汚染源インベントリー(PSI)に関する活動は以下のとおりの進捗状況となっている。

#### (1) 全般的状況

C/Pの確定やワークプランの策定に時間がかかり、全てのDONREにて活動は約2か月遅れているものの、軌道に乗りつつある。2011年7月にはワークショップが開催され、PSI開発プロセスの例が紹介された。その後、DONREによりPSIの対象企業が決定され、質問票調査やサンプリングの対象となる企業も選定された。また、PSIに含まれる情報を入力するためのフォーマットが作成された。

プロジェクトでは、DONREがPSIの活用の具体的イメージを描けるように、日本人専門家がPSIの活用例を紹介する研修も実施した。明確な目的を持ったPSIの作成はほとんどのDONREにとって初めての経験であったことから、準備段階に計画以上の時間がかかったが、そのプロセスを経て、各DONREとも明確な目的を持ってPSI作成に取り組む準備ができた。現在、各DONREはプロトタイプPSIの開発にかかり始めており、2012年2月には試用に向けて動き出す予定である。

#### (2) 特筆すべき点

ハノイDONREは、人民委員会(PPC)の資金により包括的な環境データベースの構築を行う新プロジェクトを開始した。このため、2011年11月に、同DONREと日本人専門家チームとの話し合いにより、本プロジェクトにおけるPSIの作成は取りやめとなり、データベースの構築において日本人専門家が技術的助言を行うことが合意された。

フエDONREは、インスペクションデータのデジタル化、インベントリー作成を行いたいと強く希望しており、すでに自分達で100の対象企業の汚染源情報をデジタル化した。このデータを地理

情報システム（GIS）に組み込み汚染源マップを作成している。

ホーチミン DONRE は汚染源情報収集のための質問票を持っており、本プロジェクトでの対象 DONRE によるプロトタイプ PSI の開発に役立っている。

### 3-3-2-4 成果2-4（インスペクション）

成果 2 のための活動のうち、インスペクションに関する活動は以下のとおりの進捗状況となっている。

#### (1) 全般的状況

プロジェクト活動は計画どおり進んでいる。主要汚染源の発見能力、排水処理施設のチェック能力の向上のため、ワークショップがハノイ、ハイフォン、フエにおいて 2011 年 11 月あるいは 12 月に開催され、ホーチミンでは 2012 年 1 月、バリアブントウでは同 2 月に予定されている。また、インスペクション活動に役立つ支援ツールとして主要・重大汚染源発見のためのポイントをまとめた「Examples of Viewpoints for Finding Primary/Crucial Pollution Sources」が JICA 専門家により作成され、各 DONRE に活用されている。

#### (2) 特筆すべき点

インスペクション担当者が排水処理の現場で活用できる情報をまとめた「Preliminary Idea of Handy Reference Cards」が日本人専門家により作成され、現在ハイフォン DONRE が使用している。今後他の DONRE にも配布される予定である。

### 3-3-3 成果3（水汚染対策策定能力強化）

成果 3（対象 DONRE における効果的な水汚染対策を策定する能力が強化される）のための活動は、ハノイ DONRE のみを対象としており、同 DONRE にてワークプラン通りに実施されている。まず、本プロジェクトの下で水汚染対策実施の対象となるモデル地区、産業グループが特定された。ハノイ DONRE は専門家の指導を受けつつ、汚染源に関する基本情報と環境関連規制の遵守状況を示した汚染源テーブル（PST）を作成した。さらに汚染源についての分析を行うため、2011 年 9 月から 11 月にかけて最初の現地調査を実施し、事業所からの情報収集を行った。

### 3-3-4 成果4（水環境啓発能力強化）

成果 4（対象 DONRE の市民、産業界に対する水環境の啓発能力が強化される）のための活動の進捗状況は次のとおりである。

#### (1) 全般的状況

環境啓発活動実施に先立った準備段階はほぼ計画どおりに進み、DONRE ごとに対象地域が選定さ

れ、地域の環境汚染の特性を考慮してターゲットグループが決められた。ハノイ、フエ、ハイフォン、バリアブントウではすでにそれらのターゲットグループを対象に環境啓発ワークショップが開催され、残るホーチミンでは 2012 年 2 月に実施が予定されている。

## (2) 特筆すべき点

ハノイ及びホーチミンの DONRE は主要企業を環境啓発ワークショップの対象にしている。ハノイでは Ha Dong と Tu Liem 地区から 30、市内全域から 20 の企業が招待された。近々開催予定のホーチミンでは、Tan Qui 産業クラスターの企業 20 社が招かれる予定である。

環境啓発ワークショップの対象は、地域の環境事情に応じて決められているため、DONRE により異なっている。ハイフォン DONRE はハイフォン工業地区管理局、社会組織、フエ DONRE は、漁業組合と社会組織を対象としている。バリアブントウでは、社会組織の他に、環境警察、市・県・コミュニケーションレベルの PPC といった幅広い対象がワークショップに招待された。

### 3-3-5 成果5（情報管理・活用能力強化）

成果 5（MONRE・DONRE の情報の管理・活用能力が強化される）のための活動については、ベトナム側と日本人専門家の議論が最近開始されたところである。ベトナム側はカウンターパート候補として、Decision No.2465/QD-BTNMT（MONRE 大臣決定 2008 年 11 月 26 日付）により設立された VEA 下部の非生産・公共サービス部門に位置づけられる CEID を挙げていることが確認されている。CEID は同決定により行政官の職務を支援するためのデータ収集・蓄積・管理・更新・加工等を担う部門と規定されているが、成果 5 達成のためプロジェクトではまず、VEA の各部局が DONRE から収集を必要とする情報を調査し、情報収集の頻度についても検討する予定である。

## 3-4 活動の実績

中間レビューチームは現時点での活動の実績と実施体制の有効性を検討した。結果は以下のとおりである。なお、本セクションで扱う「実績」とは、知識、ノウハウ、技術の改善レベルを指す。

### 3-4-1 実施体制

PMB はプロジェクトに関する調整を行い、プロジェクト運営に関して指針を与えるのに重要な役割を果たしている。

本プロジェクトでは成果別（成果 2 については分野別）に WG を設立している。プロジェクト開始当初は、WG の運営管理には多少の困難が伴い、WG を通じたベトナム側と日本人専門家のコミュニケーションが円滑でない場面もあった。しかし、プロジェクト活動が進み、ベトナム側と日本人専門家のコミュニケーションが改善した結果、現在 WG は適切に機能している。さらに今後は、ベトナム側の関係者は非常に多忙であるため、WG 活動を合理化する効果的な方法を検討するのが



望ましいと思われる。

### 3-4-2 成果1（政策・政策手段立案能力向上）

成果1のための活動については、活動のステップを決め、政策レビューのための課題を絞り込むのに時間がかかったが、関係部署と日本人専門家間の適切な調整により、着実な進捗が見られる。中間レビュー調査団は、国会から、2013年までに環境関連法に係るレビューの要請とそれを受けてMONRE上層部からVEAへ明確な検討指示があったことが、プロジェクト活動の進捗に貢献したと見ている。

政策レビュー活動において、MONREと対象5DONREとの間の密なコミュニケーションが確保され、DONREからも政策執行レベルでの課題等に関する貴重な意見が提示されている。これらを通じ、政策の執行に不可欠なMONREとDONREの間の緊密な連携の基礎が築かれた。

2012年には、さらなる政策レビュー活動が計画されている。

### 3-4-3 成果2（水汚染対策執行能力強化）

#### 3-4-3-1 成果2-1（水質モニタリング）

##### (1) 全般的実績

プロジェクトの下で開催されたワークショップを通じ、対象DONREは水質モニタリング計画策定に必要な基礎知識を得ると共に、所有する機材、マンパワー、予算を考慮しつつ、モニタリングの特定目的、頻度、モニタリング地点の検討を行った。同ワークショップ及びWGでの議論を通じ、対象DONREは、次のステップであるモニタリング計画の改定に進む準備ができている。モニタリング計画の改定は、対象地域のモニタリングデータの解析結果を基に行う予定である。

##### (2) 特筆すべき実績

いくつかのDONREでは関係部署・組織間の連携が上手くいっている。特に、ホーチミンでは、ホーチミン環境保護局（HEPA）とDONREのインスペクション部が、組織間の垣根を越えて緊密に連携している。また、ハイフォン環境モニタリングセンター（HACEM）とDONREのインスペクション部も協力して活動している。他のDONREについてもモニタリング、インスペクションそれぞれの担当部門／組織間の連携の強化を目指している。

#### 3-4-3-2 成果2-2（水質分析）

##### (1) 全般的実績

2011年12月にプロジェクト文書がMONREによって承認されたところであり、現状水質分析に必要な機材が全て揃っていないことから未だ実施を評価する段階にない。しかし日本人専門家の支援を得ながら、すべての対象DONREにおいてプロジェクト活動のため、追加調達が必要な機材が特定さ

れ来年に予定される水質分析研修の効果を高めることが期待される。

## (2) その他特筆すべき実績

ハイフォンの DONRE は他の DONRE に先行しており、すでに研修を通じて検出限界の設定のための品質保証・品質管理 (QA/QC) の能力を向上させ始めている。

### 3-4-3-3 成果 2-3 (汚染源インベントリー)

#### (1) 全般的実績

目的を明確にした PSI 作成は多くの DONRE にとって初めての経験であるが、プロジェクト活動を通じ、すべての対象 DONRE が PSI の重要性和有効性に対する理解を高めており、PSI 作成のためのデータ収集フォーマットを準備するのに必要な基礎知識を習得している。さらに、関係者のニーズに合った PSI を作成するのに不可欠な関連部局／組織間の連携も進められている。

また、プロジェクトの下での PSI の活用に関する議論や活用例を紹介するワークショップを通じ、各 DONRE が将来の PSI の活用に関し、具体的イメージを持つようになっている。また、同時に、プロトタイプ PSI の準備プロセスを主導するようになっている。活動は計画より遅れているものの、このような DONRE 側のオーナーシップの醸成状況に鑑み、2012 年には各 DONRE によりそれぞれのニーズに合った PSI が開発される可能性は高い。

#### (2) その他特筆すべき実績

プロジェクト開始前は PSI 作成を主導する部署がなかったが、いくつかの DONRE ではマンパワーの強化が計画されている。バリアブントウの DONRE では、PSI の作成に従事する職員を数人配置することを計画している。ホーチミンの DONRE は、環境管理部と EPA との合併後、25 人を PSI の作成に係らせる予定であり、作成にあたっては Tan Qui 産業クラスターに焦点を当てる一方、それが上手くいけば、対象地域を拡大する意向がある。

フエ DONRE は、上述のとおり、対象企業の GPS データ収集から開始し、対象 100 企業の GPS 情報を収集して 12 月中旬までに収集情報を元に GIS マップを作成している。

ハイフォン DONRE は現地調査を実施し、PSI に含む Re 川流域の 109 の企業を選定した。

### 3-4-3-4 成果 2-4 (インスペクション)

#### (1) 全般的実績

OJT やワークショップを通じ、すべての DONRE で第一次汚染源を特定する能力が強化された。将来的には、実践的かつ効果的なインスペクション計画の策定に役立つことが期待される。

#### (2) その他特筆すべき実績

プロジェクトではインスペクションの支援ツール（3-3-2-4 を参照）を配布しているが、これらのツールが将来のインスペクション能力の向上に役立つと思われる。

#### **3-4-4 成果3（水汚染対策策定能力強化）**

ハノイ DONRE は、汚染源に関する情報を示した PST を作成したが、これにより、汚染源の構造と特徴を把握する能力が向上し、水汚染対策の改善に向けた最初のステップとなった。

プロジェクト活動はスケジュールどおりに進んだものの、WG メンバーの参加が限られていることから、ハノイ DONRE の長期的なキャパシティ・ディベロップメントの観点から懸念が残る。

#### **3-4-5 成果4（水環境啓発能力強化）**

対象地域のステークホルダーを招いた第 1 回目のワークショップが各 DONRE により 2011 年 12 月に開催された（ホーチミンは 2012 年 2 月開催予定）ところであり、成果 4 についてはまだプロジェクトの実績を評価する段階にはない。しかし、ワークショップの準備プロセスに各 DONRE の関係部署から積極的参加があったことは、特筆すべきであろう。まだ第 1 回目のワークショップは開催されたばかりであるが、今後、2012 年に予定されている啓発活動の方向性を示すものとなることが期待される。

## 第4章 評価結果

本中間レビューでは、評価5項目のうち、プロジェクトが順調に効果発現に向けて実施されているかを検証し、後半に向けて改善すべき点等があれば提言をするため、妥当性、有効性、効率性につき、簡潔な評価を行った。結果は以下のとおりである。

### 4-1 妥当性

国の環境保護政策の中心となる2003年策定の「国家環境保護戦略：2010年ならびに2020年に向けたビジョン(National Strategy on Environmental Protection till 2010 and Orientations towards 2020)」は、本プロジェクトで強化を目的とするMONREおよびDONREを実施の責任機関に位置づけており、MONREについては関係省や機関、地方などの調整役を担うものとしている。

直近に策定された関連政策・計画としては、2012年から2015年を対象とする「汚染対策と環境改善にかかる国家目標プログラム(National Target Program on Pollution Remedies and Environment Improvement: NTP)」が2011年に国会で採択された。ベトナム政府は、本プロジェクトで取り組む水環境分野を含む汚染対策に今後一層力を入れていく予定である。

また、2013年に環境保護の基本法であるLEP及び関連法の改正が行われることとなり、本プロジェクトが取り組む既存の政策・政策手段のレビュー、新政策の草案作成は、ベトナム政府のかかる法改正に貢献するものとなっている。

これらの背景から、本プロジェクトの妥当性は現在も非常に高いと判断できる。

### 4-2 有効性

プロジェクト活動の多くが2011年開始となっており、現段階でプロジェクトの有効性を検証することは難しいが、中間レビューチームは、以下の理由から、プロジェクト目標達成の見通しは明るいとは判断した。

- (1) 各活動のインセプション段階において、WGメンバーの間で十分な議論が行われ、キャパシティ・ディベロップメントのための基礎が築かれている。特に成果2においては、各DONREが作成したアクション・プランをベースに、DONREと専門家の間で具体的な活動に関する議論がなされている。特に、明確な目的を持ったPSIの作成に関しては、ほとんどのDONREにとって初めての経験であるため、活動の方向性を関係者とのワークショップや会合を重ねて検討している。
- (2) MONREの関係者と対象DONREは、プロジェクトで取り組んでいる各分野に関し、2011年に行われた研修やワークショップを通じ、今後の能力向上の土台となる基礎的な知識と技術を着実に身に付けている。

- (3) 各活動の立ち上げ段階での議論やプロジェクト活動を通じ、MONRE だけでなく、対象 DONRE にオーナーシップ意識が醸成されている。PSI 作成に関しては、当初公式な担当部署がなく、また、作成のステップや PSI の用途について DONRE 側の知識が不足していたため、自発的な取り組みが得られなかったが、本中間レビューでは、各 DONRE が明確な目的を持って積極的にプロトタイプ PSI の作成に取り組んでいることが確認された。
- (4) LEP 及び関連法の改正予定に附随する MONRE の責務に鑑み、2012 年は MONRE が政策レビューに一層力を入れることが推測される。
- (5) 2011 年 12 月に MONRE によりプロジェクト文書が承認されたことから、今後はさらに効率的なプロジェクトの実施が期待できる。

一方で、ハノイ DONRE が実施する成果 3「効果的な水汚染対策を策定する能力が強化される」については、ハノイ DONRE の中核的担当部局は活動に積極的に参加しているものの、他の関係部局の WG への参加率が低く、ハノイ DONRE の組織的な能力強化の観点で懸念が浮上している。

#### 4-3 効率性

本プロジェクトのほとんどの活動が 2011 年 4 月以降に開始されており、また、大部分の機材調達もこれからであるため、まだ成果の達成度や投入の適切性を十分に検証する段階にないものの、現時点で各成果に関して次のような実績が確認できた。

- 成果 1 (MONRE の水環境管理政策・政策手段の立案能力向上) に関しては、関係者間で政策レビューの対象となる課題に合意するのに想定以上の時間がかかったため、前半の活動は遅れていたが、その後、プロジェクトは成果達成に向けて着実に前進している。これまでに 4 つの課題について政策案が作成され、現在、他の課題に関しても VEA と専門家でも今後のステップについて議論している。
- 成果 2 (対象 DONRE の基本的水汚染対策執行能力強化)、成果 3 (対象 DONRE の水汚染対策策定能力強化)、成果 4 (対象 DONRE の水環境啓発能力強化) に関する活動は 2011 年 5 月に始まったばかりであるが、活動は概ねワークプランどおりに進んでおり、対象 DONRE は各分野 (水質モニタリング、水質分析、PSI 作成、インスペクション、水汚染対策、環境啓発) において、これまでに基礎的な知識と技術を身に付けている。

一方で、一部の活動には以下のような遅れあるいは支障が生じている。

- 成果 2-2 (水質分析) に関する研修活動は、機材の不足により遅れている。ラボを新設したフエの DONRE には、本プロジェクトにより機材を調達することになっているが、MONRE によ

るプロジェクト文書承認の遅れが影響して調達が遅れ、さらに、全 DONRE において既存の機材の修理や一部機材の調達が必要なことが判明したため、研修活動の遅れにつながっている。

- 成果 2-3 (PSI 作成) のための活動につき、ワークプランの準備や将来の PSI の活用について具体的なイメージを固めるのに時間がかかり、活動がおよそ 2 か月遅れている。
- プロジェクト文書の承認の遅れによりベトナム側の予算措置ができず、DONRE のプロジェクト活動への全面的参加や DONRE と JICA 専門家の直接のコミュニケーションが難しい場合 (プロジェクト文書の承認がなされていない状態では、DONRE とのコミュニケーションは VEA を介す必要がある。) があり、プロジェクト活動の進捗に多少の影響を及ぼしていた。

しかし、機材調達については、最近のプロジェクト文書承認を受けて調達手続きが開始される予定であることから今後の順調な活動の実施が予想される。また、PSI 作成に関しては上述のとおり準備段階に十分な時間を費やしたことにより、活動が円滑に進み始めている。ベトナム側の予算措置の問題は、MONRE によるプロジェクト文書承認により解消が期待される。

## 第 5 章 まとめ及びプロジェクト目標達成に向けた提案

MONRE によるプロジェクト文書承認の遅れによって、予算措置・機材調達が遅れたり、DONRE への連絡に際し都度 VEA のレター取付けを要請されたりする等、プロジェクトの円滑な実施に影響が及ぼされてきた面があるが、2011 年 12 月に MONRE によるプロジェクト文書承認がなされたことが確認された。また、活動の立ち上げに時間がかかり、実質活動期間はあまり長くなかったものの、短期間に 3-3 に述べたような実績も出始めていることが確認された。

上記の点を踏まえ、今後のプロジェクト目標達成への見通しは明るい、中間レビュー調査団は、プロジェクトの効果拡大に向けて、以下の点を提案する。

### 5-1 プロジェクト全体に対する提案

- DONRE は省レベルでの水環境管理において極めて重要な役割を担っていることから、継続したキャパシティ・ディベロップメントが必要である。本プロジェクトを通じ、VEA の関係部署との連携を確保しつつ DONRE の水環境管理能力を強化することが期待される。
- 2011 年に習得した知識と技術のさらなる向上と活用のためには、2012 年のプロジェクト活動が非常に重要である。MONRE 及び DONRE の職員からの十分なインプットを確保するため、できる限り早期に 2012 年度のワークプランを作成し、また、同ワークプランを実践的かつニーズの変化等に応じられるような柔軟性を持ったものとする必要がある。2012 年の活動が効率的、効果的に実施されるよう、残されたプロジェクト期間と予算制限を十分考慮に入れたワークプランが望まれる。

- 本調査中、複数の DONRE から、本プロジェクトの下での会合や他の活動につき、事前準備や関係者の参加確保のため、十分な時間的余裕をもってスケジュール調整をしてほしいとの要望があった。会合の効果を向上させるためにも、適切な事前の調整を行うことが望ましい。
- プロジェクトの活動を通して得られるノウハウの DONRE 間の共有はプロジェクトの成果を高めるために効果的であることから、VEA の支援の下、DONRE 間の相互訪問の実施を提案する。

## 5-2 各成果に関連する提案

### (1) 成果 1（政策・政策手段立案能力向上）

MONRE の関係部署・機関は、2012 年の LEP 改正や NTP の策定といった最近の環境管理にかかる動向を踏まえ、現在の環境政策及び法規の有効性向上のため、政策レビューおよび調査を行っている。特に LEP の改正が決まったことで、MONRE の各部署が積極的に関係業務を見直すことが必要となっている。また、これらの作業の中で、DONRE の実態に即した実効的な環境管理政策・手段の策定がなされることが期待されている。かかる背景を踏まえ、以下を提案する。

- 今後複数のトピックにつき、政策レビューのワークプランが作成される予定であるが、プロジェクトの残りの期間が短いこと、予算が限られていることから、レビューの具体的成果、特に対象とする法令などをイメージしたワークプランとすることが賢明である。
- 本プロジェクトで政策レビューの対象とする課題のいくつかは相互に関連していることから、それぞれのレビューの間に一貫性、相乗効果を生み出すために、調査結果を積極的に共有する機会を設けることを提案する。
- 中間レビューチームは本調査を通じ、DONRE レベルにおける 이슈のうちいくつかは、成果 1（政策レビュー）に関する活動で取り上げられ得ることを再確認した。したがって、成果 1 と成果 2 及び 3 との間のリンクを確保することが必要であり、その際、PMB の監視の下、VEA が十分に関与することが望ましい。

### (2) 成果 2（水汚染対策執行能力強化）

- プロジェクトの下で実施される研修に、インスペクション及び環境検査・監査の担当者が参加する機会を設けることを提案する。
- PSI 作成、活用については、関係部署間の連携が必要である。連携により、環境管理にかかる DONRE の組織能力強化が促進されることが期待される。

### (3) 成果 3（水汚染対策策定能力強化）

- ハノイ DONRE は、モデル地区における包括的かつ効果的水汚染対策計画策定のため、関係部署の本プロジェクト担当者の参加を規定する決議 (No. 178/2011/QD-STNMT) を出した。これまで、

ハノイ DONRE の関係者は、プロジェクトの活動にある程度参加の努力を示してきたが、日常業務と兼ね合いが難しく成果 3 の準備活動に十分に参加しているとは言えない。成果 3 は本プロジェクトの全ての活動の結果を集約する要素を含んでおり、プロジェクトの成否を担う非常に重要な役割を担っている。より円滑にプロジェクトを実施し、結果を確保するために、ハノイ DONRE の積極的な参加が強く求められる。NTP の策定、予定される LEP の改正に鑑み、現在ベトナムはターニングポイントに差し掛かっており、成果 3 の達成は、ベトナムの全 DONRE に適用可能な革新的水汚染管理モデルの構築に繋がる可能性を秘めている。かかる状況を考慮し、また、ベトナムの首都としての責任を踏まえ、成果 3 に関する活動へのハノイ DONRE の関係者の戦略的関与は、成果 3 の達成に不可欠である。

(4) 成果 4（水環境啓発能力強化）

- 2月のホーチミンでの開催をもって全対象 DONRE で終了する最初のワークショップの結果を詳細に分析し、対象 DONRE 間及び VEA と共有し、各対象地域の社会経済及び環境状況を踏まえつつ、産業界や社会組織等の環境啓発の効果的方法を検討することが望まれる。

(5) 成果 5（情報管理・活用能力強化）

- プロジェクトでは、VEA と DONRE の関係を考慮に入れつつ、情報管理と活用にかかる問題点を洗い出す調査を計画している。調査結果を分析し、その後の適切なアクションを提示することが望まれる。



Report of Mid-term Review  
on  
The Project  
for  
Strengthening Capacity of Water  
Environmental Management  
in Vietnam

Mid-term Review Team, JICA

22 December 2011

# Table of Contents

## 1. Introduction

- 1.1 Background of the Mid-term Review Study
- 1.2 Objectives of the Mid-term Review Study
- 1.3 Methodologies of the Study
- 1.4 Schedule of the mid-term Review
- 1.5 Members of the Review Team

## 2. Current Status of Activities

- 2.1 Organizational Arrangement
- 2.2 Output 1(Policy review)
- 2.3 Output 2-1(Monitoring)
- 2.4 Output 2-2(Water quality analysis)
- 2.5 Output 2-3(Inventory)
- 2.6 Output 2-4(Inspection)
- 2.7 Output 3(Water pollution control measures)
- 2.8 Output 4 (Environmental awareness)
- 2.9 Output 5 (Information management and utilization)

## 3 Performance of Activities

- 3.1 Organizational Arrangement
- 3.2 Output 1
- 3.3 Output 2-1 (monitoring)
- 3.4 Output 2-2 (Water quality analysis)
- 3.5 Output 2-3 (Inventory)
- 3-6 Output 2-4 (Inspection)
- 3-7 Output 3 (Water pollution control measures)
- 3-8 Output 4 (Environmental awareness)
- 3-9 Output 5 (Information management and utilization)

## 4. Relevance of the Project

## 5. Efficiency of the Project

## 6. Effectiveness of the Project

## 7. Suggestions for the Work Forward

# 1. Introduction

## 1.1 Background of the Mid-term Review Study

JICA's technical cooperation "The Project for Strengthening Capacity of Water Environmental Management in Vietnam (hereinafter referred to as "the Project") aims to enhance water environmental management capacity of Vietnam Environment Administration (VEA), Ministry of Natural Resources and Environment (MONRE) and Department of Natural Resources and Environment (DONRE) in five target provinces by improving: MONRE's capacity to make policy and management tools (Output 1); target DONREs' enforcement capacity on basic water pollution control with focus on water quality monitoring, development of pollution sources inventory and pollution sources inspection (Output 2); target DONRE's capacity to make effective water pollution control measures (Output 3); target DONREs' capacity to promote environmental awareness (Output 4); and the capacity of MONRE and target DONREs on better information management and utilization (Output 5).

In the middle of the Project duration, JICA formed a mid-term review team (hereinafter referred to as "the Team") for the purpose shown in 1.1-2.

## 1.2 Objectives of the Mid-term Review Study

The objectives of the mid-term review study (hereinafter referred to as "the Study") are:

- 1) to grasp the current status of the activities based on the Work Plan prepared by both the Vietnamese side and the Japanese Expert Team (JET) and to review the performance of activities;
- 2) to consider the necessary actions to be taken and make suggestions for the work forward; and
- 3) to briefly review the relevance, efficiency and effectiveness of the Project as of now.

## 1.3 Methodologies of the Study

- 1) to undertake questionnaire surveys from officials of VEA, MONRE and DONREs of five provinces;
- 2) to carry out interviews with each department of VEA/MONRE, and each section of five DONREs that are participating in the Project;
- 3) to prepare a brief draft report of the Study and to share it with VEA/MONRE and five DONREs; and
- 4) to finalize the report and present it to the JCC to be held on 22<sup>nd</sup> December 2011.

## 1.4 Schedule of the mid-term Review

Date	Institution
8 <sup>th</sup> Dec. (Thu)	Department of International Cooperation and Science, Technology (ISD), Centre for Environmental Information and Documentation (CEID), VEA, MONRE
9 <sup>th</sup> Dec. (Fri)	Department of Pollution Control (PCD),

	Department of Water Resources Management (DWRM), Department of Environmental Appraisal and Impact Assessment (EIA), Department of Waste Management and Environment Promotion (DWMEP), ISD, Inspection Department (ID), Center for Environmental Monitoring (CEM), VEA, MONRE
10 <sup>th</sup> Dec. (Sat)	JICA Expert Team (JET)
11 <sup>th</sup> Dec. (Sun)	Internal meeting
12 <sup>th</sup> Dec. (Mon)	Ba Ria – Vung Tau (BRVT), DONRE
13 <sup>th</sup> Dec. (Tue)	Ho Chi Minh (HCM) DONRE
14 <sup>th</sup> Dec. (Wed)	Thua Thien Hue (TT-Hue) DONRE
15 <sup>th</sup> Dec. (Thu)	Hai Phong (HPG) DONRE
16 <sup>th</sup> Dec. (Fri)	Ha Noi (HNI) DONRE Institute of Science for Environmental Management (ISEM), VEA, MONRE
17 <sup>th</sup> Dec. (Sat)	Report preparation
18 <sup>th</sup> Dec. (Sun)	Report preparation
19 <sup>th</sup> Dec. (Mon)	ISD, VEA, MONRE
20 <sup>th</sup> Dec. (Tue)	Report preparation
21 <sup>st</sup> Dec. (Wed)	Internal meeting
22 <sup>nd</sup> Dec. (Thu)	Experience sharing meeting among 5 DONREs and VEA, MONRE 3 <sup>rd</sup> JCC

※Dr. Kien from ISD, a member of Project Management Board participated in all interviews.

### 1.5 Members of the Review Team

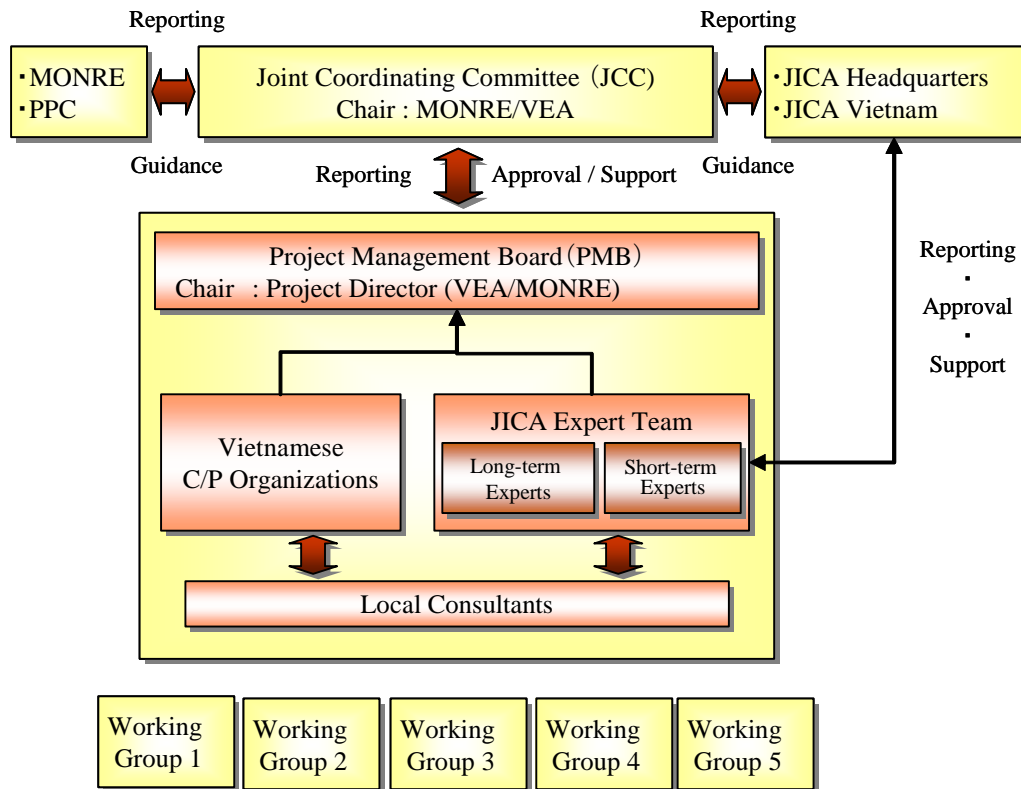
Name	Job title
Mr. Senro Imai	Senior Advisor, JICA (Advisory Committee for the Project)
Mr. Mitsuhiro Yamamoto	Senior Advisor, Overseas Environmental Cooperation Center (OECC), (Advisory Committee for the Project)
Mr. Koji Nishimiya	General Manager, OECC (Advisory Committee for the Project)
Ms. Ruri Hidano	Deputy Assistant Director, Global Environment Department, JICA
Ms. Rie Fusamae	Evaluation consultant, Foundation for Advanced Studies on International Development (FASID)

## 2. Current Status of Activities

### 2.1 Organizational Arrangement

A multilayered implementation structure consisting of Joint Coordination Committee (JCC), Project Management Board (PMB) and Working Groups (WG) was established to ensure the smooth implementation of the Project (See Figure 1).

Figure 1 Project Management Structure



Source: JET

JCC monitors the project implementation and decides the overall direction of the Project. JCC meetings were held in April 2011 and June 2011 to discuss and approve a draft inception report of the Project.

PMB was established to manage Project activities and to report progresses to JCC. Since it took time to agree on the organization of the board, the first meeting was held in November 2011. The contents of a draft progress report No.1 of the project was discussed in the meeting.

A WG was set up for each Output of the Project in each DONRE to clarify the activities and responsibilities of concerned officials from different departments as well as JET. Numbers of meetings were held to discuss specific matters regarding Project activities.

## 2.2 Output 1(Policy review)

### (1) General Status

Overall review on water environmental management policy and tools at the national level has been carried out.. Each department of MONRE participating in Output 1 activities has also conducted reviews.

After the above review, eight departments presented candidate subjects for policy review and several subjects were selected. Subjects are rather diversified ranging from those directly related to the Law of Environmental Protection (LEP), decrees, decisions and circulars to those related to technologies.

Three departments which selected urgent policy issues have already drafted new policies, namely modification of LEP (PCD), Decree 117 (ID) and “a genetic protocol for assessment of waste water treatment (WWT) technology” (ISD/VEA).

With respect to SEA, EIA and EPC, the workshop was held and Decree and Circular were issued.

Other departments have just selected target subjects and discussions on work plans and specific deliverables.

### (2) Specific Status to be Noted

DONREs’ participation and contribution to policy review are considered to be important to ensure the enforceability of laws and regulations.

In fact, in the above-mentioned workshop, many valuable views and opinions were presented and specific comments and suggestions were made by DONREs.

## 2.3 Output 2-1(Monitoring)

### (1) General Status in 5 DONREs

The Project activities for reviewing water quality monitoring plan have been implemented mostly as scheduled in the Work Plan. The first training was conducted in each DONRE in August 2011 on a method to review monitoring plan. Following the training, a workshop to draft a revised water quality monitoring plan was held in November/December 2011. Through the workshop, each DONRE selected target areas for the review of their monitoring plan. The next step will be to analyze monitoring data on the selected areas and reflect the results in the annual reports. This training is planned for February 2012 to ensure alignment with the timing of annual report preparation by DONREs.

### (2) Specific Status to be Noted

Although TT-Hue DONRE has no data management system for environmental monitoring, they are now digitizing the past monitoring data based on a format prepared under the Project.

## 2.4 Output 2-2 (Water quality analysis)

#### (1) General Status in 4 DONREs

Training activities are behind schedule in all DONREs due to mechanical problems with existing equipment. Procurement of new equipment for TT- Hue is delayed since the project has not been approved until recently.

The JET examined condition of the troubled equipment and prepared a list of additional equipment required to conduct planned training whilst necessary repair of some equipment have been arranged. Based on the decision to approve the Project Document by MONRE on December 2011, JICA will proceed with the procurement process.

#### (2) Specific Status to be Noted

For TT-Hue DONRE, the JET provided technical support on the design and arrangement of a new laboratory. Construction was completed in August 2011.

HCMC DONRE is ardently working on quality assurance and quality control (QA/QC) of results of monitoring data analysis from external laboratories.

### 2.5 Output 2-3 (Inventory)

#### (1) General Status in 4 DONREs

Although activities are behind the schedule specified in the Work Plan for approximately two months in all DONREs, they are on the right track. DONREs learned examples of Pollution Source Inventory (PSI) development processes in a workshop held in July 2011. Following the workshop, DONREs selected target enterprises to be included in PSI and also chose enterprises for questionnaire surveys and water sampling, and then prepared a format in which information for PSI will be input.

In order to help DONREs to have some ideas about how they can make use of PSI, PSI usage examples were introduced by JET to DONREs in a training program. Although this preparatory work took longer than planned, it helped each DONRE to be prepared for development of PSI with clear objectives. The next step, development of a prototype PSI, is expected to be completed by February 2012 for a trial usage.

#### (2) Specific Status to be Noted

Since HNI DONRE has launched a new project funded by the Provincial People's Committee (PPC) to develop a comprehensive environmental database, the planned activities under the Project to develop a PSI were cancelled in HNI DONRE. Instead, JET will provide technical advice in developing the database, which was agreed between HNI DONRE and JET in November 2011.

TT-Hue DONRE digitized existing environmental information of 100 enterprises and prepared a GIS pollution source map. This work was done by themselves.

HCMC DONRE has a questionnaire format for pollution source information which serves to develop a prototype PSI for all target DONREs under the project.

## 2.6 Output 2-4 (Inspection)

### (1) General Status in 5 DONREs

Planned activities have been implemented on schedule. A workshop to find crucial pollution sources and to improve the capacity for checking WWT plants was held in HNI, HPG and TT-Hue in November/December 2011 and are planned to be held in HCM and BRVT in January/February 2012. Some support tools for inspection activities were prepared by JET such as “Examples of Viewpoints for Finding Primary/Crucial Pollution Sources”.

### (2) Specific Status to be Noted

A support tool “Preliminary idea of Handy Reference Cards,” which helps officials in charge of inspection to check appropriateness of wastewater treatment on site, was prepared by JET and HPG DONRE is currently using it. It will be distributed to other DONREs as well.

## 2.7 Output 3 (Water pollution control measures)

The Project activities for Output 3 have been implemented in accordance with the Work Plan. HNI DONRE, the target DONRE for Output 3, specified a model area as well as target industrial groups for which water pollution control measures will be worked out under the Project. HNI DONRE, with technical guidance from JET, developed a Pollution Source Table (PST) which provides basic information on pollution sources and the status of their compliance with environmental regulations. For further analysis, the first stage of the site survey to collect information from industrial entities was carried out from September to November 2011.

## 2.8 Output 4 (Environmental awareness)

### (1) General Status in 5 DONREs

Preparatory works prior to implementation of environmental awareness activities have been implemented mostly as planned. Target areas for awareness activities have been decided by all the five DONREs. Each DONRE has selected target groups considering the local contexts. The workshops inviting those target groups already took place in HNI, TT-Hue, HPG and BRVT and is planned to be held in HCMC in February 2012.

### (2) Specific Status to be Noted

HNI DONRE and HCMC DONRE planed to invite major industrial companies to the workshops. In HNI, thirty enterprises from Ha Dong and Tu Liem, twenty enterprises from all over the city, relevant departments and district DONREs were invited. In HCMC twenty industrial companies in the Tan Qui Industrial Cluster will be invited.

Target groups in the workshop vary from DONRE to DONRE depending on the local environmental context. HPG DONRE targeted the HPG Industrial Zone



Authority and social organizations whereas TT-Hue DONRE invited fishery associations along with social organizations. In BRVT, broader ranges of groups such as environmental police, city/district/commune people's committees as well as social organizations were invited to the workshop.

## 2.9 Output 5 (Information management and utilization)

The discussion between JET and Vietnamese side has just started recently. Based on the Decision 954, CEID is appointed as a center of data collection and storage of VEA.

JET will soon start the survey on information requirements of each department of VEA, which they would like to receive from DONREs. Frequency of information collection will also be examined.

## 3 Performance of Activities

The Team tried to grasp the performance of activities at this stage and effectiveness of organizational arrangement. Performances in terms of improvement level of knowledge, know-how and skills, and their actual utilization are examined below.

### 3.1 Organizational Arrangement

The PMB is playing an important role to coordinate the Project and provide guidance for the Project management.

WGs were established for each Output. In the beginning of the project implementation, actual operation and management of WGs seemed to be not easy and communication between the Vietnamese side and JET through WG meetings was sometimes not smooth.

With the progress of activities and better communication between the Vietnamese side and JET, WGs are now functioning well. However, given the fact that Vietnamese officials are very busy, it will be better to consider a more effective way to streamline WG activities.

### 3.2 Output 1 (Policy review)

#### (1) General Performance

Although it took time to develop the flow of the activities and narrow down the target subjects for policy review, some progress have been made as a result of good coordination between concerned departments and JET. The Team identified important factors for this progress, i.e. the request from the National

Assembly to review the environment related laws until 2013 and a clear instruction from top management of MONRE to VEA.

In policy review activities, close communication between MONRE and the target DONREs was ensured and valuable inputs from DONREs have been given. All these led to the formation of good bases for close links between MONRE and DONREs that are considered to be indispensable to ensure the enforceability of policies.

More policy review activities are planned for 2012.

### 3.3 Output 2-1(monitoring)

#### (1) General Performance in 5 DONREs

The target DONREs are prepared for the next step of revising their monitoring plans based on the results of monitoring data analysis on target areas. In workshops held under the project, they acquired basic knowledge required to develop water quality monitoring plans and discussed specific objectives of water quality monitoring, its frequency and monitoring points in accordance with available equipment, human and financial resources.

#### (2) Specific Performance to be Noted

Good collaboration among concerned departments/organizations has been observed in some DONREs. In particular, the monitoring section of HCM Environmental Protection Agency (EPA) and the inspection department of HCM DONRE have been working closely across organizational boundaries. Also, Hai Phong Center for Environmental Monitoring (HACEM) has been working in partnership with inspection department of DONRE. Other DONREs are also pursuing enhanced cooperation between departments/organizations engaging in monitoring and inspection.

### 3.4 Output 2-2 (Water Quality Analysis)

#### (1) General Performance in 5 DONREs

Equipment required for the development of water quality analysis capacity has been clarified in all target DONREs with support from JET. With the recent approval of the Project by MONRE, those equipment will be procured smoothly and facilitate effective training on water quality analysis planned for the next year.

#### (2) Specific Performance to be Noted

HPG DONRE is taking a step further compared to other DONREs. Their QA/QC capacity to set detection limit have begun to develop through training.

### 3.5 Output 2-3(Inventory)

#### (1) General Performance in 4 DONREs

All DONREs have begun to understand the importance and usefulness of PSI and gained basic knowledge to prepare a data collection format for PSI

development through the Project activities. Moreover, collaborative work have been pursued among concerned departments/centers, which is essential to develop a useful PSI accommodating needs of all the respective parties.

Through discussions and workshops to introduce PSI usages in the initial stage of the Project, each DONRE has developed their own vision for the future usage of the PSI and is indeed taking the lead in the preparatory process of a prototype PSI on their own. With such ownership on DONREs' side, the Team believes that a PSI tailored to their specific needs will be developed in each DONRE in 2012.

(2) Specific Performance to be Noted

Some DONREs intend to increase their manpower. There had been no department to lead the PSI development before starting the Project, BRVT DONRE now plans to assign a few officials to engage in the work. HCMC DONRE also has a plan to assign 25 staff to PSI development work when its environmental department division merges with EPA. It will focus on the Tan Qui industrial cluster in developing a PSI, and target areas could be expanded if their attempt on Tan Qui is successful.

TT-Hue DONRE started their PSI development process from collection of GPS information by themselves on selected 100 enterprises. By mid-December, they have developed a GIS map with the collected GPS information.

HPG DONRE conducted field surveys and selected 109 enterprises in the Re River basin by themselves to be included in PSI.

### 3-6 Output 2-4 (Inspection)

(1) General Performance in 5 DONREs

The capacity to identify primary/crucial pollution sources has been enhanced through OJTs and workshop in all DONREs. It will help them to develop practical and effective inspection plans in the future.

(2) Specific Performance to be Noted

Two support tools developed will be used for developing the inspection capacity in the future.

### 3-7. Output 3 (Water Pollution Control Measures)

The development of PST has contributed to enhancement of HNI DONRE's capacity to grasp structures and features of pollution sources. That is the first step towards development of improved water pollution control measures.

Although Project activities have been implemented on schedule, participation of working group members has been limited, which raises a concern about capacity development of HNI DONRE in the long run.

### 3-8 Output 4 (Environmental Awareness)

Workshops inviting stakeholders in target areas were/will be organized December 2011/February 2012, and therefore it is not yet in the stage to assess the performance of DONREs. However, it should be noted that concerned departments actively participated in the preparation process for the workshop. The workshop is expected to give directions for awareness activities in 2012.

### 3-9 Output 5 (Information Management and Utilization)

The Project activities have just started regarding Output 5 and therefore progress is yet to be observed.

## 4. Relevance of the Project

The Team considers that the relevance of the Project is very high in view of the recent Vietnamese context. The Project objectives are in line with the Vietnamese Government's policy such as the National Environmental Protection Strategy of 2003 and the National Target Program on Pollution Remedies and Environment Improvement (NTP) was adopted by the National Assembly in 2011. The Project is also contributing to the Vietnamese Government's plan to revise the LED as well as other environment related laws in 2013 by reviewing existing policies and drafting new ones.

## 5. Efficiency of the Project

The Project is making steady progress towards achievement of Output 1 though the inception stage to agree on subjects for policy review took more time than originally assumed. Draft policies have already been prepared on three subjects and VEA and JET are currently discussing specific steps to proceed with other subjects.

For Outputs 2 to 4, the Project activities started in May 2011 and it is therefore still premature to measure the achievement level. The Project activities under these Outputs have been implemented largely on schedule and target DONREs have been equipped with basic knowledge and skills before moving into the next stage. On the other hand, some delays in the Project activities, though not serious, have been observed. Activities for Output 2-3 (inventory) have been delayed approximately two months. This is due to extensive time required for discussions to prepare a good work plan as well as to develop a vision for future usage of PSI. However, after such sufficient preparation time, the Project activities began to move forward smoothly. Activities under Output 2-2 (water quality analysis) have also been delayed. This is attributed to, in the case of TT-Hue DONRE, the delay in procurement of equipment as a consequence of the late approval of the Project document by MONRE, and also because repairs of existing equipment and procurement of some more equipment were found necessary for training.

Following the recent approval of the Project by MONRE, the procurement

process will proceed and the Project activities are expected to be smoothly carried out. **The equipment will contribute to improved environmental management by DONREs.**

## 6. Effectiveness of the Project

Although the effectiveness of the project cannot be verified at this stage, the Team observed that prospects for the achievement of the Project Purpose are good for the following reasons:

- 1) The foundation for capacity development has been laid in the inception stage in which work plans were developed based on sufficient discussions among working group members;
- 2) Concerned officials of MONRE and target DONREs have gained basic skills and knowledge regarding respective areas through training and workshops conducted in 2011;
- 3) A sense of ownership of the Project on the DONREs' side has been facilitated through the inception stage and some Project activities; and
- 4) It has been difficult for DONREs to fully commit to the Project activities without the official approval of the Project. With the recent approval of the Project document by MONRE, more efficient implementation of the Project is expected for the latter half of the Project term.

## 7. Suggestions for the Work Forward

### (1) General Suggestions

- a) **DONREs play a crucial role for water environmental management at the provincial level and there are continuous needs for their capacity development. Through this project, water environmental management level in DONRES is expected to be enhanced pursuing and ensuring strong linkages with related departments of VEA.**
- b) The Project activities in 2012 are very important in terms of further development and utilization of the knowledge and skills gained in 2011. It is important to make detailed work plan as early as possible to ensure the sufficient inputs of ideas, opinions of staffs in MONRE and DONREs and to come up with practical work plans while maintaining some flexibilities to respond to the changes of needs and so forth. It is advisable to make work plans taking into account rather short period left and budget limit of the Project so that the activities in 2012 can be implemented in an efficient and effective manner.
- c) Some DONREs requested that meetings and other activities under the Project be arranged well in advance so that they can be better-prepared and also more officials concerned can participate. Therefore it is desirable to make arrangement early enough to streamline meetings.

d) Exchanging and sharing of experiences and findings among DONREs are very important and effective to increase the level of performance of the Project. In this regard it is advisable to consider study visits among DONREs with support from VEA.

(2) Specific suggestions

(i) Output 1 (Policy Review)

The concerned departments and institutions of MONRE of this project are conducting the reviews and studies to improve the effectiveness of current environmental policies and regulations in Vietnam based on the recent environmental management trend: a) the revision of the LEP in 2012; and b) correspondence to the NTP. During the above mentioned reviews and studies, available measures for DONREs are expected to be found from the outcomes of the project.

a) There are several subjects that detailed work plans are to be made from now on. With rather short duration left in the Project and its limited budget, it is desirable to set clear image of outputs in work plans in particular laws and regulations to which the results of the study would be reflected and incorporated.

b) Several subjects are closely related to each other. In this connection, it is desirable to have opportunities to exchange and share the results of each study in order to create harmony, consistency and synergy.

c) Through the Study, the Team reconfirmed that several issues at the DONRE level might be taken up in Output 1 activities. The linkage between Output 1 and Output 2 & 3 needs to be ensured and a substantial level of intervention of VEA is recommended **under the appropriate supervision of the PMB.**

(ii) Output 2

a) It is advisable to have such opportunities that officials in charge of inspections and environmental check can participate in training under the Project for monitoring staff.

b) With respect to PSI, collaboration among concerned sections is necessary. If good collaboration is ensured in developing and utilizing PSI, this will contribute much to the enhancement of the institutional capacity for environmental management of DONREs.

(iii) Output 3 (Water Pollution Control Measures)

The decision of HNI DONRE (No.178/2011/QD-STNMT) have defined the participation of responsible officials for the Project from concerned divisions to develop a comprehensive and effective water pollution control plan in the model area aimed at strengthening the capacity of water pollution control in Hanoi city. The participation of concerned officials of HNI DONRE in the preparation stage of Output 3 so far has been measured rather insufficient because of their routine work and project activities as WG member while a certain level of efforts to participate in the project activities is recognized.

Since the successful implementation of activities of Output 3 is crucial for the entire Project in view of the integration of results of all relative activities, proactive participation of HNI DONRE is strongly required for further improvement of smooth project implementation to secure fruitful outcomes. In addition, since Vietnam is facing a turning point corresponding to the NTP and the revision of the LEP, the achievement of Output 3 have the potential to create an innovative water pollution control model, **which would be applicable to all DONREs in Vietnam. Taking the context into consideration,** the strategic engagement of concerned officials of HNI DONRE in activities for Output 3 with their responsibilities as the Vietnamese Capital City in collaboration with the VEA is indispensable to substantialize remarkable outcome of Output 3 consequently.

(iv) Output 4 (Environmental Awareness)

It is advisable to make in-depth analyses of the results of the first workshops and share them among DONREs and VEA to consider effective ways and means to enhance environmental awareness of industrial sectors, social organizations and so forth taking into account the socio-economic and environmental features of the target cities concerned.

(v) Output 5 (Information Management and Utilization)

a) It is planned to undertake a study to identify issues regarding information management and utilization in VEA considering relations between VEA and DONREs. It is advisable to analyze the results of the study to come up with appropriate actions forward.

## 評価結果要約表

<b>1. 案件の概要</b>	
国名：ベトナム社会主義共和国	案件名：全国水環境管理能力向上プロジェクト
分野：環境管理	援助形態：技術協力プロジェクト
所轄部署：地球環境部	協力金額（評価時点）：6.4 億円
協力期間：2010年6月～2013年6月	先方関係機関：天然資源環境省（MONRE）、対象省の地方省天然資源環境局（DONRE）
	日本側協力機関：環境省
他の関連協力：環境管理個別専門家派遣（2004-2008、2008-2010）、水環境技術能力向上プロジェクト（2003-2006）、水環境技術能力向上プロジェクトII（2008-2012）、河川流域水環境管理計画（開発調査）（2008-2010）	
<b>1-1 協力の背景と概要</b>	
<p>ベトナム国においては、近年の飛躍的な経済成長に伴う工業化、都市化により、ハノイ、ホーチミン等の主要都市並びに地方都市において、未処理の産業排水、生活排水等の流入による河川、湖、運河等の汚染が深刻な問題となっている。</p> <p>このような状況下、ベトナム政府は1994年に環境保護法（LEP）を施行（2006年改正）し、水、大気、廃棄物等に係る環境基準を整備した他、環境・資源に係る国家的管理を強化することを目的に、2002年に天然資源環境省（MONRE）を設立した。翌2003年には、2010年までに取り組むべき環境課題と、2020年に向けた環境課題解決の方向性を示す「国家環境保全戦略」を策定するとともに、排水課徴金に係る政令（Decree No.67）や重点汚染企業の汚染対策に係る首相決定（Decision No.64）を制定する等、対策執行のための制度整備も進めている。また、2006年に国家支出の最低1%を環境保護予算に割り当てることを決定する等、財源確保にも努めている。さらに、2008年12月には水環境保全と水資源管理を含めた総合的な流域管理に関する政令（Decree No.120）を制定し、国家として流域管理に力点を置くことを明確にしており、水環境の総合管理に向けたMONRE及び地方省（DONRE）の責務はますます増えている。</p> <p>その一方で、環境管理の責任機関であるMONREが、法制度執行の現場である地方の環境問題の特質、地方政府の環境部門の力量を十分把握せず実態と乖離した理想的・理論的な制度を策定する傾向があり、また法制度の執行に必要な実施細則の整備が不十分で実際の執行につながっていないという状況がある。また、急速な制度整備に起因する諸問題も顕在化しつつあり、水環境管理政策の効果的な実施が困難となっている。さらに、地方省のトップ、企業経営者は短期的な経済的利益を追求しがちで、環境保全及び法律遵守への認識が十分でないという根本的な課題も存在し、DONREにおいては、一般的に、人員、人材、予算、経験、技術力不足等、水環境管理行政を執行していく上での能力の強化が遅れている。</p> <p>こうした背景からベトナム政府は我が国に対し、技術協力を要請し、JICAは2010年6月より2013年6月までの3年間の予定で、MONRE及びDONREをカウンターパート（C/P）機関とした水環境管理行政に係る能力強化支援を実施中であり、現在、2名の長期専門家及び各技術分野の業務実施契約による専門家を派遣中である。</p>	
<b>1-2 協力内容</b>	
(1) 上位目標	



MONRE 及び全国の DONRE の水環境管理に係る執行能力\*が強化される。

\* MONRE の能力とは、政策・制度の執行能力を含む。

(2) プロジェクト目標

MONRE 及び対象 DONRE の水環境管理にかかる行政執行能力\*が強化される。

\*本能力が包含する意味は以下のとおりである。

MONRE：政策・制度立案能力ならびに情報管理・活用能力

DONRE：基礎的な水汚染対策執行能力、対策策定能力、環境啓発活動実施能力、情報管理・活用能力

(3) アウトプット

- 1) 執行性の高い水環境管理政策・政策手段を立案する MONRE の能力が向上する。
- 2) 対象各 DONRE における基本的な水汚染対策執行能力（環境モニタリング、汚染源インベントリー、汚染源インスペクション）が強化される。
- 3) 対象 DONRE における効果的な水汚染対策を策定する能力が強化される。
- 4) 対象 DONRE の市民、産業界に対する水環境の啓発能力が強化される。
- 5) MONRE・DONRE の情報の管理・活用能力が強化される。

(4) 投入（評価時点）

日本側： 専門家派遣 延べ18名（80.5M/M） 機材供与 約4,010千円（51,439USD）  
ローカルコスト負担 約20,811千円（266,985USD）

ベトナム側： カウンターパート配置（プロジェクト運営人員 MONRE15名、DONRE12名）  
プロジェクト事務所（ハノイ）提供 ローカルコスト負担 事務所光熱費等

2. 評価調査団の概要

調査者	総括：今井千郎（JICA 国際協力専門員） 環境行政：山本充弘（社団法人海外環境協力センター 参与） 環境技術：西宮康二（社団法人海外環境協力センター 業務部長） 環境管理：肥田野るり（JICA 地球環境部環境管理第一課 副調査役） 評価分析：房前理恵（財団法人国際開発高等教育機構）		
調査期間	2011年12月7日～2011年12月23日	調査区分	中間レビュー

3. 評価結果の概要

3-1. 実績の確認

成果1：執行性の高い水環境管理政策・政策手段を立案する MONRE の能力が向上する。

活動のステップを決定し、政策レビューのための課題を絞り込むのに時間がかかったが、その後の活動は着実に前進している。これまでに、MONRE の関係8部署それぞれにおいて政策レビューの対象となる課題が選定され、喫緊の政策課題を選択した3部署は政策案を作成済みである。また、VEA の DAEIA により、戦略的環境アセスメント（SEA）、環境影響アセスメント（EIA）、環境保護公約（EPC）に関する政令案、通達案が作成され、その後、Decree No. 29 及び Circular No26 として公布された。

成果2：対象各 DONRE における基本的な水汚染対策執行能力（環境モニタリング、汚染源インベントリー、汚染源インスペクション）が強化される。

<成果2-1：水質モニタリング>

ワークショップを通じ、対象 DONRE は水質モニタリング計画策定に必要な基礎知識を得ると共に、モニタリングの目的、頻度、モニタリング地点の検討を行った。同ワークショップやワーキン

グループ（WG）での議論を通じ、対象 DONRE は、次のステップであるモニタリング計画の改定に進む準備が整っている。

#### <成果 2-2：水質分析>

プロジェクト活動のために修理や追加調達が必要な機材が判明したことから、日本人専門家の支援を得て、すべての対象 DONRE でプロジェクト目標達成のために必要な機材が特定された。2011年12月の MONRE によるプロジェクト文書の承認を受け、第1回の JCC 会合で調達が合意されていたフエの新設ラボの機材やこれらの追加機材が円滑に調達され、来年に予定される水質分析研修の効果を高めることが期待される。なお、ハイフォンの DONRE は他の DONRE に先行しており、すでに研修を通じて品質保証・品質管理（QA/QC）の能力を向上させ始めている。

#### <成果 2-3：汚染源インベントリー（PSI）>

プロジェクト活動を通じ、すべての対象 DONRE が PSI の重要性和有効性に対する理解を高めており、PSI 作成のためのデータ収集フォーマットを準備するのに必要な基礎知識を習得している。さらに、関係者のニーズに合った PSI を作成するのに不可欠な関連部局／組織間の連携も進められている。また、プロジェクトの下での WG やワークショップを通じ、各 DONRE が将来の PSI の活用に関し、具体的なイメージを持つと同時に、プロトタイプ PSI の準備プロセスを主導するようになっている。活動は計画より遅れているものの、このような DONRE 側のオーナーシップの醸成状況に鑑み、2012年には各 DONRE によりそれぞれのニーズに合った PSI が開発される可能性が高い。

#### <成果 2-4：インスペクション>

OJT やワークショップを通じ、すべての DONRE で重要汚染源を特定する能力が強化された。将来的には、実践的かつ効果的なインスペクション計画の策定に役立つことが期待される。

### **成果 3：対象 DONRE における効果的な水汚染対策を策定する能力が強化される。**

ハノイ DONRE は専門家の指導を受けつつ、汚染源に関する基本情報と環境関連規制の順守状況を示した汚染源テーブル（PST）を作成した。これにより、汚染源の構造と特徴を把握する能力が向上し、水汚染対策の改善に向けた最初のステップとなった。

### **成果 4：対象 DONRE の市民、産業界に対する水環境の啓発能力が強化される。**

対象地域のステークホルダーを招いた第1回目のワークショップが各 DONRE により開催された（ホーチミンは開催予定）ところであり、まだプロジェクトの実績を評価する段階にはないが、ワークショップの準備プロセスに各 DONRE の関係部署から積極的参加があり、また企業等の関心も高かったことは特筆に値する。

### **成果 5：MONRE・DONRE の情報の管理・活用能力が強化される。**

成果5については、ベトナム側と日本人専門家の議論が最近開始されたところである。プロジェクトでは近々、VEA の各部局が MONRE として DONRE から収集して管理すべき情報の種類や用途を調査し、情報収集の頻度についても検討する予定である。

## **3-2. 評価結果の要約**

### **(1) 妥当性**

2003年策定の「国家環境保護戦略：2010年ならびに2020年に向けたビジョン」は、MONRE および DONRE を実施の責任機関に位置づけている。ベトナム政府は2011年12月に「汚染対策と環境改善にかかる国家目標プログラム（NTP）」（2012～2015年対象）を国会採択し、水環境分野を含む汚染対策に今後一層力を入れていく予定である。また、2013年に LEP 及び関連法の改正が行わ

れることとなり、本プロジェクトが取り組む既存の政策・政策手段のレビュー、新政策の草案作成は、ベトナム政府のかかる法改正に貢献するものとなる予定である。

これらの背景から、本プロジェクトの妥当性は現在も非常に高いと判断できる。

## (2) 有効性

プロジェクト活動の多くが 2011 年に開始されたところであり、現段階でプロジェクトの有効性を検証することはできないが、中間レビューチームは、以下の理由から、プロジェクト目標達成の見通しは明るい判断した。

- 各活動のインセプション段階において、WG メンバーの間で十分な議論が行われ、キャパシティ・ディベロップメントのための基礎が築かれている。
- MONRE の関係者と対象 DONRE は、プロジェクトで取り組んでいる各分野に関し、2011 年のプロジェクト活動により基礎的な知識と技術を着実に身に付けている。
- 各活動のインセプション段階での議論やプロジェクト活動を通じ、対象 DONRE にオーナーシップ意識が醸成されている。
- LEP 及び関連法の改正予定に附随する MONRE の責務に鑑み、2012 年は MONRE が政策レビューに一層力を入れることが推測される。
- 2011 年 12 月に MONRE によりプロジェクト文書が承認されたことから、今後はさらに効率的なプロジェクトの実施が期待できる。

一方で、ハノイ DONRE が実施する成果 3「効果的な水汚染対策を策定する能力が強化される」については、ハノイ DONRE の中核的担当部局は活動に積極的に参加しているものの、他の関係部局の WG への参加率が低く、ハノイ DONRE の組織的な能力強化の観点で懸念が浮上している。

## (3) 効率性

これまでの実質活動期間・機材の準備状況を踏まえ、現段階で成果の達成度や投入の適切性を検証するのは時期尚早であるものの、現時点で各成果に関して次のような実績が確認できた。

- 成果 1 に関しては、政策レビューの対象となる課題の選定に時間がかかったが、その後、プロジェクトは着実に前進し、これまでに 4 つの課題について政策案が作成された。
- 成果 2、3、4 に関する活動は 2011 年 5 月に始まったばかりであるが、活動は概ねワークプランどおりに進み、対象 DONRE は各分野において基礎的な知識と技術を習得している。

一方で、一部の活動には以下のような遅れあるいは支障が生じている。

- 成果 2-2（水質分析）に関する研修活動が機材の不足により遅れている。MONRE によるプロジェクト文書承認の遅れ、全 DONRE における追加機材の必要性の判明等が影響した。
- 成果 2-3（PSI 作成）のための活動につき、ワークプランの準備等に時間がかかり、活動がおよそ 2 か月遅れている。
- プロジェクト文書の承認の遅れによりベトナム側の予算措置ができず、DONRE のプロジェクト活動への全面的参加や DONRE と専門家のコミュニケーションに影響を及ぼしていた。

しかし、機材調達については、最近のプロジェクト文書承認を受けて調達手続きが開始される予定であり、また、PSI 作成に関しては準備段階に十分な時間を費やしたことで活動が円滑に進み始めている。ベトナム側の予算措置の問題も MONRE によるプロジェクト文書承認により解消が期待される。

### 3-3 効果発現に貢献した要因

成果1に関し、国会からの2013年までの環境関連法のレビュー要請とそれを受けてのMONREの上層部からVEAへの明確な検討指示があったことが、本プロジェクトの下での政策レビューの進捗に貢献したと思われる。

### 3-4 問題点および問題を惹起した要因

上述のとおり、これまで、機材調達の遅れ、プロジェクト承認の遅れに起因する予算措置や関係者のコミュニケーションへの影響がプロジェクトの円滑な実施に影響を及ぼしている。成果3の活動へのハノイDONREの関係者の参加が限られていることは、活動の進捗には影響していないものの、上述のとおり、ハノイDONREのキャパシティ・ディベロップメントの観点から懸念される。

### 3-5 提案

#### (1) プロジェクト全体に対する提案

- 本プロジェクトを通じ、VEAの関係部署との連携を確保しつつDONREの水環境管理能力を強化する。
- MONRE及びDONREの職員からの十分なインプットを確保するため、できる限り早期に2012年度のワークプランを作成し、また、同ワークプランを実践的かつニーズの変化等に応じられるような柔軟性を持ったものとする。
- 本プロジェクトの下での会合や他の活動につき、効果を向上させるためにも、適切な事前の調整を行う。
- プロジェクトの活動を通して得られるノウハウのDONRE間の共有のため、VEAの支援の下、DONRE間の相互訪問を実施する。

#### (2) 各成果に関連する提案

##### 1) 成果1（政策・政策手段立案能力向上）

- プロジェクトの残りの期間が短く、予算も限られていることから、レビューの具体的成果、特に対象とする法令など最終成果をイメージしたワークプランを作成する。
- 本プロジェクトで行う複数の政策レビューの間に一貫性、相乗効果を生み出すため、調査結果を共有する機会を設ける。
- DONREレベルにおける 이슈のうちいくつかは、成果1（政策レビュー）に関する活動で取り上げられうるものであり、成果1と成果2及び3との間のリンクを確保することが必要である。その際、PMBの監視の下、VEAが十分に関与する。

##### 2) 成果2（水汚染対策執行能力強化）

- プロジェクトの下で実施される研修に、インスペクション及び環境チェックの担当者が参加する機会を設ける。
- PSI作成、活用については、DONREの組織能力強化のため、関係部署間の連携を確保する。

##### 3) 成果3（水汚染対策策定能力強化）

- 成果3の活動はプロジェクトの成果2～4の活動を結実させるものであり、重要な意味を持つ。より円滑にプロジェクトを実施するために、ハノイDONREの積極的な参加を求める。

##### 4) 成果4（水環境啓発能力強化）

- 最初のワークショップの結果を詳細に分析し、対象 DONRE 間及び VEA と共有し、産業界や社会組織等の環境啓発の効果的方法を検討する。

5) 成果 5 (情報管理・活用能力強化)

- プロジェクトで計画している情報管理と活用にかかる問題点を洗い出す調査の実施後、その結果を十分分析してその後の適切なアクションを提示する。

## Summary of the Mid-term Review

<b>I. Outline of the Project</b>	
County: Socialist Republic of Viet Nam	Project title: The Project for Strengthening Capacity of Water Environmental Management in Vietnam
Issue/Sector: Environmental Management	Cooperation scheme: Technical Cooperation Project
Division in charge: Global Environment Department	Total cost : JPY 640 million
Period of Cooperation: June 2010 - June 2013	Partner Country's Implementing Organization: Ministry of Natural Resources and Environment (MONRE), Departments of Natural Resources and Environment (DONREs) of Governments of target Provinces
	Supporting Organizations in Japan: None
Related Cooperation: Environmental Management Policy Implementation Support (2004-2008, 2008-2010), Enhancing Capacity of Vietnamese Academy of Science and Technology in Water Environment Protection (Phase I 2003-2006, Phase II 2008-2012), The Study for Water Environment Management on River Basins in Vietnam (2008-2010)	
<p><b>1 Background of the Project</b></p> <p>Rapid economic growth in Viet Nam promoted industrialization and urbanization and the pollution of water resources such as rivers, lakes and canals due to untreated industrial effluent and domestic wastewater has become a serious issue in major cities.</p> <p>The Government of Viet Nam (GOV) has enacted the Law of Environmental Protection (LEP) in 1994 (amended in 2006), which sets environmental standards with regard to water, air, waste, etc. and established in 2002 the Ministry of Natural Resources and Environment (MONRE) to enhance environmental management at the national level. Following the creation of MONRE, the “National Strategy on Environmental Protection till 2010 and Orientations towards 2020” was formulated. The GOV also pursued institution building for enforcement of pollution control measures by devising legal instruments such as Decree No. 64 prescribing environmental protection charges for wastewater and Decision No.67 on pollution control by crucial pollution sources. In order to finance environmental management, the GOV decided in 2006 to allocate a minimum of 1% of national expenditure for environmental protection. Furthermore, it promulgated Decree No. 120 on integrated river basin management combining protection of the water environment and management of water resources. Under the circumstances, MONRE and DONRE assume increased responsibilities in management of water environment.</p> <p>However, these laws and regulations have not been effectively enforced. It is often the case that local contexts behind environmental problems and the enforcement capacity of local governments are not well examined in developing the legal frameworks. In addition, rules and instructions required to enforce the environmental laws and regulations are not sufficiently developed. There are problems at the provincial level as well. Departments of Natural Resource and Environment (DONREs) of provincial governments are not sufficiently equipped for proper environmental management in terms of human resources, finance, experience and skills, whilst environmental awareness of high-rank officials of provincial governments as well as business owners is still not developed.</p> <p>Under these circumstances, upon the request from the GOV for technical cooperation to strengthen their</p>	

environmental management capacity, JICA is providing cooperation for the period of three-years from June 2010 up to June 2013. The Project aims to enhance the capacity of both MONRE and DONRE to manage the water environment. JICA Experts of various expertises have been dispatched under the Project.

## 2 Project Overview

### (1) Overall Goal

Enforcement capacity of MONRE and DONREs on water environmental management is strengthened.

### (2) Project Purpose

Capacity of MONRE and target DONREs regarding water environmental management is strengthened.

### (3) Outputs

1. MONRE's capacity of making policy and management tools that are more effective and enforceable is strengthened.
2. Enforcement capacity of target DONREs on basic water pollution control (environmental monitoring, pollution sources inventory, pollution sources inspection) is strengthened.
3. Target DONRE's capacity of making effective water pollution control measures is strengthened.
4. Target DONRE's capacity of promoting awareness of public and industrial sectors on water environment is strengthened.
5. Capacity of MONRE and DONREs on information management and utilization is strengthened.

### (4) Inputs (as of the end of November 2012)

#### Japanese Side:

Experts	18 persons (80.5M/M)
Equipment provided	JPY4,010 thousands (USD51,439)
Local Cost	JPY20,811 thousands (USD266,985)

#### Vietnamese Side:

Counterpart	15 persons from MONRE and 12 persons from target DONREs for project administration
Facilities	Office space in Hanoi
Local Cost	Running cost of the project office

## II. Evaluation Team

Members of Evaluation Team	Mr. Senro Imai (Team Leader) JICA Senior Advisor Mr. Mitsuhiro Yamamoto (Environmental Administration) Senior Advisor, Overseas Environmental Cooperation Center (OECC) Mr. Koji Nishiyama (Environmental Technology) General Manager, OECC Ms. Ruri Hidano (Environmental Management) Deputy Assistant Director, Global Environment Department, JICA Ms. Rie FUSAMAE (Evaluation Analysis) Consultant, Foundation for Advanced Studies on International Development		
Period of Evaluation	December 7 to December 23, 2011	Type of Evaluation	Mid-term Review

### III. Results of Evaluation

#### 1 Project Performance

##### **Output 1: MONRE's capacity of making policy and management tools that are more effective and enforceable is strengthened.**

Although it took time to narrow down the target subjects for policy review, some progress have been made. Each of eight relevant departments of MONRE decided on a policy review subject and three of them which chose urgent policy issues have already drafted new policies. In addition, DAEIA (Department of Appraisal and Environmental Impact Assessment) of the Vietnam Environment Administration (VEA) drafted a draft decree and a draft circular regarding Strategic Environmental Assessment (SEA), Environmental Impact Assessment (EIA) and Environmental Protection Commitment (EPC). Those documents were later issued as Decree No. 29 and Circular No. 24.

##### **Output 2: Enforcement capacity of target DONREs on basic water pollution control (environmental monitoring, pollution sources inventory, pollution sources inspection) is strengthened.**

###### Output 2-1: Water Quality Monitoring

In workshops held under the project, the target DONREs acquired basic knowledge required to develop water quality monitoring plans and discussed specific objectives of water quality monitoring, its frequency and monitoring points. They are prepared for the next step of revising their monitoring plans based on the results of monitoring data analysis on target areas.

###### Output 2-2: Water Quality Analysis

Additional equipment required for the achievement of the Project Purpose has been clarified in all target DONREs with support from Japanese Experts. With the approval of the Project by MONRE in December 2011, those equipment along with other equipment to be installed in a new laboratory of Thua Thien Hue DONRE, which JICA agreed to procure in the first Joint Coordination Committee meeting of the Project, will be procured smoothly and facilitate effective training on water quality analysis planned for the next year.

Hai Phong DONRE is taking a step further compared to other DONREs. Their QA/QC capacity has begun to develop through training.

###### Output 2-3: Pollution Source Inventory (PSI)

All DONREs have began to understand the importance and usefulness of PSI and gained basic knowledge to prepare a data collection format for PSI development through the Project activities. Moreover, collaborative work has been pursued among concerned departments/centers, which is essential to develop a useful PSI accommodating needs of all the respective parties.

Through discussions and workshops under the Project, each DONRE has developed their own vision for the future usage of the PSI and is indeed taking the lead in the preparatory process of a prototype PSI on their own. With such ownership on DONREs' side, the Team believes that a PSI tailored to their specific needs will be developed by each DONRE in 2012.

###### Output 4: Inspection

The capacity to identify primary/crucial pollution sources has been enhanced through OJTs and workshop in all DONREs. It will help them to develop practical and effective inspection plans in the future.



**Output 3: Target DONRE's capacity of making effective water pollution control measures is strengthened.**

Hanoi DONRE, with technical guidance from JICA Experts, developed a Pollution Source Table (PST) which provides basic information on pollution sources and the status of their compliance with environmental regulations. Through the process of PST development, they enhanced the capacity to grasp structures and features of pollution sources, which is the first step towards development of improved water pollution control measures.

**Output 4: Target DONRE's capacity of promoting awareness of public and industrial sectors on water environment is strengthened.**

Workshops inviting stakeholders in target areas were/will be organized December 2011/February 2012, and therefore it is not yet in the stage to assess the performance of DONREs. However, it should be noted that concerned departments actively participated in the preparation process for the workshop and that participated enterprises showed a keen interest.

**Output 5: Capacity of MONRE and DONREs on information management and utilization is strengthened.**

The discussion between Japanese Expert and Vietnamese side has just started recently. The survey on information requirements of each department of VEA, which they would like to receive from DONREs. Frequency of information collection will also be examined.

## **2 Summary of Evaluation Results**

### **(1) Relevance**

The Team considers that the relevance of the Project remains very high. MONRE and DONRE assume responsibility for the implementation of the National Environmental Protection Strategy of 2003. The GOV intends to step up their efforts for environmental pollution control through the National Target Program on Pollution Remedies and Environment Improvement (NTP), which was adopted by the National Assembly in December 2011. The Project will also contribute to the Vietnamese Government's plan to revise the LEP as well as other environment related laws in 2013 by reviewing existing policies and drafting new ones.

### **(2) Effectiveness**

Most of the Project activities started in 2011 and therefore the effectiveness of the Project cannot be verified at this stage. The Team however observed that prospects for the achievement of the Project Purpose are good for the following reasons:

- The foundation for capacity development has been laid in the inception stage in which work plans were developed based on sufficient discussions among working group members;
- Concerned officials of MONRE and target DONREs have gained basic skills and knowledge regarding respective areas through training and workshops conducted in 2011;
- A sense of ownership of the Project on the DONREs' side has been facilitated through the inception stage and some Project activities;
- In the light of MONRE's responsibility for the planned revision of the LEP and related laws, it is expected that MONRE will focus its efforts more on policy review; and

- With the recent approval of the Project document by MONRE, more efficient implementation of the Project is expected for the latter half of the Project term.

On the other hand, there is a concern about the organizational capacity development of Hanoi DONRE regarding development of water pollution control measures. Although the leading unit has been actively participating in working group activities, the level of attendance of some concerned departments of Hanoi DONRE has been low.

### **(3) Efficiency**

It is premature to measure the achievement level of planned Outputs as well as appropriateness of Inputs in view of the short period after the start of most of the planned project activities and lack of some equipment for the Project activities. The mid-term review team however observed some good performance:

- The Project is making steady progress towards achievement of Output 1, though the inception stage to agree on subjects for policy review took more time than originally assumed. Draft policies have already been prepared on four subjects; and
- For Outputs 2 to 4, the Project activities, which started in May 2011, have been implemented largely on schedule and target DONREs have been equipped with basic knowledge and skills.

On the other hand, some delays in and obstacles to the Project activities have been observed:

- Training activities for Output 2-2 (water quality analysis) have been delayed due to lack of necessary equipment. This is attributed to the delay in procurement of equipment as a consequence of the delayed approval of the Project document by MONRE and also because it turned out that some more equipment needs to be procured for training.
- Activities for Output 2-3 (PSI development) have been delayed approximately two months. This is due to extensive time required for discussions to prepare a good work plan as well as to develop a vision for future usage of PSI.
- The full participation of DONRE officials in the Project activities and communication between DONRE and JICA Experts have been somewhat restricted due to unavailability of counterpart fund on the Vietnamese side, which requires MONRE's approval of the Project document.

However, following the recent approval of the Project by MONRE, the procurement process will proceed and the counterpart fund will be made available to the Project, and therefore the Project activities are expected to be smoothly carried out. Activities regarding PSI development has also began to move forward smoothly after sufficient preparation time taken in the first half of the Project period.

### **3 Factors that promoted realization of effects**

The mid-term review team observed that policy review activities under the Project was facilitated by the request from the National Assembly to MONRE to review the environment related laws by 2013 and a clear instruction from the top management of MONRE to VEA regarding this matter.

### **4 Factors that impeded realization of effects**

The implementation of the Project has been affected by the delay in procurement of equipment, unavailability of counterpart fund and restricted communication among those concerned due to the

delayed approval of the Project document, as mentioned above. Besides this, the low level of participation of some departments of Hanoi DONRE in the Project activities for Output 3 has been a concern in terms of their capacity development, though it has not affected the implementation of the activities so far.

## **5 Suggestions**

### **(1) General suggestions**

- It is suggested that linkages between DONREs and related departments of VEA be ensured in enhancing water environmental management level of DONREs.
- It is important to make detailed work plan as early as possible to ensure the sufficient inputs of ideas, opinions of staffs in MONRE and DONREs and to come up with practical work plans while maintaining some flexibilities to respond to the changes of needs and so forth.
- It is desirable to make arrangement early enough to streamline meetings and other activities.
- It is advisable to consider study visits among DONREs with support from VEA in order to share experiences and findings among DONREs.

### **(2) Specific Suggestions**

#### **i) Output 1 (Formulation of policy and management tools)**

- With rather short duration left in the Project and its limited budget, it is desirable to set clear image of outputs in work plans in particular laws and regulations to which the results of the study would be reflected and incorporated.
- It is desirable to have opportunities to exchange and share the results of each study in order to create harmony, consistency and synergy among outputs of policy review activities.
- Several issues at the DONRE level might be taken up in Output 1 activities. The linkage between Output 1 and Output 2 and 3 needs to be ensured and a substantial level of intervention of VEA is recommended under the appropriate supervision of the PMB.

#### **ii) Output 2 (Enforcement of basic water pollution control measures)**

- It is advisable to have such opportunities that officials in charge of inspections and environmental check can participate in training under the Project for monitoring staff.
- With respect to PSI, if good collaboration is ensured in developing and utilizing PSI, this will contribute much to the enhancement of the institutional capacity for environmental management of DONREs.

#### **iii) Output 3 (Development of water pollution control measures)**

- Since the successful implementation of activities of Output 3 is crucial for the entire Project in view of the integration of results of all relative activities, active participation of Hanoi DONRE is strongly required.

#### **iv) Output 4 (Promotion of awareness of public and industrial sectors on water environment)**

- It is advisable to make in-depth analyses of the results of the first workshops and share them among DONREs and VEA to consider effective ways and means to enhance environmental awareness of industrial sectors, social organizations and so forth.

#### **v) Output 5 (information management and utilization)**

- It is planned to undertake a study to identify issues regarding information management and utilization in VEA considering relations between VEA and DONREs. It is advisable to analyze the results of the study to come up with appropriate actions forward.

**MINUTES OF MEETING**  
**ON**  
**THE JOINT COORDINATING COMMITTEE**  
**FOR**  
**THE PROJECT FOR STRENGTHNING CAPACITY OF WATER**  
**ENVIRONMENTAL MANAGEMETN IN VIET NAM**

In line with the Record of Discussions (hereinafter referred to as “R/D”) signed between the Government of the Socialist Republic of Viet Nam (hereinafter referred to as “the Government of Viet Nam”) and the Japan International Cooperation Agency (hereinafter referred to as “JICA”) on January 8<sup>th</sup>, 2010, the Vietnamese side and the Japanese side held the third Joint Coordinating Committee (hereinafter referred to as “JCC”) meeting in Hanoi on December 22<sup>nd</sup>, 2011.

In the course of the meeting, both Vietnamese side and Japanese side discussed the progress and issues of the Project as attached hereto.

Hanoi, December 22<sup>nd</sup>, 2011

---

**Mr. Shigenobu Obayashi**  
Leader  
JICA Expert Team

---

**Dr. Nguyen The Dong**  
Deputy Director General of Viet Nam  
Environment Administration  
Ministry of Natural Resources and  
Environment

## **MINUTES OF MEETING**

### **THE THIRD MEETING OF THE JOINT COORDINATING COMMITTEE FOR THE PROJECT FOR STRENGTHNING CAPACITY OF WATER ENVRIONMENTAL MANAGEMETNT IN VIETNAM**

(Draft)

#### **1. Objective**

To confirm the result of the 1<sup>st</sup> PMB meeting held on 25<sup>th</sup> November 2011

To confirm the result of the mid-term review

To discuss the activity plans for 2012

#### **2. Date and Venue**

Date: Thursday, 22nd December 2011

Time: 14:00-16:10

Venue: Bao Son Hotel, Hanoi, Vietnam

### 3. Participants

No.	Name	Organization	Current Position
<b>I. JCC members</b>			
<b><i>I.1. Vietnam side</i></b>			
1	Dr. Nguyen The Dong	VEA	Deputy Director General of VEA
2	Mr Hoang Danh Son	ISD/VEA	Director of ISD, VEA
3	Mr. Nguyen Viet Thang	ISD, VEA	Officer
4	Mr. Nguyen Huu Quyet	TT-Hue DONRE	Deputy Director
5	Mr Le Van Sam	BRVT DONRE	Director
<b><i>I.2. JICA side</i></b>			
7	Mr. Shigenobu Obayashi	JICA Expert Team	Leader
8	Ms. Saori Ushimi	JICA Expert Team	Project Coordinator
9	Mr. Yoichi Iwai	JICA Expert Team	Chief Advisor
10	Mr. Akira Shimizu	JICA Vietnam Office	Senior Representative
<b>II. Participants</b>			
<b><i>II.1. Vietnam side</i></b>			
11	Mr. Duong Xuan Diep	ISEM/VEA	Officer
12	Mr. Chu Ngoc Kien	ISD/ VEA	Officer
13	Mr. Vu The Hung	DEAIA/ VEA	Officer
14	Mr. Nguyen Trung Thuan	PCD/ VEA	Officer
15	Ms. Tran Thi Thu Huong	ID/MONRE	Officer
16	Mr. Nguyen Viet Hung	Thua Thien Hue EPA	Director
17	Mr. Le Tan Cuong	Ba Ria Vung Tau EPA	Director
18	Ms. Dao Thi Anh Diep	Hanoi EPA	Deputy Director
19	Ms Le Thi Kim Oanh	Inspection Division/HCMC DONRE	Deputy Chief Inspector
20	Ms. Le Thi Thanh Dung	Environmental Management Division/ HCMC DONRE	Officer
21	Ms. Nguyen Thi Tuyet Lan	CEM - Hai Phong DONRE	Director
22	Ms. Le Thi Thanh Huong	VEA Office	Officer
23	Ms. Le Thi Hoa	GHG Project	Officer
24	Mr. Pham Minh Tien	GHG Project	Officer
<b><i>II.2. JICA officers and experts</i></b>			
25	Mr. Tadashi Suzuki	JICA Vietnam office	Representative
26	Mr. Nguyen Vu Tiep	JICA Vietnam office	Program officer
27	Ms. Ruri Hidano	JICA Headquarter	Officer/ Mid-term review team member
28	Mr. Senro Imai	JICA	Advisory Committee member/ Mid-term review team leader
29	Mr. Koji Nishimiya	JICA	Advisory Committee member/ Mid-term review team member
30	Ms. Rie Fusamae	FASID	Consultant/Mid-term review member
31	Mr. Hiroshi Tsujihara	JICA Policy Advisor	MONRE
32	Mr. Yoshiharu Shirane	JICA Expert Team	Member
33	Mr. Tomoyuki Hosono	JICA Expert Team	Member
34	Mr. Tadashi Shoji	JICA Expert Team	Member
35	Mr. Shunsuke Hieda	JICA Expert Team	Member
36	Mr. Hiroshi Nakano	JICA Expert Team	Member
37	Ms. Dinh Thu Binh	JICA Expert Team	Secretary
38	Ms. Nguyen Thanh Lan	JICA Expert Team	Staff
39	Mr. Vu Dinh Thai	JICA Expert Team	Staff

**CEID:** Centre for Environmental Information and Data

**CEM:** Centre for Environmental Monitoring

<b>CETAC:</b>	Center for Environment Training and Communication
<b>DEAIA:</b>	Department of Environmental Appraisal and Impact Assessment
<b>DONRE:</b>	Department of Natural Resources and Environment
<b>DWMEP:</b>	Department of Waste Management and Environment Promotion
<b>DWRM:</b>	Department of Water Resources Management
<b>EPA:</b>	Environmental Protection Agency
<b>FASID:</b>	Foundation for Advanced Studies on International Development
<b>GHG:</b>	Green House Gas
<b>ID:</b>	Inspection Department
<b>ICD:</b>	International Cooperation Department
<b>ISD:</b>	International Cooperation and Science, Technology Department
<b>ISEM:</b>	Institute of Science for Environmental Management
<b>PCD:</b>	Pollution Control Department
<b>MONRE:</b>	Ministry of Natural Resources and Environment
<b>VEA:</b>	Vietnam Environment Administration



#### 4. Program:

No.	Time	Item	Presentation
1	14:00 - 14:05	Introduction of Participants	Mr. Nguyen Viet Thang, VEA
2	14:05 - 14:10	Opening Remarks	Dr. Nguyen The Dong, Deputy Director General, VEA
3	14:10 - 14:20	Opening Speech	Mr. Akira Shimizu, Senior Representative, JICA Vietnam Office
4	14:20 - 14:40	Results of the 1 <sup>st</sup> PMB Meeting	Dr. Nguyen The Dong, Deputy Director General, VEA
5	14:40 - 15:00	Results of the Mid-term Review	Mr. Senro Imai, (Advisory Committee/ JICA Mid-term Review Team Leader)
6	15:00 - 15:20	Activity Plans for 2012	1) Mr. Shigenobu Obayashi, Leader of JICA Expert Team 2) Mr. Yoichi Iwai, Chief Advisor, Short-term Expert Team
7	15:30 - 16:00	Questions and Discussions	All participants
8	16:00 - 16:10	Closing	Dr. Nguyen The Dong, Deputy Director General, VEA

#### 5. Discussions and Summary

##### 5.1. Introduction and Presentations

The third JCC meeting was started by opening remarks of Dr. Nguyen The Dong, Deputy Director General, VEA and Mr. Akira Shimizu, Senior Representative of JICA Vietnam office. At first, Dr. Nguyen The Dong presented the result of the 1<sup>st</sup> PMB meeting held on 25<sup>th</sup> November 2011. Secondly, Mr. Senro Imai presented the result of the Mid-term Review. Finally the activity plans for 2012 were presented by Mr. Shigenobu Obayashi, Leader of the JICA Expert Team (JET), for Outputs 1 and 5, and Mr. Yoichi Iwai, Chief Advisor of JET, for Outputs 2, 3, and 4.

##### 5.2. Discussions

The discussion was chaired by Dr. Nguyen The Dong with the participation of all meeting members. The comments on the 1<sup>st</sup> Progress Report (Pr/R) and the project implementation raised by VEA and DONREs in both written and oral forms are summarized as follows:

###### **5.2.1. The 1<sup>st</sup> Progress Report (Pr/R):**

Since the 1<sup>st</sup> PMB was already held on 25<sup>th</sup> November 2011 to discuss contents of the 1<sup>st</sup> Pr/R, there were no particular comments for the Pr/R in JCC. Therefore, the information and contents of the 1<sup>st</sup> Pr/R were agreed by both Vietnamese side and Japanese side. The members of JCC have highly appreciated the efforts of JET and VEA in working closely with DONREs and units under VEA for the preparation of Pr/R and active contribution to PMB.

###### **5.2.2. The result of the Mid-term Review:**

The result of the Mid-term Review was presented by Mr. Senro Imai, JICA Mid-term Review Team Leader, and the JCC members approved the result of the review. Mr. Imai expressed his sincere gratitude to all DONREs and the relevant departments in MONRE who cooperated with the Review team for smooth implementation.

For the final evaluation, both Vietnamese and Japanese side agreed to make the sufficient preparation in advance for the joint evaluation of the Project.

###### **5.2.3. Activity plans for 2012:**

The activity plans for 2012 have been explained by Mr. Shigenobu Obayashi and Mr. Yoichi

Iwai.

#### 5.2.4. Other Issues

##### (1) National Target Program (NTP) on Environmental Pollution Control

Dr. Nguyen The Dong asked for support of the Project and the Japanese side for NTP as follows:

a) The Vietnamese National Assembly has just approved NTP on environmental pollution control facing difficulties of water environmental pollution in Vietnam. The approval of this NTP confirms the concern of Vietnamese Government on water environment issues. The main targets of NTP include:

- Urban wastewater treatment for all cities from grade 2,
- Wastewater treatment in Cau river basin, Nhue Day river basin, and Sai Gon-Dong Nai river basin,
- Pollution treatment for 5 craft villages in Vietnam, and
- Pollution control for 100 residual pollution points from the past including 50 – 70 points for solid wastes.

b) In order to implement this NTP, the Vietnamese Government needs supports of international donors in many aspects such as budget (NTP needs 10,000 billion VND in the 1<sup>st</sup> three years of the Program), technology, etc. Therefore, the Vietnamese side would like to request the Project to assist NTP.

Mr. Akira Shimizu, Senior Representative of JICA Vietnam Office, answered that the Japanese side could not express immediate answer in this meeting since this Project has already started since 2009 with its own goal, and NTP was not focused at that time. This issue could be further discussed between VEA and JICA (JICA MONRE advisor) if necessary.

##### (2) Revision of Law of Environmental Protection (LEP)

Dr. Nguyen The Dong commented on the Output 1 as follows:

- The Vietnam National Assembly approved the revision of LEP including wastewater treatment and water environment protection. The Vietnamese side would like to request JET to support the LEP revision under scope of Output 1. The action plan of Output 1 should focus on revising water environment related to the contents in LEP. Also, the Project should consider the way to integrate and utilize the results of Output 3 for Output 1.

Mr. Akira Shimizu replied as follows:

- Mr. Shigenobu Obayashi and the relevant departments in MONRE has been working together to review the contents of LEP and found out some overlapping and conflicting points. When final review is done, JET will provide its feedback to VEA. However, the revision of LEP should be handled by the Vietnamese side. JICA will reconsider the efficient way to achieve the purpose of this Output.

##### (3) Request from DONREs

The participants of concerned DONREs highly appreciated the supports of the Project, and commented as follows:

Ms. Nguyen Thi Tuyet Lan, Hai Phong DONRE, requested JET to prepare detailed action plan of Hai Phong city in 2012 soon, especially for the 1<sup>st</sup> quarter of 2012.

Mr. Dao Thi Anh Diep, Hanoi DONRE, committed to arrange time and staff to participate in all project activities in the next year.

Mr. Nguyen Viet Hung, TT-Hue DONRE, commented that VEA should issue the documents guiding DONRE to prepare the project activity plan in 2012 and to allocate counterpart fund, and he requested to change description from “revision of monitoring plan” to “supplementation and finalization of monitoring plan” related to the plan for Output 2-4, because the monitoring plan in 2012 has already approved and it cannot be revised anymore. He also commented that the capacity on environmental check should be focused on the Project as well as inspection.

Mr. Le Tan Cuong, BRVT DONRE, requested a clear instruction on the Project implementation by MONRE because the Project has just been approved.

Dr. Nguyen The Dong replied DONRE’s comments as follows:

- As JET’s presentation, the monitoring plan revision of TT-Hue DONRE should be for 2013, not for 2012.

#### (4) Additional Equipment

Mr. Akira Shimizu explained the situation of additional equipment under the Project as follows:

- At first, JICA allocated a budget for equipment only for TT-Hue DONRE. However, considering the Vietnamese request on additional equipment and the project purpose, JICA accepted to provide the additional budget within FY2011 for necessary equipment in other DONREs to achieve the project purpose. Its procurement procedures are going on. In order to complete the procedure, the Vietnamese side is kindly requested to prepare the A4 form and send it to JICA.
- Considering the remaining Project period and the budget constraint, JICA cannot further support on equipment and would like to request the Project to focus on the activities for the capacity development of Vietnamese side utilizing the provided equipment and maximizing its effects.

#### (5) Revision of Verifiable Indicators of PDM

Mr. Shigenobu Obayashi proposed to discuss a revision of PDM further with VEA and DONREs after the 3<sup>rd</sup> JCC meeting.

### **5.3. Conclusions**

Thanking with sincere discussions by participants, Dr. Nguyen The Dong summarized and concluded the 3<sup>rd</sup> JCC meeting as follows:

- JCC officially approved the contents of the 1<sup>st</sup> Pr/R,
- JCC approved the result of the mid-term review,
- Both Vietnamese and Japanese side agreed to make the sufficient preparation in advance for the final joint evaluation of the Project,
- JCC officially approved the activity plans in 2012,
- The revision of PDM will be discussed after the JCC meeting,
- VEA agreed to conduct all necessary procedures for the budget distribution to the target DONREs as soon as possible,
- Activities of the Project in 2012 are crucial. Therefore, VEA, DONREs, and JET should cooperate closely in developing the work plan of 2012,

- Conclusions of the 3<sup>rd</sup> JCC meeting should be informed to all DONREs as the feedback from the JCC members, and
- The Vietnamese side requested the Japanese side to integrate the revision of LEP in the results of Output 1 in the 1<sup>st</sup> PMB meeting. The Vietnamese side requests the Japanese side again to keep considering and finding some proper ways to support on this matter.

### Output 1 (WG 1): Environmental Policy

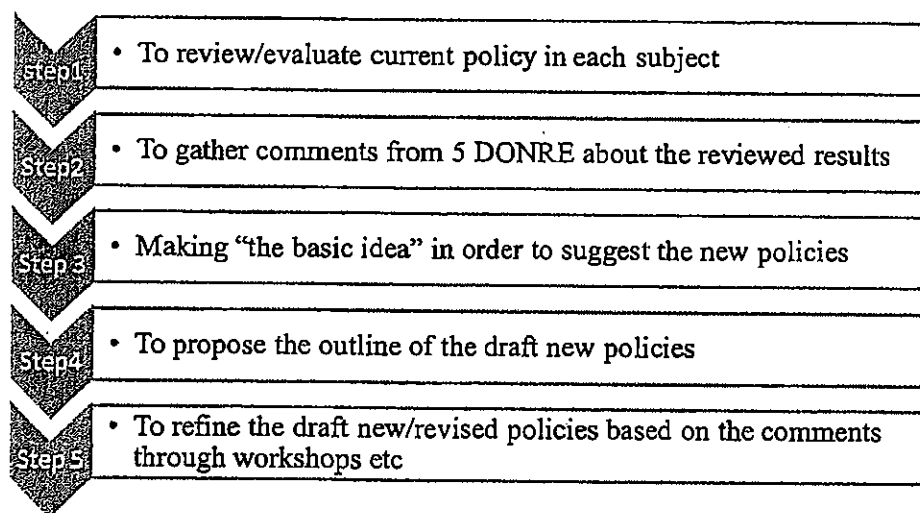
#### (1) Overall Activities for Output 1

##### 1) Basic stance of activities

Output 1 aims at strengthening the capacity of making environmental policies and policy tools. For making environmental policies including policy tools, it is important to grasp the current environmental conditions in each province and also current environmental capacity of DONRE. It is because that almost all the environmental policies made by MONRE are enforced by each DONRE. Therefore, in the activity of Output 1, it is planned to obtain comments from target DONREs in the stage of the reviewing current environmental policy or the stage of making environmental policy. In addition, it is also planned that the activities for Output 1 should reflect the results of Output 2 - 4, which are mainly implemented by target DONREs.

##### 2) Method of the progress

The operation flow for Output 1 is as described in Figure 2.1-1. First of all, the status of the current policies related to water environment management and the extent of its enforcement need to be revealed. Secondly the results of the reviews will be shared among 5 DONRE in order to receive the variety of the comments and the comments will be reflected in the new/revised draft policies. Thirdly, based on the policy review and the comments from DONREs, the outline of the new/revised will be proposed and it will be shared with 5 DONREs through the workshop and modified if needed. Finally through the workshops and seminars with 5 DONREs as well as the relevant stakeholders, all the comments would be gathered and examined. Afterwards, the draft of the new/revised policy will be refined or revised depending on the necessarily.



Source: JET

Figure 1-1 Flow of the Operation of Output 1

#### (a) Overall Review of the Current Status of the Water Environmental Management (Step1)

Vietnamese government has been committed to establish the wide-ranging regulations on waste water management to prevent its water environment from being deteriorated by the rapid industrialization and urbanization. However, these regulations are not regarded as effectively enforced in the reality.

Considering above-mentioned situation, the output 1 is designed to aims at strengthening the capacity of making policy and management tools that are more effective and enforceable.

First of all, it will start with reviewing and evaluating all the existing policies and policy tools related to waste water management. This process will be implemented by two methods: namely, (1) conducted by each relevant department in MONRE by focusing on specific policy as shown in Table 2.1-1, conducted by JICA experts by focusing on the basic policy as described in Table 2.1-2. These two methods can be done by using local consultants or holding workshops if necessary.

The Project for Strengthening Capacity of  
Water Environmental Management in Vietnam

Table 1-1 Policy Review Plans of Each Department in MONRE

No	Department	Title of the review/Workshop	Purposes	Progress Status	Review period
1	PCD	Development of Regulation on Water Pollution Control in Vietnam	<ul style="list-style-type: none"> <li>- To develop new cycle management system for waste water pollution control as a new chapter of LEP</li> </ul>	<ul style="list-style-type: none"> <li>- Summarized draft 1 is submitted in Aug 2011</li> <li>- Workshop conducted in Sep 2011</li> </ul>	June 2011 - March 2012
2	ID	Modifying Decree 117/2009/ND-CP issued on 31 December 2009 by the government of the handling of law violations in the domain of environmental protection	<ul style="list-style-type: none"> <li>- To revise the new circular to introduce new procedure of inspection and penalty of violation.</li> <li>- To develop the means for public awareness to control pollution source</li> </ul>	<ul style="list-style-type: none"> <li>- Draft Final is submitted in Aug 2011</li> <li>- Workshop is conducted in May 2011</li> </ul>	June 2011 - August 2011
3	DAEIA	Workshop on draft circular of Strategy Environmental Assessment (SEA), Environmental Impact Assessment (EIA) and Environmental Protection Commitment (EPC)	<ul style="list-style-type: none"> <li>- To gather information from the experts, DONRE, stakeholders and line agencies</li> </ul>	Workshop is conducted in Jun 2011	
4	DWMEP	Review, synthesis, analysis and evaluation the overlapping and gaps in state management on environmental protection (water environment) at river basin/ (river basin management) and propose appropriate management solutions for the amendment of Decision No. 132/2008/QĐ-TTg	<ul style="list-style-type: none"> <li>- To review the existing legislation system related to water environment protection in river basin/river basin management;</li> <li>- To propose appropriate management solutions for water environment protection in river basin/river basin management for revision/amendment of Decree 25/2008/ND-CP, Decision 132/2008/QĐ-TTg and relevant legal documents</li> </ul>	It started in Sep 2011	September 2011 - January 2012
5	ISD	Assessment of status of application of wastewater treatment technologies in Vietnam and propose the genetic protocol for assessment of appropriate wastewater treatment technology under Vietnam's conditions	<ul style="list-style-type: none"> <li>- To initially assess the current status of employment of wastewater treatment technologies in Vietnam;</li> <li>- To formulate and prepare a draft of genetic protocol for assessment of appropriate wastewater treatment technology under Vietnam's conditions;</li> <li>- To coordinate with Department of International Cooperation and Science, Technology (ISD) of Vietnam Environment Administration (VEA) to develop the draft Circular on guidance of Assessment of Waste Treatment Technology.</li> </ul>	<ul style="list-style-type: none"> <li>- It started in Aug 2011</li> <li>- 1<sup>st</sup> Draft report and circular is submitted in Oct 2011</li> </ul>	August 2011 - November 2011
6	CEM	Circular for Specification and the basic requirements for water automatic monitoring Station (WAMS)	<ul style="list-style-type: none"> <li>- To construct circulars prescribed specifications of the automatic water monitoring stations: station type, size, sampling method, observation and monitoring technology.</li> <li>- To build regulations and circulars basic characteristics of the automatic monitoring</li> <li>- To provide guidance in choosing the set of monitoring stations, monitoring parameters, technology and monitoring equipment ...</li> <li>- To provide criteria for selection of equipment, technologies and methods of observation.</li> <li>- To provide the guidance in the operation, maintenance and repair, fix minor damage.</li> </ul>	It starts in Oct 2011	October 2011 - March 2012

The Project for Strengthening Capacity of  
Water Environmental Management in Vietnam

No	Department	Title of the review/Workshop	Purposes	Progress Status	Review period
7	ISEM	Studying, evaluating the state and proposing solutions to improve the efficiency of water pollution control due to Nonpoint Source pollution in rural areas in Vietnam  Strengthening enterprises' responsibility for disseminating environmental information to citizen	<ul style="list-style-type: none"> <li>- To review, evaluate the state of existing legislation system on water pollution control caused by nonpoint source pollution</li> <li>- To evaluate the management state and propose solutions to raise the efficiency of water pollution control on nonpoint source pollution in rural areas in Vietnam</li> <li>- To make clearly enterprises' responsibility for disseminating environmental information to citizen</li> <li>- To assess the regulations of current legal and implementation processing</li> <li>- To develop the guidance processing to enterprises to implement that must be in accord with the development processing of socio-economic and environment situations</li> <li>- To hold vision and targets of managing the country's water environment in a sustainable way</li> <li>- To Strengthen the policy and institutional framework for integrated water environment management and quality monitoring</li> <li>- To expand and diversifying investment in infrastructure for the water sector, while paying more attention to financing for the management side</li> <li>- To improve compliance and enforcement; and deepen public participation and involvement</li> </ul>	It starts in Oct 2011  Under discussion	October 2011 - March 2012
8	DWRM	Policy consultative workshop to strengthen capacity of MONRE/DWRM to develop policies and tools for water environmental management and water quality monitoring system		Under discussion	

Source: JET

**Table 1-2 Policy Review Made by JICA Expert**

No	Title of the review	The purposes	Status
1	Assessing Law related to industrial waste water management and status of its enforcement in Vietnam	1. To grasp the comprehensive regulations on industrial waste water management in Vietnam 2. To assess the actual status of the enforcement 3. To find out causes of insufficient enforcement in the fields	Completed in August 2011

Source: JET

**(b) Gathering the Comments from 5 DONREs about the Enforcement of the Existing Policies (Step 2)**

After conducting, reviewing and evaluating all the existing policies and policy tools related to waste water management, the results will be shared with 5 DONREs to receive the comments and the comments will be reflected in the review and evaluation.

Therefore, in this process, it is aimed to absorb the opinions and points of view based on the actual situation in the local provinces. Then the opinions shall be integrated to the new/ revised draft policies. In order to receive the comments, it is planned to send the questionnaire to 5 DONREs after sharing the results of the review and evaluation.

**(c) Making "basic idea in proposing a new policy" (Step 3)**

After going through (2) (Step1) "overall review of the current status of the laws of water environmental management" and (3) (Step2) as "Gathering the comments from 5 DONREs about the enforcement of the existing policies", as 1st step of (5) "Proposing the outline of the new/ revised policy", each department of MONRE will submit the draft new/ revised policy.

However, the draft new/ revised policies which would be submitted by each department will be related to each other. Thus, it is reasonable for each department in MONRE and 5 DONREs to share, first of all, the basic concept to make the new/ revised policies based on the overall review conducted by each department in MONRE, then secondly to suggest the new/ revised policies.

For this reason, "the basic idea in proposing a new policy" will be made by gathering each department and 5 DONREs opinions.

Following is the outline of "the basic idea in proposing a new policy (draft), which is drawn out from the overall review until today.

1. Main points to be considered in making water environmental policies
  - 1) Domestic problems (the current situation of polluted water bodies for public use, human health affected by water pollution and obstacles to use water)
  - 2) International harmonization (Environmental treaties or Economic agreements)
2. Overall picture of the water environmental policies (focused on the measures to the point pollution source): Figure 2.1-2 and Figure 2.1-3
  - 2-1. Individual policy for the reduction of pollution
    - 1) Focus points of the reduction of pollution
      - a. End of pipe
      - b. Production process
    - 2) Measures to reduce pollution
      - a. Regulatory measure (e.g. compliance with wastewater standards)
      - b. Economic measure (e.g. wastewater discharging fee)
      - c. Measure by procedures (e.g. EIA)
      - d. Measure by providing information to citizen (e.g. honorable information as well as



dishonorable information of enterprises)

e. Others (measures by self-management or measures by cooperative treatment)

3) Legal framework design

a. Points of the legal framework design

“Enforceability”, “Effectiveness”, “Efficiency” and “Equality” etc...

b. Examples of the legal framework designs (in case of “End of pipe” and “Regulatory measures”)

I. The designs of overall regulation

Reasonable overall regulatory designs: “Set the standard of wastewater discharging”, “Appraisal of wastewater treatment system before the operation”, “Appraisal of wastewater treatment system during operation”, and “Sanction of violating laws” etc

II. The design of individual regulatory factor of regulatory designs

The design of individual regulatory on the basis of the overall design

2-2. Common policies for the reductions of pollution

1) Capacity development of human resources in administrative agencies

(MONRE (policy making agency) and DONRE (policy enforcing agency))

2) Capacity development of the stakeholders

(Enterprises, Citizen/Citizen groups and environmental industries)

3) Support for development of technologies

4) Utilization and management of environmental information

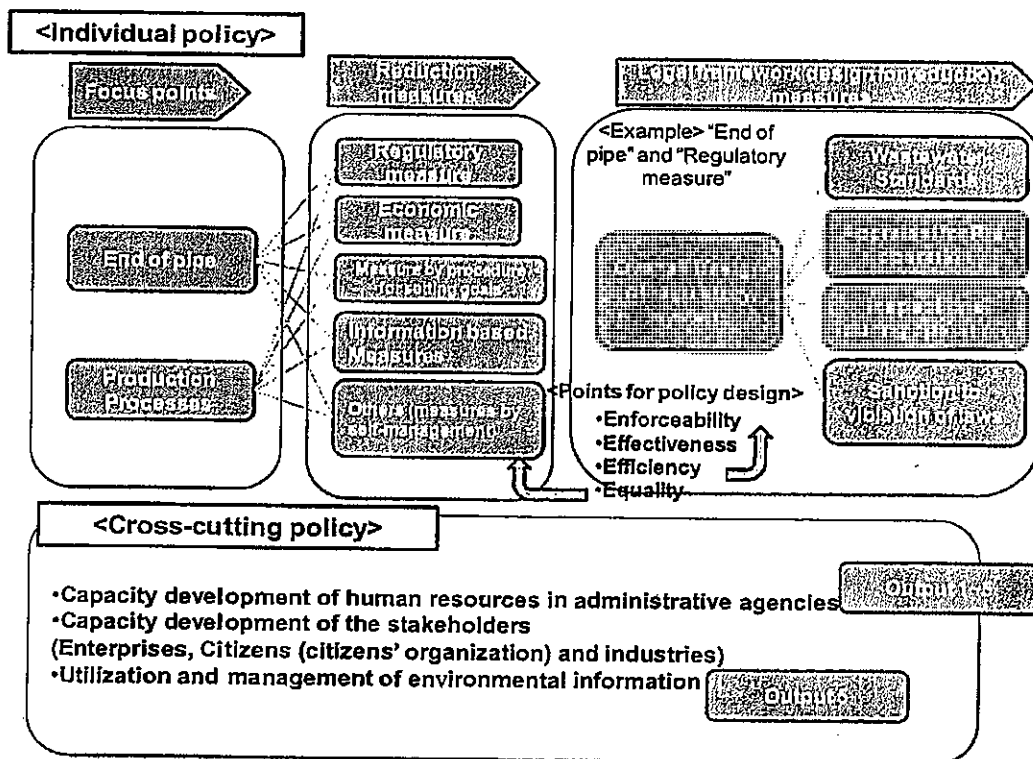
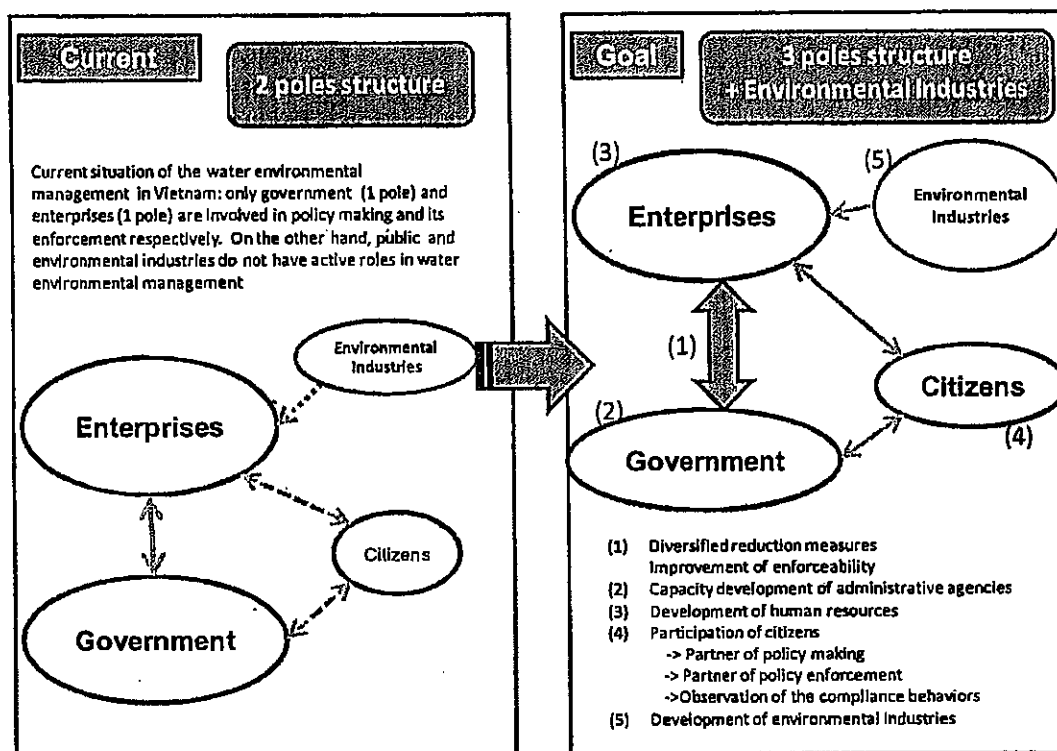


Figure 1-2 The Whole Concept of Policy for the Wastewater Pollution Control



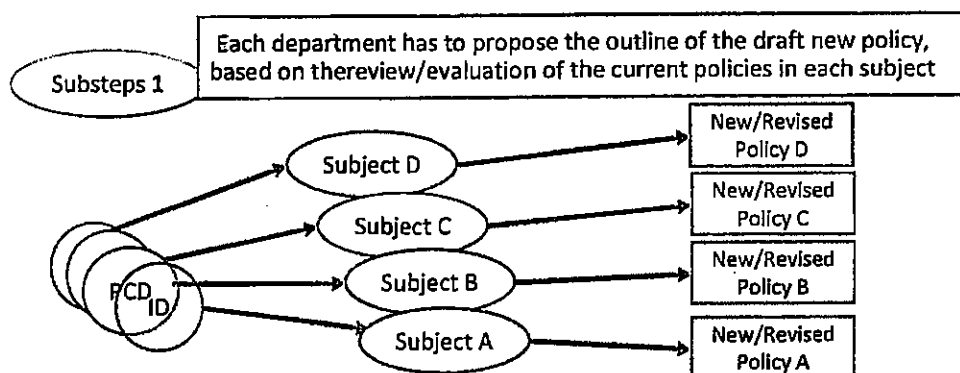
Source: JET

Figure 1-3 Water Environmental Management for the Sustainable Society

(d) Proposing the Outline of the New/Revised Policy (Step 4)

After reviewing current policies and gathering comment from 5 DONREs, each department in MONRE will make the new/revised policies and policy tool as a first draft on the basis of "the basic concept" as described in Step 3. This process has 4 sub steps as described below.

- i. Sub Step 1: Each department has to propose the outline of the draft new policy based on the review/evaluation of the existing policies in each subject as well as comment gathering from 5 DONREs and relevant stakeholders. Each department will select their concerning subject, which is considered to be revised or to be created newly. Accordingly, after reviewing and comment gathering, the new and revised policies will be proposed as first drafts.



Source: JET

Figure 1-4 Concept of Sub Step 1

ii. Sub Step2: Make the correlation mechanism among New Policies.

After the outline of new/revised draft policies are proposed, the relations among policies will be clarified. For example, as shown in Figure 2.1-5, assume that policy A is a frame work of the comprehensive policy such a cycle management system as "Prevention ->Monitoring and detection -> Inspection and compensation -> Pollution treatment -> Environmental recovery." In this sub step 2, the relations between proposed policies will be clarified and positioning of the policies will be conducted. Finally the vertical and horizontal connection will be set up clearly to make the comprehensive but not overlapping policy.

The important thing in this sub step is that when each department makes each different new/revised policy, each policy has to be correlated with other relevant policies and it should be a reasonable and coherent scenario as a whole for the better water environmental management.

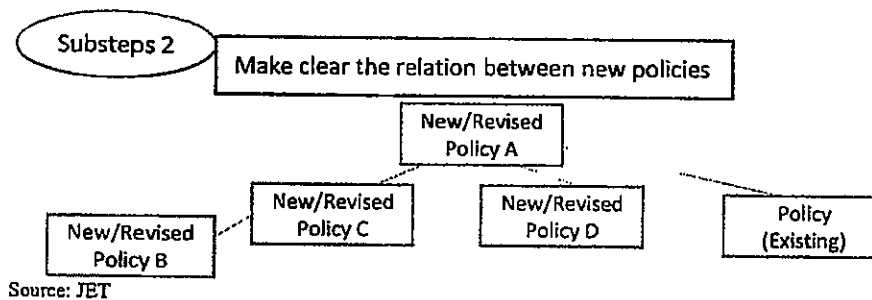


Figure 1-5 Concept of Sub Step 2

iii. Sub Step3: To evaluate all the new policies and then propose the outline of new/revised policies

In this step, all the new/revised policies will be evaluated by the following point of view by considering the results from Step 2.

- Rationality and feasibility in each policy  
A proposed policy has to be examined its rationality and feasibility from the aspect of below items, and has to be revised if necessary.
  - Administrative ability
  - Human resource (public sector or private sector)
  - Financial resource (ditto)
  - Appropriate technology
  - Availability of Information
- Consistency/Coherence among policies  
It has to be examined whether consistency/coherence among policies are secured or not, and has to be supplemented/ revised if necessary.

iv. Sub Step4: To propose the new/revised policies based on substep3

After going through all the sub steps, the new/revised policies are made up. Then the new/revised policies are shared with 5 DONREs and the entire relevant stakeholders to receive comments through workshops.

(e) Refine the draft of the New/Revised Policies (Step 5)

Refine the draft of the new/revised policies will continue until the end of the project. It will be amended and modified based on the opinions from DONREs and other stakeholders through workshops and seminars until it is finalized.

In addition, it is important to monitor and analyze the enforcement of the new/revised policies.

(2) Future Plans

Up to now, the current policies have been reviewed by each department (as a Step 1). Moreover, based on the results, the main issues have been organized and the draft of “the basic idea in proposing a new policy” (Step 3)” was made. In addition, we could contribute the policy reviews which led to finalizing a new policy (DAEIA) as well as making a new policy (ID).

Future plans can be varied by each department and its policy. However, it would be conducted as below.

- 1) “The basic idea in proposing a new policy” shall be finalized after reflecting all the comments from MONRE and the target DONREs. (December 2011 (Step2 and 3))
- 2) Based on the currently-conducting policy reviews (or policy reviews to be conducted from now on), the concrete draft of the new policies will be suggested by following “The basic idea in proposing a new policy”. (November 2011 until June 2012 (Step 4))
- 3) Enrich the contents of the new draft policies by the comments from relevant people thought workshops. (December 2011 until December 2012 (Step 5))

## Work Plan of Output 2-1 (Monitoring)

### 1. General

#### 1.1 Objectives of the Work Plan (WP)

Objectives of the Work Plan (WP) are as follows:

- To clarify actual capacity development activities and scheduling,
- To identify indicators and targets of the activities for evaluation,
- To conduct activities in accordance with WP, and
- To reflect results and lessons to WP for the next working period.

#### 1.2 Review of Current Situation of Water Quality Monitoring Activity

Current situation of water quality monitoring activities of each DONRE is summarized in the table below based on the tentative action plan and discussion with the Counterparts (C/Ps).

**Table 1.2-1 Review Results of Monitoring**

Item	HNI	HPG	TT-HUE	HCMC	BRVT
1) Framework of water quality monitoring	a) Organization - Monitoring and Analysis of Natural Resources and Environment Division in CENMA b) Staff for monitoring - 40 staffs (including laboratory analysis) c) Annual Budget - XXX VND/yr (to be confirmed) d) Job description - Development of monitoring plan, reporting, and results dissemination to public	a) Organization - Monitoring Division in CEM b) Staff for monitoring - 7 staffs c) Annual Budget - XXX VND/yr (to be confirmed) d) Job description - same as HNI DONRE	a) Organization - Monitoring Division in EPA b) Staff for monitoring - XX staffs c) Annual Budget - 290 million VND/yr (= \$15,000 in 2009, including surface water, coastal, and groundwater) d) Job description - same as HNI DONRE	a) Organization - Division of Environmental Quality Monitoring and Assessment in HEPA b) Staff for monitoring - 5 staffs c) Annual Budget - XXX VND/yr (to be confirmed) d) Job description - same as HNI DONRE	a) Organization - Monitoring division in CEMA b) Staff for monitoring - 5 staffs c) Annual Budget - 1.6 billion VND/yr (= \$80,000 in 2010, including all of the Activities in CEMA, to be checked in detail) d) Job description - same as HNI DONRE
2) Monitoring Plan to be developed or updated	Yearly monitoring plan in 2013	5 years monitoring plan for 2012-2016	Yearly monitoring plan in 2013	5 years monitoring plan for 2012-2016	5 years monitoring plan for 2010-2015
3) Structure of Water quality monitoring	a) monitoring points -river: 500 points -lake: 40 points -groundwater: 184 points -pollution sources : on demand b) frequency and times: -river and canal: 2 times/yr (polluted stations: 12 times/yr) -lake: 2 times/yr (4 times/yr in West Lake) -groundwater: 2 times/yr -pollution sources: on demand (to be confirmed) c) substances: -river, lake, and groundwater: 16 parameters d) lab analysis -implemented by analysis division of CENMA	a) monitoring points -river: 3 points -lake & channel: 12 points b) frequency and times -river: 6 times/yr -lake & channel: 4 times/yr c) substances -river: 16 parameters -lake & channel: 15 parameters d) lab analysis -implemented by analysis division of CEM	a) monitoring points -river & lake: 42 points: -coastal: 6 points b) frequency and times -river & lake: 4 times/yr -coastal: 4 times/yr c) substances -river & lake: 12 parameters -coastal: 12 parameters d) lab analysis -out sourcing -Lab under construction -to be analyzed by TT-HUE DONRE	a) monitoring points -river: 20 points -channel: 10 points -coastal: 9 points -groundwater: 16 points b) frequency and times -river: monthly -channel: monthly -coastal: 4 times/yr -groundwater: monthly c) substances -river: 19 parameters -channel and groundwater: 22 parameters -coastal: 18 parameters d) lab analysis -out sourcing -no intention on water quality analysis by DONRE	a) monitoring points -river: 12 points -urban wastewater: 3 points -lake: 6 points -coastal: 8 points -groundwater: 5 points b) frequency and times -all: 4 times /yr c) substances -river: 13 parameters -urban wastewater: 7 parameters -lake: 11 parameters on physico-chemical, nutrients, organic, etc. -coastal: 7 parameters -groundwater: 6 parameters d) lab analysis -implemented by analysis division of CEMA
4) Usage of monitoring data	a) Data analysis - Checking compliance with QCVN - Checking historical trend - Reflection data to new monitoring plan b) report preparation -annual report -semi-annual report c) sharing with others -PPC & VEA d) countermeasures - Reporting to DONRE	a) Data analysis - Checking compliance with QCVN - Checking historical trend b) report preparation -annual report -semi-annual or quarterly report (to be confirmed) c) sharing with others -PPC & VEA	a) Data analysis - Checking compliance with QCVN b) report preparation -annual report -semi-annual report c) sharing with others -PPC & VEA d) countermeasures - Investigation by EPA when unexpected pollution event has occurred	a) Data analysis - Checking compliance with QCVN - Checking historical trend b) report preparation -annual report -quarterly report -monthly report c) sharing with others -PPC & VEA	a) Data analysis - Checking compliance with QCVN - Checking historical trend b) report preparation -annual report -by-monthly report c) sharing with others -PPC & VEA

Item	HNI	HPG	TT-HUE	HCMC	BRVT
	when unexpected pollution event has occurred				
5) Constraints	- knowledge of developing monitoring plan to identify contaminated areas - knowledge of data analysis and report preparation	- knowledge to understand its objective - knowledge of data analysis and report preparation	- knowledge to understand its objective - knowledge of data analysis and report preparation - development of data management system	- knowledge for optimization of the existing plan - knowledge of data analysis and report preparation	- knowledge of developing monitoring plan to understand its objective - knowledge of data analysis and report preparation
6) Training needs	a) Lecture and Workshop for reviewing monitoring plan b) Lecture and OJT for data analysis and report writing	a) Lecture and Workshop for reviewing monitoring plan b) Lecture and OJT for data analysis and report writing	a) Lecture and Workshop for reviewing monitoring plan b) Lecture and OJT for data analysis and report writing c) Group exercise and OJT for data management system	a) Lecture and Workshop for reviewing monitoring plan b) Lecture and OJT for data analysis and report writing	a) Lecture and Workshop for reviewing monitoring plan b) Lecture and OJT for data analysis and report writing

### 1.3 Approach

(1) Capacity Development (CD) Needs based on the Action Plan prepared by DONRE

The actual CD needs of each DONRE are summarized in the table below based on the Action Plan prepared by DONRE.

**Table 1.3-1 Draft CD Approach in each DONRE**

Item	HNI	HPG	TT-HUE	HCMC	BRVT
(1) Key points to be improved	a) improvement of skill for reviewing monitoring plan b) improvement of skill for data analysis and report preparation to identify characteristic of water pollution	a) improvement of skill for understanding the monitoring plan prepared by PPC and reviewing it b) improvement of data analysis and report preparation skill to identify characteristic of water pollution	a) improvement of skill for understanding the monitoring plan prepared by PPC and reviewing it b) improvement of data analysis and report preparation to identify characteristic of water pollution c) lack of data management system	a) skills for understanding the monitoring plan prepared by PPC and reviewing it b) improvement of data analysis and report preparation to identify characteristic of water pollution	a) skills for understanding monitoring plan prepared by SEMLA and reviewing it b) improvement of data analysis and report preparation to identify characteristic of water pollution
(2) Approach of CD activity	a) reviewing monitoring plan - lecture and workshop b) data analysis and report preparation - lecture and OJT	a) reviewing monitoring plan - lecture and workshop b) data analysis and report preparation - lecture and OJT	a) reviewing monitoring plan - lecture and workshop b) data analysis and report preparation c) data management - group exercise and OJT	a) reviewing monitoring plan - lecture and workshop b) data analysis and report preparation - lecture and OJT	a) reviewing monitoring plan - lecture and workshop b) data analysis and report preparation - lecture and OJT
(3) Figures/ status of before the Project	a) surface water quality monitoring stations are necessary to reviewed b) DONRE does not analyze monitoring data to identify characteristic of water pollution	a) monitoring section has never been fully involved to develop monitoring plan because the monitoring plan was prepared by an independent consultant for PPC b) DONRE does not analyze monitoring data to identify characteristic of water pollution	a) monitoring section has never been fully involved to develop monitoring plan because the monitoring plan was prepared by an independent consultant for PPC b) DONRE does not analyze monitoring data to identify characteristic of water pollution c) DONRE doesn't have data management system for monitoring results	a) monitoring section has never been fully involved to develop monitoring plan because the monitoring plan was prepared by an independent consultant for PPC b) DONRE does not analyze monitoring data to identify characteristic of water pollution	a) monitoring section has never been fully involved to develop monitoring plan because the monitoring plan was prepared by an independent consultant under SEMLA Project b) DONRE does not analyze monitoring data to identify characteristic of water pollution
(4) Figures/ status of after the Project	a) improve monitoring plan with clear objective b) optimize locations, frequency, and parameters based on	a) same as HNI DONRE	a) same as HNI DONRE b) establish data management system	a) same as HNI DONRE	a) same as HNI DONRE

Item	HNI	HPG	TT-HUE	HCMC	BRVT
	its objective c) revise annual monitoring report to describe not only compliance with QCVN and last 2 years historical trend but also characteristic of water pollution				
(5) Expected outcomes	a) improved monitoring plan b) revised annual monitoring report	a) improved monitoring plan b) revised annual monitoring report	a) improved monitoring plan b) revised annual monitoring report c) manual for data management system	a) improved monitoring plan b) revised annual monitoring report	a) improved monitoring plan b) revised annual monitoring report
	common outcomes: handbook for improvement of water quality monitoring activities at the target DONREs which is summarized based on the project activities				
(6) Goal	a) CENMA can review monitoring plan with clear objective b) CENMA can prepare revised annual report with characteristic of water pollution based on data analysis	a) CEM can develop monitoring plan with clear objective by themselves b) CEM can prepare revised annual report with characteristic of water pollution based on data analysis	a) EPA can develop monitoring plan with clear objective by themselves b) EPA can prepare revised annual report with characteristic of water pollution based on data analysis c) EPA can operate data management system for monitoring results by themselves	a) HEPA can develop monitoring plan with clear objective by themselves b) HEPA can prepare revised annual report with characteristic of water pollution based on data analysis	a) CENMA can develop monitoring plan with clear objective by themselves b) CENMA can prepare revised annual report with characteristic of water pollution based on data analysis
(7) Conceivable indicator and target	<i>To be discussed</i> -implementation rate of monitoring - number of type of data analysis -historical & longitudinal trend, -water quality status map, and -statistical analysis	<i>Same as HNI DONRE</i>	<i>Same as HNI DONRE</i>	<i>Same as HNI DONRE</i>	<i>Same as HNI DONRE</i>

## (2) Direction, Approach, and Strategy of CD

There are six broad areas in which capacity development can be strengthened and a standard approach to plan design and the understanding of the data generated by the sampling and measurement contaminants in the water can be progressed.

**Table 1.3-2 Areas of Capacity Development related Monitoring**

Area	Approach and Strategy	Actual activity	Target	Note
1) Optimization of water quality monitoring plan	1. Utilization of the Data Quality Objective (DQO) process for optimization of water quality monitoring plan regarding the following items. a) Formalizing monitoring procedures b) Numbers and locations of sampling stations c) Frequency of sampling d) Parameter of measured	1. Lectured training and workshop will be implemented as follows; a) introduction training for DQO Process (1 day training at each DONRE) b) workshop for designing water quality monitoring plan based on DQO Process (3 days workshop at each DONRE)	1. Target DONRE HNI, HPG, TT-HUE, HCMC, BRVT 2. Target staff Monitoring division of each DONRE and Center 3. Target stakeholders Water resource management division, pollution control division in DONRE	Activity-1: CD for optimization of water quality monitoring plan
2) Analysis of water quality monitoring results	1. Introduction of data analysis based on the existing monitoring data a) interaction between water environment and pollution sources b) relationships among contaminants c) water pollution mechanism	1. Lectured training and OJT courses will be implemented. a) basic data analysis training for checking standard, longitudinal trend, historical trend, water quality status mapping and so on (1 day training at each DONRE) b) group exercise for data interpretation and application of basic	1. Target DONRE HNI, HPG, TT-HUE, HCMC, BRVT 2. Target staff Monitoring division of each DONRE and Center 3. Target stakeholders Water resource management division, pollution	Activity-2: CD for interpretation of water quality monitoring result and report preparation
3) Statistical techniques	1. Introduction of basic statistical techniques for the quantitative assessment of differences and changes in water quality based on the existing monitoring			
4) Report preparation and	1. Utilization of the above training results for 1) optimization of water monitoring plan, 2) analysis of			

Area	Approach and Strategy	Actual activity	Target	Note
dissemination	water quality monitoring results, and 3) statistical technique on preparation of structuring reports for the needs of the readers	statistical techniques for data evaluation	control division in DONRE	
5)Structured data management systems	1. Development of structured data management systems to facilitate access to water quality data for subsequent reporting and analysis through group exercise and its operation	1. Group exercise and OJT courses will be implemented. a) group exercise for development of data management system (1 day) b) OJT and trial operation of data management system (continuous training)	1.Target DONRE TT-HUE 2.Target staff Monitoring division of EPA, TT-HUE 3.Target stakeholders Laboratory analysis section of EPA	Activity-3: CD for establishment of structured data management system
6)QA/QC	Establishment of QA/QC procedures to be applied to in-house laboratory analysis or to outsourced laboratory work	See detail in Work Plan of Output 2-2 (Water Quality Analysis)	See detail in Work Plan of Output 2-2	This item is implemented by Output 2-2

Among the 6 areas mentioned above, all target DONREs requested JET to improve and develop their capacity on optimization of water quality monitoring plan (Activity-1), interpretation of water quality monitoring results and report preparation (Activity-2), and establishment of data management system (Activity-3). The CD strategies for these three areas are shown as below;

#### 1) Activity-1: CD for optimization of water quality monitoring plan

The Data Quality Objective (DQO) process is used to establish performance or acceptance criteria, which serve as the basis for designing a plan for collecting data of sufficient quality and quantity to support the objectives of a monitoring plan. The DQO approach consists of seven iterative steps. Each step of DQO Process defines criteria that will be used to establish the final data collection design. The first five steps are primarily focused on identifying qualitative criteria, such as:

- the question to be answered by carrying out the monitoring plan and a conceptual model of the environmental to be monitored;
- the information about the environment and where in the environment the data will be collected
- the measurements to be made and the frequency that they will be made ; and
- the analytic approach or decision rule that will be applied to the data to draw conclusions from the monitoring..

The sixth step establishes acceptable quantitative criteria on the quality and quantity of the data to be collected. These criteria are known as performance or acceptance criteria, or DQOs. For compliance with a water quality standard as set out in QCVNs the DQOs are typically expressed in terms of an estimate of the uncertainty interval around a estimate of the mean concentration. For situations which will result in a decision to do or not do something the DQOs are typically expressed as tolerable limits on the risk of the collected data leading to the making of an incorrect decision. These DQO will feed into the seventh step to determine the level of replication of sampling to achieve acceptable uncertainty or risk.

In the seventh step the data collection design is developed that will provide data meeting the quantitative and qualitative criteria specified at the end of Step 6. A data collection design specifies the type, number, location, and physical quantity of samples and data, as well as the QA and QC activities that will ensure that sampling design and measurement errors are managed sufficiently to meet the performance or acceptance criteria specified in DQO. The outputs of the DQO Process are used to develop a QA Project Plan for the monitoring plan.

#### 2) Activity 2: CD for interpretation of water quality monitoring result and report preparation

The interaction between water, the environment and pollution and the relationships and interactions between contaminants is a complex topic and is best developed by hands on experience. However there are some basic processes and interactions which need to be understood before beginning to try to interpret the 'story' that the data from a monitoring plan tells. The objective of the training will be to introduce the basic processes taking place in the environment as a result of pollution pressures and to enable the staff of the DONRE to look critically at individual parameters and associated groups of parameters to identify 'rogue' values, and to be able to explain cause and effect processes.

#### 3) Activity 3: CD for establishment of structured data management system (only T-T HUE DONRE)

Structured data management system contributes to preparation of accurate monitoring report. The structured data management system includes preparation of format of monitoring result to be stored, setting rules for data inputting, data checking, data sharing, and data-back-up. Among 5 target DONREs, the



database management system in the environmental monitoring section of T-T HUE DONRE has not been established yet. Therefore the environmental monitoring section of T-T HUE DONRE decided to establish the structured data management system as one of the project activities.

(3) Overall Implementation Schedule of CD Work Plans

Overall implementation schedule for CD work plan of the target DONREs for monitoring during 2011-2013 are shown in Figure 1.3-1 and Table 1.3-3. The detailed implementation schedules for CD work plan of each DONRE are show in Chapter 2.

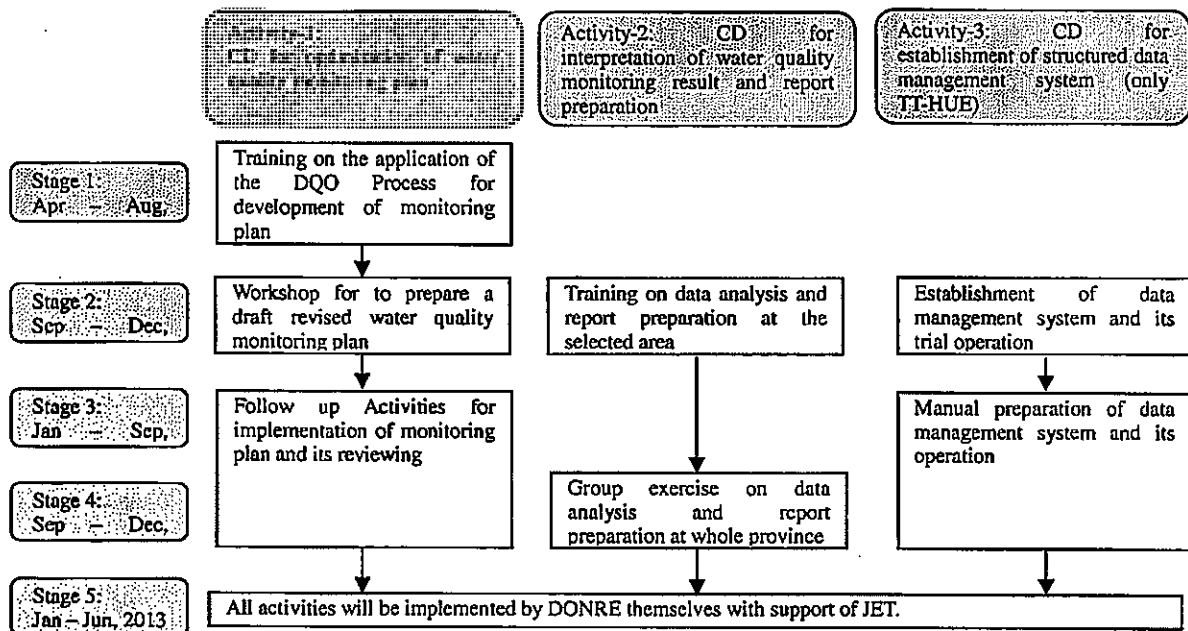


Figure 1.3-1 Overall Implementation Schedule for CD Work Plan for Monitoring

**Table 1.3-3 Implementation Schedule for CD Work Plan for Monitoring**

Activities	2011												2012												2013					
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun			
<b>Common</b>																														
0-1 Preparation of CD Work Plan	▲																													
0-2 Reviewing CD work plan in 2012									▲																					
0-3 Workshop for Water Quality Monitoring of the target 5 Provinces																					▲									
<b>Activity-1: Revising Water Quality Monitoring Program</b>																														
1-1: Studying the existing guidelines and																														
1-2: Introduction training on the application of the DQO Process for development of Water Quality Monitoring Plans																														
1-3: Assembly of information relating to the design and implementation of the current Water Quality Monitoring Plan, summary of monitoring data already collected, information on costs for collection of samples and carrying out laboratory analysis of samples																														
1-4: Workshop on preparation a draft revised water quality monitoring plan for 2012-2017 and its budget estimate for presentation to PPC																														
1-5: Submission of comments to PPC regarding the draft 5 years monitoring plan for 2012-2017 prepared by PPC																														
1-6: Following up the new 5 years water quality monitoring plan																														
1-7: Feedback for reviewing the new 5 years water quality monitoring plan																														
1-8: Revising water quality monitoring plan for																														
1-9: Following up Activities (Training to District DONRE Staff)																														
<b>Activity-2: Data Analysis and Report Preparation</b>																														
2-1: Study the existing guidelines and																														
2-2: Assembling the past water quality monitoring results																														
2-3: Training on data analysis (check standard, vertical trend, historical trend, water quality status mapping) at the selected area																														
2-4: Reflection of results of data analysis at the selected area to annual report																														
2-5: Data analysis on monitoring results in 2011 at the whole province																														
2-6: Training on water quality data interpretation and application of basic statistical techniques for data evaluation																														
2-7: Reviewing table of contents on monitoring report																														
2-8: Report preparation at the whole Province																														
2-9: Follow up activities (Training to District DONRE Staff)																														
<b>Activity-3: Establishment of structured data management system (only T-HUB DONRE)</b>																														
3-1: Establishment of provisional data management system for monitoring through internal discussion within monitoring section																														
3-2: Trial operation of provisional data management system for monitoring																														
3-3: Feedback of results of trial operation and establishment of data management system																														
3-4: Preparation of draft manual for data management system for monitoring																														
3-5: Operation of data management system for monitoring																														
3-6: Updating manual for data management system for monitoring																														
3-7: Follow up activities (Implementation by DONRE themselves)																														
<b>Assignment of JET</b>																														
Mr. Derek JOHNSON (Water Env. Monitoring (1))																														
Mr. Shunsuke HIEDA (Water Env. Monitoring (2))																														

**(4) Implementation of Capacity Assessment**

Capacity assessment sheets for Output-2-1 (Monitoring) were prepared for individuals as shown in Appendix 1. Capacity assessment for individuals will be conducted by means of self-evaluation by C/Ps. In addition, evaluation by JET will also be considered as reference.

## 2. CD Work Plan in each DONRE

### 2.1 HNI DONRE

#### (1) Summary of CD Work Plan

The CD work plan for HNI DONRE has been drafted through discussion between Monitoring and Analysis of natural resources and environment Division of CENMA (Centre for Environmental and Natural Resources Monitoring and Analysis) and JET in April and August 2011. The drafted CD work plan is shown in Table 2.1-1

**Table 2.1-1 Summary of Draft CD Work Plan for HNI DONRE (Draft)**

Target Point/ Field of CD	Details	Outcomes	Dissemination
1. Reviewing Water Monitoring Plan	<p><b>2011</b></p> <p>May-Jul: Studying the existing guidelines and procedures [1-1]</p> <p>Aug: Introduction training to CENMA staff on the application of the DQO Process for development of Water Quality Monitoring Plans [1-2]</p> <p>Aug-Nov: Assembly of information relating to the design and implementation of the current Water Quality Monitoring Plan, summary of monitoring data already collected, information on costs for collection of samples and carrying out laboratory analysis of samples [1-3]</p> <p>Nov-Dec: Workshop for CENMA staff to prepare a draft revised water quality monitoring plan for 2013 and its budget estimate [1-4]</p> <p>Dec. 2012: Reviewing CD work plan in 2012</p> <p>Jan-Jul: Following up the water quality monitoring plan for 2013 [1-5]</p> <p>Aug: Feedback for reviewing the water quality monitoring plan for 2013 [1-6]</p> <p>Submission of the draft monitoring plan for 2013 and budget proposal to PPC [1-7]</p> <p>Sep-Nov: Revising water quality monitoring plan for 2013 [1-8]</p> <p>Dec. 2012: Workshop for water quality monitoring in 5 Provinces</p> <p><b>2013</b></p> <p>Jan-Jun: Following up Activities (Training to District DONRE Staff) [1-9]</p>	<p>[Outputs]</p> <ul style="list-style-type: none"> <li>- Guidance for reviewing water monitoring plan</li> <li>- Draft DQO based water quality monitoring plan at the whole Province for submission to PPC and MONRE</li> </ul> <p>[Monitoring for output]</p> <ul style="list-style-type: none"> <li>-OJT records (Training and Workshop)</li> <li>-CA results</li> </ul>	<p>[WG 2-2]</p> <ul style="list-style-type: none"> <li>-Involving analysis section to develop the monitoring plan from the viewpoint of capacity of laboratory analysis</li> </ul> <p>[WG 2-3]</p> <ul style="list-style-type: none"> <li>-Involving EPA to develop the monitoring plan to identify polluted area</li> </ul> <p>[WG 2-4]</p> <ul style="list-style-type: none"> <li>-Provision of monitoring plan to EPA to consider effective inspection and checking activities</li> </ul>
2. Data Analysis and Report preparation	<p><b>2011</b></p> <p>May-Jul: Studying the existing guidelines and procedures [2-1]</p> <p>Aug-Sep: Assembling the past water quality monitoring results [2-2]</p> <p>Oct-Nov: Training for CENMA staff on data analysis (check standard, longitudinal trend, historical trend, water quality status mapping) at the selected area [2-3]</p> <p>Dec: Reflection of results of data analysis at the selected area to annual report [2-4]</p> <p><b>2012</b></p> <p>Jan-Jul: Data analysis on monitoring results in 2011 at the whole province [2-5]</p> <p>Aug-Sep: Training for CENMA staff in water quality data interpretation and application of basic statistical techniques for data evaluation [2-6]</p> <p>Oct: Reviewing table of contents on monitoring report [2-7]</p> <p>Nov-Dec: Report preparation at the whole Province [2-8]</p> <p>Dec. 2012: Workshop for water quality monitoring in 5 Provinces</p> <p><b>2013</b></p> <p>Jan-Jun: Follow up activities (Training to District DONRE Staff) [2-9]</p>	<p>[Outputs]</p> <ul style="list-style-type: none"> <li>- Guidance for data analysis and report writing for water quality monitoring</li> <li>- Revised water quality monitoring report (Annual report)</li> </ul> <p>[Monitoring for output]</p> <ul style="list-style-type: none"> <li>-OJT records (Training and Workshop)</li> <li>-CA results</li> </ul>	<p>[WG 2-2]</p> <ul style="list-style-type: none"> <li>-Opinion exchanges with analysis section to improve accuracy of analyzed data</li> </ul> <p>[WG 2-3]</p> <ul style="list-style-type: none"> <li>-Provision of revised report to EPA to identify polluted area</li> </ul> <p>[WG 2-4]</p> <ul style="list-style-type: none"> <li>-Provision of revised report to EPA to consider effective inspection and checking activities</li> </ul> <p>[WG 3]</p> <ul style="list-style-type: none"> <li>-Provision of revised report to EPA as basic information to consider water pollution control measures</li> </ul> <p>[WG 4]</p> <ul style="list-style-type: none"> <li>-Provision of revised report to EPA for public awareness</li> </ul> <p>[Output 5]</p> <ul style="list-style-type: none"> <li>-Provision of revised report to CBM/VEA for information sharing and utilization</li> </ul>

(2) Key Strategy

CENMA has just developed the draft monitoring plan for 2012 based on reviewing the current monitoring plan and a local understanding of water quality issues and submitted it to PPC through DONRE in August 2011. Therefore, CENMA will hold on the workshop for developing water monitoring plan for 2013 in December 2011 and submit the plan and its budget proposal to PPC in August 2012 with support from JET. With respect to training for data analysis and report preparation, this training will be implemented on parallel of training for reviewing water quality monitoring plan.

(3) C/P List

Working group of Hanoi DONRE for monitoring consists of XX members from the monitoring and analysis of natural resources and environment division of CENMA, water resource management division of HNI DONRE, and JET as shown in Table 2.1-2.

**Table 2.1-2 Working Group Member for Monitoring of HNI DONRE**

Name	Organization	Position
1) Dr. Nguyen Kim Thanh*	CENMA	Vice-Director
2) Ms. Nguyen Hong Ngoc	Monitoring and Analysis of natural resources and environment Division of CENMA	Vice-head
3) to be named		
4) to be named		
5) to be named		

Note; \*: Head of Working Group Member, Additional C/P are requested by SET to HNI DONRE  
Source: JET and Hanoi CENMA

(4) Plan of Operation

Plan of operation for HNI DONRE for monitoring are developed by the monitoring and analysis of natural resources and environment division of CENMA and JET as shown in Table 2.1-3.

**Table 2.1-3 Plan of Operation for Monitoring of HNI DONRE**

Joint implementation of JET and Vietnamese C/P

Continuous implementation by Vietnamese side

Output 2-1: Monitoring		JFY 2010/2011												JFY 2012												JFY 2013						JICA Expert in Charge						
		VFY 2011												VFY 2012												VFY 2013												
		3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6									
DONRE	activity																																					
HNI	Common																																					
HNI	0-1 Preparation of CD Work Plan																																					Johnson, Hieda
HNI	0-2 Reviewing CD work plan in 2012																																					Johnson, Hieda
HNI	0-3 Workshop for Water Quality Monitoring of the target 5 Provinces																																					Johnson, Hieda
HNI	<del>Activity 1: Reviewing Water Quality Monitoring Prog.</del>																																					
HNI	1-1: Studying the existing guidelines and procedures																																					Hieda
HNI	1-2: Introduction training on the application of the DQO-Process for development of Water Quality Monitoring Plans																																					Johnson
HNI	1-3: Assembly of information relating to the design and implementation of the current Water Quality Monitoring Plan, summary of monitoring data already collected, information on costs for collection of samples and carrying out laboratory analysis of samples																																					Hieda
HNI	1-4: Workshop for CENMA staff to prepare a draft revised water quality monitoring plan for 2013 and its budget estimate																																					Johnson
HNI	1-5: Following up the water quality monitoring plan for 2013																																					Johnson, Hieda
HNI	1-6: Feedback for reviewing the water quality monitoring plan for 2013																																					Johnson
HNI	1-7: Submission of the draft monitoring plan for 2013 and budget proposal to PPC [1-7]																																					Johnson
HNI	1-8: Revising water quality monitoring plan for 2013																																					Johnson, Hieda
HNI	1-9: Following up Activities (Training to District DONRE Staff)																																					Hieda
HNI	<del>Activity 2: Data Analysis and Report Preparation</del>																																					
HNI	2-1: Studying the existing guidelines and procedures																																					Hieda
HNI	2-2: Assembling the past water quality monitoring results																																					Hieda
HNI	2-3: Training on data analysis (check standard, vertical trend, historical trend, water quality status mapping) at the selected area																																					Hieda
HNI	2-4: Reflection of results of data analysis at the selected area to annual report																																					Hieda
HNI	2-5: Data analysis on monitoring results in 2011 at the whole province																																					Johnson, Hieda
HNI	2-6: Training on water quality data interpretation and application of basic statistical techniques for																																					Johnson, Hieda
HNI	2-7: Reviewing table of contents on monitoring report																																					Johnson, Hieda
HNI	2-8: Report preparation at the whole Province																																					Johnson, Hieda
HNI	2-9: Follow up activities (Training to District DONRE Staff)																																					Hieda
	Derek JOHNSON (Water Env. Monitoring)																																					
	Shunsuke HIEDA (Water Env. Monitoring (2))																																					

## 2.2. HPG DONRE

### (1) Summary of CD Work Plan

The CD work plan for HPG DONRE has been drafted through discussion between Analysis and monitoring division of CEM (Center for Environmental Monitoring) and JET in April and August 2011. The drafted CD work plan is shown in Table 2.2-1

**Table 2.2-1 Summary of CD Work Plan for HPG DONRE**

Target Point/ Field of CD	Details	Outcomes	Dissemination
1. Reviewing Water Monitoring Plan	<p>2011</p> <p>May-Jul: Studying the existing guidelines and procedures [1-1]</p> <p>Aug: Introduction training to CEM staff on the application of the DQO Process for development of Water Quality Monitoring Plans [1-2]</p> <p>Aug-Nov: Assembly of information relating to the design and implementation of the current Water Quality Monitoring Plan, summary of monitoring data already collected, information on costs for collection of samples and carrying out laboratory analysis of samples [1-3]</p> <p>Nov-Dec: Workshop for CEM staff to prepare a draft revised water quality monitoring plan for 2012-2017 and its budget estimation [1-4]</p> <p>Dec: Submission of comments to PPC regarding the draft 5 years monitoring plan for 2012-2017 prepared by PPC [1-5]</p> <p>Reviewing CD work plan in 2012.</p> <p>2012</p> <p>Jan-Jul: Following up the new 5 years water quality monitoring plan [1-6]</p> <p>Aug: Feedback for reviewing the new 5 years water quality monitoring plan [1-7]</p> <p>Sep-Nov: Revising water quality monitoring plan for 2013 [1-8]</p> <p>Dec: Workshop for water quality monitoring in 5 Provinces</p> <p>2013</p> <p>Jan-Jun: Following up Activities (Training to District DONRE Staff) [1-9]</p>	<p>[Outputs]</p> <ul style="list-style-type: none"> <li>- Guidance for reviewing water monitoring plan</li> <li>- Draft DQO based water quality monitoring plan at the whole Province for submission to PPC and MONRE</li> </ul> <p>[Monitoring for output]</p> <ul style="list-style-type: none"> <li>-OJT records (Training and Workshop)</li> <li>-CA results</li> </ul>	<p>[WG 2-2]</p> <ul style="list-style-type: none"> <li>-Involving laboratory section to develop the monitoring plan from the viewpoint of capacity of laboratory analysis</li> </ul> <p>[WG 2-3]</p> <ul style="list-style-type: none"> <li>-Involving EPA to develop the monitoring plan to identify polluted area</li> </ul> <p>[WG 2-4]</p> <ul style="list-style-type: none"> <li>-Provision of monitoring plan to EPA to consider effective inspection and checking activities</li> </ul>
2. Data Analysis and Report preparation	<p>2011</p> <p>May-Jul: Studying the existing guidelines and procedures [2-1]</p> <p>Aug-Sep: Assembling the past water quality monitoring results [2-2]</p> <p>Oct-Nov: Training for CEM staff on data analysis (check standard, longitudinal trend, historical trend, water quality status mapping) at the selected area [2-3]</p> <p>Dec: Reflection of results of data analysis at the selected area to annual report [2-4]</p> <p>2012</p> <p>Jan-Jul: Data analysis on monitoring results in 2011 at the whole province [2-5]</p> <p>Aug-Sep: Training for CEM staff in water quality data interpretation and application of basic statistical techniques for data evaluation [2-6]</p> <p>Oct: Reviewing table of contents on monitoring report [2-7]</p> <p>Nov-Dec: Report preparation at the whole Province [2-8]</p> <p>Dec: Workshop for water quality monitoring in 5 Provinces</p> <p>2013</p> <p>Jan-Jun: Follow up activities (Training to District DONRE Staff) [2-9]</p>	<p>[Outputs]</p> <ul style="list-style-type: none"> <li>- Guidance for data analysis and report writing for water quality monitoring</li> <li>- Revised water quality monitoring report (Annual report)</li> </ul> <p>[Monitoring for output]</p> <ul style="list-style-type: none"> <li>-OJT records (Training and Workshop)</li> <li>-CA results</li> </ul>	<p>[WG 2-2]</p> <ul style="list-style-type: none"> <li>-Opinion exchanges with laboratory section to improve accuracy of analyzed data</li> </ul> <p>[WG 2-3]</p> <ul style="list-style-type: none"> <li>-Provision of revised report to EPA to identify polluted area</li> </ul> <p>[WG 2-4]</p> <ul style="list-style-type: none"> <li>-Provision of revised report to EPA to consider effective inspection and checking activities</li> </ul> <p>[WG 4]</p> <ul style="list-style-type: none"> <li>-Provision of revised report to EPA for public awareness</li> </ul> <p>[Output 5]</p> <ul style="list-style-type: none"> <li>-Provision of revised report to CEM/VEA for information sharing and utilization</li> </ul>

### (2) Key Strategy

As of August 2011, HPG PPC is developing new 5 years monitoring plan from 2012 to 2017 and will issue its decree within 2011. The new 5 years monitoring plan is drafted by an independent consultant. The relevant organizations such as CEM, pollution control division, and water resource management division are requested from PPC to make comments on the new 5 years monitoring plan by the end of August. Therefore, HPG CEM start to review the monitoring plan as first training with support from JET based on

the training of first DQO process on 11th August and the existing guideline for designing water quality monitoring prepared by JICA in 2010. The other training items will be implemented after development of the new 5 years monitoring plan. With respect to training for data analysis and report preparation, this training will be implemented on parallel of training for reviewing water quality monitoring plan.

(3) C/P List

Working group of HPG DONRE for monitoring consists of 9 members from Analysis and monitoring division of CEM, Consultant and Training division of CEM, and JET as shown in Table 2.2-2.

**Table 2.2-2 Working Group Member of HPG DONRE for Monitoring**

Name	Organization	Position
1) Ms. Nguyen Thi Tuyet Lan*	CEM	Director
2) Mr. Dao Duc Thien	CEM	Vice Director
3) Mr. Khong Minh Tien	Analysis and monitoring division of CEM	Vice Head
4) Mr. Dam Van Quynh	Consultant and Training division of CEM	Vice Head
5) Mr. Dao Van Vuong	CEM (confirm to division)	Officer
6) Ms. Nguyen Thu Huyen	CEM (confirm to division)	Officer
7) Mr. Le Tien Thanh	CEM (confirm to division)	Officer
8) Ms. Nguyen Thi Nhu Quynh	CEM (confirm to division)	Officer
9) Ms. Tran Thi Minh Huyen	CEM (confirm to division)	Officer

Note; \*: Head of Working Group Member

Source: JET and Hai Phong CEM

(4) Plan of Operation

Plan of operation for HPG DONRE for monitoring are prepared by the Analysis and monitoring division of CEM and JET as shown in Table 2.2-3.





## 2.3. TT-HUE DONRE

### (1) Summary of CD Work Plan

The CD work plan for TT-HUE DONRE has been drafted through discussion between Environmental Monitoring Section of Environmental Protection Agency (EPA) and JET in April and August 2011. The drafted CD work plan is shown in Table 2.3-1.

**Table 2.3-1 Summary of CD Work Plan for TT-HUE DONRE**

Target Point/ Field of CD	Details	Outcomes	Dissemination
1. Reviewing Water Monitoring Plan	<p><b>2011</b></p> <p>May-Jul: Studying the existing guidelines and procedures [1-1]</p> <p>Aug: Introduction training to EPA staff on the application of the DQO Process for development of Water Quality Monitoring Plans [1-2]</p> <p>Aug-Nov: Assembly of information relating to the design and implementation of the current Water Quality Monitoring Plan, summary of monitoring data already collected, information on costs for collection of samples and carrying out laboratory analysis of samples [1-3]</p> <p>Nov-Dec: Workshop for EPA staff to prepare a draft revised water quality monitoring plan for 2012-2016 and its budget estimate [1-4]</p> <p>Dec: Submission of the draft revised 5 years monitoring plan to PPC [1-5]</p> <p>Reviewing CD work plan in 2012</p> <p><b>2012</b></p> <p>Jan-Jul: Following up the new 5 years water quality monitoring plan [1-6]</p> <p>Aug: Feedback for reviewing the new 5 years water quality monitoring plan [1-7]</p> <p>Sep-Nov: Revising water quality monitoring plan for 2013 [1-8]</p> <p>Dec: Workshop for water quality monitoring in 5 Provinces</p> <p><b>2013</b></p> <p>Jan-Jun: Following up Activities (Training to District DONRE Staff) [1-9]</p>	<p>[Outputs]</p> <ul style="list-style-type: none"> <li>- Guidance for reviewing water monitoring plan</li> <li>- Draft DQO based water quality monitoring plan at the whole Province for submission to PPC and MONRE</li> </ul> <p>[Monitoring for output]</p> <ul style="list-style-type: none"> <li>-OJT records (Training and Workshop)</li> <li>-CA results</li> </ul>	<p>[WG 2-2]</p> <ul style="list-style-type: none"> <li>-Involving to develop the monitoring plan from the viewpoint of capacity of laboratory analysis</li> </ul> <p>[WG 2-3]</p> <ul style="list-style-type: none"> <li>-Provision of monitoring plan to pollution control division to identify polluted area</li> </ul> <p>[WG 2-4]</p> <ul style="list-style-type: none"> <li>-Provision of monitoring plan to inspection division to consider effective inspection and checking activities</li> </ul>
2. Data Analysis and Report preparation	<p><b>2011</b></p> <p>May-Jul: Studying the existing guidelines and procedures [2-1]</p> <p>Aug-Sep: Assembling the past water quality monitoring results [2-2]</p> <p>Oct-Nov: Training for EPA staff on data analysis (check standard, longitudinal trend, historical trend, water quality status mapping) at the selected area [2-3]</p> <p>Dec: Reflection of results of data analysis at the selected area to annual report [2-4]</p> <p><b>2012</b></p> <p>Jan-Jul: Data analysis on monitoring results in 2011 at the whole province [2-5]</p> <p>Aug-Sep: Training for EPA staff in water quality data interpretation and application of basic statistical techniques for data evaluation [2-6]</p> <p>Oct: Reviewing table of contents on monitoring report [2-7]</p> <p>Nov-Dec: Report preparation at the whole Province [2-8]</p> <p>Dec: Workshop for water quality monitoring in 5 Provinces</p> <p><b>2013</b></p> <p>Jan-Jun: Follow up activities (Training to District DONRE Staff) [2-9]</p>	<p>[Outputs]</p> <ul style="list-style-type: none"> <li>- Guidance for data analysis and report writing for water quality monitoring</li> <li>- Revised water quality monitoring report (Annual report)</li> </ul> <p>[Monitoring for output]</p> <ul style="list-style-type: none"> <li>-OJT records (Training and Workshop)</li> <li>-CA results</li> </ul>	<p>[WG 2-2]</p> <ul style="list-style-type: none"> <li>-Opinion exchanges to improve accuracy of analyzed data</li> </ul> <p>[WG 2-3]</p> <ul style="list-style-type: none"> <li>-Provision of revised report to pollution control division to identify polluted area</li> </ul> <p>[WG 2-4]</p> <ul style="list-style-type: none"> <li>-Provision of revised report to inspection division to consider effective inspection and checking activities</li> </ul> <p>[WG 4]</p> <ul style="list-style-type: none"> <li>-Provision of revised report to EIA division for public awareness</li> </ul> <p>[Output 5]</p> <ul style="list-style-type: none"> <li>-Provision of revised report to CEM/VEA for information sharing and utilization</li> </ul>
3. Establishment of Data Management System	<p><b>2011</b></p> <p>Sep: Establishment of provisional data management system for monitoring through internal discussion within monitoring section [3-1]</p> <p>Oct-Dec: Trial operation of provisional data management system for monitoring [3-2]</p> <p>Dec: Feedback of results of trial operation and establishment of data management system [3-3]</p> <p><b>2012</b></p> <p>Jan-Feb: Preparation of draft manual for data management</p>	<p>[Outputs]</p> <ul style="list-style-type: none"> <li>- Manual for Data Management System in the monitoring division of TT-HUE DONRE</li> </ul> <p>[Monitoring for output]</p> <ul style="list-style-type: none"> <li>-OJT records (Training</li> </ul>	<p>[WG 2-2]</p> <ul style="list-style-type: none"> <li>-Opinion exchanges how to deliver monitoring data between monitoring section and analysis section smoothly</li> </ul>

	Jan-Dec: system for monitoring [3-4] Operation of data management system for monitoring [3-5] Dec: Updating manual for data management system for monitoring [3-6] <b>2013</b> Jan-Jun: Follow up activities (Implementation by DONRE themselves) [3-7]	and Discussion Meeting) -CA results	
--	---	--	--

### (2) Key Strategy

TT-HUE has approved the monitoring plan every year based on proposal and budget request for the plan from DONRE. The original monitoring plan was prepared by an independent consultant. Then EPA doesn't know the objective of monitoring plan well. Therefore EPA will hold on the workshop for reviewing current water monitoring plan in November or December 2011 with support from JET.

With respect to training for data analysis and report preparation, establishment of data management system, these trainings will be implemented on parallel of training for reviewing water quality monitoring plan.

### (3) C/P List

Working group of TT-HUE DONRE for monitoring consists of 6 members from Environmental Monitoring Section and Pollution Control Division of EPA, HUE PPC, and JET as shown in Table 2.3-2.

**Table 2.3-2 Working Group Member of TT-HUE DONRE for Monitoring**

Name	Organization	Position
1) Mr. Nguyen Hoang Phuoc*	EPA	Deputy Chief
2) Mr. Tran Van Vinh	Environmental Monitoring Section of EPA	Expert
3) Mr. Nguyen Thanh Phuoc	Environmental Monitoring Section of EPA	Technical Staff
4) To be Named	Environmental Monitoring Section of EPA	Technical Staff
5) To be Named	Pollution Control Division of EPA	To be described
6) To be Named	HUE PPC	To be described

Note; \*: Head of Working Group Member

Source: JET and T-T HUE EPA

### (4) Plan of Operation

Plan of operation for TT-HUE DONRE for monitoring are prepared by the Analysis and Environmental Monitoring Section of EPA and JET as shown in Table 2.3-3.



## 2.4. HCMC DONRE

### (1) Summary of CD Work Plan

The CD work plan for HCMC DONRE has been drafted through discussion between Division of Environmental Quality Monitoring and Assessment of Ho Chi Minh City Environmental Protection Agency (HEPA) and JET in April and August 2011. The drafted CD work plan is shown in Table 2.4-1

**Table 2.4-1 Summary of CD Work Plan for HCMC DONRE**

Target Point/ Field of CD	Details	Outcomes	Dissemination			
1. Reviewing Water Monitoring Plan	<b>2011</b>					
	May-Jul:	Studying the existing guidelines and procedures [1-1]	<p>[Outputs]</p> <ul style="list-style-type: none"> <li>- Guidance for reviewing water monitoring plan</li> <li>- Draft DQO based water quality monitoring plan at the whole Province for submission to PPC and MONRE</li> </ul> <p>[Monitoring for output]</p> <ul style="list-style-type: none"> <li>-OJT records (Training and Workshop)</li> <li>-CA results</li> </ul>	<p>[WG 2-2]</p> <ul style="list-style-type: none"> <li>-Involving to develop the monitoring plan from the viewpoint of capacity of laboratory analysis</li> </ul> <p>[WG 2-3]</p> <ul style="list-style-type: none"> <li>-Provision of monitoring plan to environmental management division to identify polluted area</li> </ul> <p>[WG 2-4]</p> <ul style="list-style-type: none"> <li>-Provision of monitoring plan to inspection division and checking section to consider effective inspection and checking activities</li> </ul>		
	Aug:	Introduction training to HEPA staff on the application of the DQO Process for development of Water Quality Monitoring Plans [1-2]				
	Aug-Nov:	Assembly of information relating to the design and implementation of the current Water Quality Monitoring Plan, summary of monitoring data already collected, information on costs for collection of samples and carrying out laboratory analysis of samples [1-3]				
	Nov-Dec:	Workshop for HEPA staff to prepare a draft revised water quality monitoring plan for 2012-2017 and its budget estimation [1-4]				
	Dec:	Submission of comments to PPC regarding the draft 5 years monitoring plan for 2012-2017 prepared by PPC [1-5]				
		Reviewing CD work plan in 2012.				
	<b>2012</b>					
	Jan-Jul	Following up the new 5 years water quality monitoring plan [1-6]				
	Aug	Feedback for reviewing the new 5 years water quality monitoring plan [1-7]				
	Sep-Nov:	Revising water quality monitoring plan for 2013 [1-8]				
	Dec:	Workshop for water quality monitoring in 5 Provinces				
	<b>2013</b>					
Jan-Jun:	Following up Activities (Training to District DONRE Staff) [1-9]					
2. Data Analysis and Report preparation	<b>2011</b>					
	May-Jul:	Studying the existing guidelines and procedures [2-1]	<p>[Outputs]</p> <ul style="list-style-type: none"> <li>- Guidance for data analysis and report writing for water quality monitoring</li> <li>- Revised water quality monitoring report (Annual report)</li> </ul> <p>[Monitoring for output]</p> <ul style="list-style-type: none"> <li>-OJT records (Training and Workshop)</li> <li>-CA results</li> </ul>	<p>[WG 2-2]</p> <ul style="list-style-type: none"> <li>-Opinion exchanges to improve accuracy of analyzed data</li> </ul> <p>[WG 2-3]</p> <ul style="list-style-type: none"> <li>-Provision of revised report to environmental management division to identify polluted area</li> </ul> <p>[WG 2-4]</p> <ul style="list-style-type: none"> <li>-Provision of revised report to inspection division and checking section to consider effective inspection and checking activities</li> </ul> <p>[WG 4]</p> <ul style="list-style-type: none"> <li>-Provision of revised report to information and training division for public awareness</li> </ul> <p>[Output 5]</p> <ul style="list-style-type: none"> <li>-Provision of revised report to CEM/VEA for information sharing and utilization</li> </ul>		
	Aug-Sep	Assembling the past water quality monitoring results [2-2]				
	Oct-Nov:	Training for HEPA staff on data analysis (check standard, longitudinal trend, historical trend, water quality status mapping) at the selected area [2-3]				
	Dec:	Reflection of results of data analysis at the selected area to annual report [2-4]				
	<b>2012</b>					
	Jan-Jul:	Data analysis on monitoring results in 2011 at the whole province [2-5]				
	Aug-Sep:	Training for HEPA staff in water quality data interpretation and application of basic statistical techniques for data evaluation [2-6]				
	Oct:	Reviewing table of contents on monitoring report [2-7]				
	Nov-Dec:	Report preparation at the whole Province [2-8]				
	Dec:	Workshop for water quality monitoring in 5 Provinces				
	<b>2013</b>					
	Jan-Jun:	Follow up activities (Training to District DONRE Staff) [2-9]				

## (2) Key Strategy

As of August 2011, HCMC PPC has just started to develop the new 5 years monitoring plan from 2012 to 2017 and will issue its decree within 2011. The new 5 years monitoring plan will be drafted by an independent consultant and will be available in November or December 2011. HCMC DONRE and the division of environmental quality monitoring and assessment of HEPA will be requested from PPC to make comments on the new 5 years monitoring plan by the end of 2011. Therefore HEPA will hold on the workshop for reviewing current water monitoring plan in November or December 2011 with support from JET and invite the independent consultant hired by PPC to the workshop to explain concept of the new 5 years monitoring plan for deeply understating the new plan. With respect to training for data analysis and report preparation, this training will be implemented on parallel of training for reviewing water quality monitoring plan.

## (3) C/P List

Working group of HCMC DONRE for monitoring consists of 8 members from Division of Environmental Quality Monitoring and Assessment of HEPA (HCMC Environment Protection Agency) as shown in Table 2.4-2.

**Table 2.4-2 Working Group Member of HCMC DONRE for Monitoring**

Name	Organization	Position
1) Mr. Huynh Thanh Nha *	HEPA	Vice Director
2) Mr. Nguyen Thanh Huy	Division of Environmental. Quality Monitoring and Assessment of HEPA	Head
3) Ms. Dang Thi Tuyet Loan	Division of Environmental. Quality Monitoring and Assessment of HEPA	Vice Head
4) Ms. Tran Minh Ngoc	Division of Environmental. Quality Monitoring and Assessment of HEPA	Vice Head
5) Mr. Nguyen Vo Qui Chau	Division of Environmental. Quality Monitoring and Assessment of HEPA	Specialist
6) Mr. Nguyen Ngoc Hoang Trung	Division of Environmental. Quality Monitoring and Assessment of HEPA	Specialist
7) Ms. Truong Hong Ha	Division of Environmental. Quality Monitoring and Assessment of HEPA	Specialist
8) Ms. Do Thi Thu Hang	Division of Environmental. Quality Monitoring and Assessment of HEPA	Specialist

Note; \*: Head of Working Group Member

Source: JET and HCMC HEPA

## (4) Plan of Operation

Plan of operation for HCMC DONRE for monitoring are prepared by the division of environmental quality monitoring and assessment of HEPA and JET as shown in Table 2.4-3.

**Table 2.4-3 Plan of Operation for Monitoring of HCMC DONRE**

Joint Implementation of JET and Vietnamese C/P

Continuous implementation by Vietnamese side

Output 2-1: Monitoring		JFY 2010/2011												JFY 2012												JFY 2013						JICA Expert in Charge
		VFY 2011												VFY 2012												VFY 2013						
DONRE	activity	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6			
HCMC	Common																															
HCMC	0-1 Preparation of CD Work Plan																													Johnson, Hieda		
HCMC	0-2 Reviewing CD work plan in 2012																													Johnson, Hieda		
HCMC	0-3 Workshop for Water Quality Monitoring of the target 5 Provinces																													Johnson, Hieda		
HCMC	Activity 1: Running Water Quality Monitoring Program																															
HCMC	1-1: Studying the existing guidelines and procedures																													Hieda		
HCMC	1-2: Introduction training on the application of the DQO Process for development of Water Quality Monitoring Plans																													Johnson		
HCMC	1-3: Assembly of information relating to the design and implementation of the current Water Quality Monitoring Plan, summary of monitoring data already collected, information on costs for collection of samples and carrying out laboratory analysis of samples																													Hieda		
HCMC	1-4: Workshop on preparation a draft revised 5 years water quality monitoring plan and its budget estimation																													Johnson		
HCMC	1-5: Submission of comments to PPC regarding the draft 5 years monitoring plan prepared by PPC (or Submission of the revised 5 years monitoring plan to																													Johnson, Hieda		
HCMC	1-6: Following up the new 5 years water quality monitoring plan																													Johnson, Hieda		
HCMC	1-7: Feedback for reviewing the new 5 years water quality monitoring plan																													Johnson		
HCMC	1-8: Revising water quality monitoring plan for 2013																													Johnson, Hieda		
HCMC	1-9 :Following up Activities (Training to District DONRE Staff)																													Hieda		
HCMC	Activity 2: Data Analysis and Report Preparation																															
HCMC	2-1: Studying the existing guidelines and procedures																													Hieda		
HCMC	2-2: Assembling the past water quality monitoring results																													Hieda		
HCMC	2-3: Training on data analysis (check standard, vertical trend, historical trend, water quality status mapping) at the selected area																													Hieda		
HCMC	2-4: Reflection of results of data analysis at the selected area to annual report																													Hieda		
HCMC	2-5: Data analysis on monitoring results in 2011 at the whole province																													Johnson, Hieda		
HCMC	2-6: Training on water quality data interpretation and application of basic statistical techniques for data																													Johnson, Hieda		
HCMC	2-7: Reviewing table of contents on monitoring report																													Johnson, Hieda		
HCMC	2-8: Report preparation at the whole Province																													Johnson, Hieda		
HCMC	2-9: Follow up activities (Training to District DONRE Staff)																													Hieda		
	Derek JOHNSON (Water Env. Monitoring (1))																															
	Shunsuke HIEDA (Water Env. Monitoring (2))																															

## 2.5. BRVT DONRE

### (1) Summary of CD Work Plan

The CD work plan for BRVT DONRE has been drafted through discussion between Environmental Monitoring Division of Center for Environmental Monitoring and Analysis (CEMA) and JET in April and August 2011. The drafted CD work plan is shown in Table 2.5-1

**Table 2.5-1 Summary of CD Plan for BRVT DONRE**

Target Point/ Field of CD	Details	Outcomes	Dissemination
1. Reviewing Water Monitoring Plan	<p><b>2011</b></p> <p>May-Jul: Studying the existing guidelines and procedures [1-1]</p> <p>Aug: Introduction training to CEMA staff on the application of the DQO Process for development of Water Quality Monitoring Plans [1-2]</p> <p>Aug-Nov: Assembly of information relating to the design and implementation of the current Water Quality Monitoring Plan, summary of monitoring data already collected, information on costs for collection of samples and carrying out laboratory analysis of samples [1-3]</p> <p>Nov-Dec: Workshop for CEMA staff to prepare a draft revised water quality monitoring plan for 2011-2015 and its budget estimate [1-4]</p> <p>Dec: Submission of the draft revised 5 years monitoring plan to PPC [1-5]</p> <p>Reviewing CD work plan in 2012</p> <p><b>2012</b></p> <p>Jan-Jul: Following up the new 5 years water quality monitoring plan [1-6]</p> <p>Aug: Feedback for reviewing the new 5 years water quality monitoring plan [1-7]</p> <p>Sep-Nov: Revising water quality monitoring plan for 2013 [1-8]</p> <p>Dec: Workshop for water quality monitoring in 5 Provinces</p> <p><b>2013</b></p> <p>Jan-Jun: Following up Activities (Training to District DONRE Staff) [1-9]</p>	<p>[Outputs]</p> <ul style="list-style-type: none"> <li>- Guidance for reviewing water monitoring plan</li> <li>- Draft DQO based water quality monitoring plan at the whole Province for submission to PPC and MONRE</li> </ul> <p>[Monitoring for output]</p> <ul style="list-style-type: none"> <li>-OJT records (Training and Workshop)</li> <li>-CA results</li> </ul>	<p>[WG 2-2]</p> <ul style="list-style-type: none"> <li>-Involving analysis section to develop the monitoring plan from the viewpoint of capacity of laboratory analysis</li> <li>[WG 2-3]</li> <li>-Involving EPA to develop the monitoring plan to identify polluted area</li> <li>[WG 2-4]</li> <li>-Provision of monitoring plan to EPA to consider effective inspection and checking activities</li> </ul>
2. Data Analysis and Report preparation	<p><b>2011</b></p> <p>May-Jul: Studying the existing guidelines and procedures [2-1]</p> <p>Aug-Sep: Assembling the past water quality monitoring results [2-2]</p> <p>Oct-Nov: Training for CEMA staff on data analysis (check standard, longitudinal trend, historical trend, water quality status mapping) at the selected area [2-3]</p> <p>Dec: Reflection of results of data analysis at the selected area to annual report [2-4]</p> <p><b>2012</b></p> <p>Jan-Jul: Data analysis on monitoring results in 2011 at the whole province [2-5]</p> <p>Aug-Sep: Training for CEMA staff in water quality data interpretation and application of basic statistical techniques for data evaluation [2-6]</p> <p>Oct: Reviewing table of contents on monitoring report [2-7]</p> <p>Nov-Dec: Report preparation at the whole Province [2-8]</p> <p>Dec: Workshop for water quality monitoring in 5 Provinces</p> <p><b>2013</b></p> <p>Jan-Jun: Follow up activities (Training to District DONRE Staff) [2-9]</p>	<p>[Outputs]</p> <ul style="list-style-type: none"> <li>- Guidance for data analysis and report writing for water quality monitoring</li> <li>- Revised water quality monitoring report (Annual report)</li> </ul> <p>[Monitoring for output]</p> <ul style="list-style-type: none"> <li>-OJT records (Training and Workshop)</li> <li>-CA results</li> </ul>	<p>[WG 2-2]</p> <ul style="list-style-type: none"> <li>-Opinion exchanges with analysis section to improve accuracy of analyzed data</li> <li>[WG 2-3]</li> <li>-Provision of revised report to EPA to identify polluted area</li> <li>[WG 2-4]</li> <li>-Provision of revised report to EPA to consider effective inspection and checking activities</li> <li>[WG 4]</li> <li>-Provision of revised report to EPA for public awareness</li> <li>[Output 5]</li> <li>-Provision of revised report to CEM/VEA for information sharing and utilization</li> </ul>

### (2) Key Strategy

BRVT PPC already approved two 5 years monitoring plans for 2011-2015 and 2016-2020 which was prepared by an independent consultant. Then CEMA doesn't know the objective of monitoring plan well. However CEMA has a chance to propose revising water quality monitoring plan and request additional budget for monitoring to PPC as necessity. Therefore CEMA will hold on the workshop for reviewing current water monitoring plan in November or December 2011 with support from JET and invite

the independent consultant hired by PPC to the workshop to explain concept of the existing 5 years monitoring plan for deeply understating the plan. With respect to training for data analysis and report preparation, this training will be implemented on parallel of training for reviewing water quality monitoring plan.

(3) C/P List

Working group of BRVT DONRE for monitoring consists of 6 members from Environmental Monitoring Division of CEMA and JET as shown in Table 2.5-2.

**Table 2.5-2 Working Group Member of BRVT DONRE for Monitoring**

Name	Organization	Position
1) Mr. Le Tuan Kiet *	CEMA	Vice Director
2) Ms. Nguyen Thi Hang	Environmental Monitoring Division of CEMA	Deputy Manager
3) Mr. Nguyen Xuan Son	Environmental Monitoring Division of CEMA	Deputy Manager
4) Ms. Mai Thi Hanh Dung	Environmental Monitoring Division of CEMA	Staff
5) Mr. Trinh Dinh Loi	Environmental Monitoring Division of CEMA	Staff
6) Mr. Le Van Cuong	Environmental Monitoring Division of CEMA	Staff

Note; \*: Head of Working Group Member

Source: JET and BRVT CEMA

(4) Plan of Operation

Plan of operation for BRVT DONRE for monitoring are prepared by the division of environmental monitoring division of CEMA and JET as shown in Table 2.5-3.





### **3. OTHERS**

#### **3.1 Provincial Specific Problems to be solved**

##### **(1) HNI DONRE**

The CENMA incorporated 18 staffs from Ha Tay province in accordance with expansion of Hanoi City area in 2008. Most of the dairy activities such as sampling, laboratory analysis, and data management have been already incorporated. However, works for development of monitoring plan, data analysis, and report preparation are under incorporating. For example, contents of annual monitoring report are still divided into two individual sections; urban area (former Hanoi City) and sub-urban area (former Ha Tay province). In order to tackle the above issue, CENMA will integrate works for development of monitoring plan, data analysis, and report preparation through the Project activities with support from JET.

##### **(2) HPG DONRE**

In case of development of 5 years monitoring plan, CEM had only opportunity to make comment to the draft plan which was prepared by an independent consultant hired by PPC. Therefore CEM doesn't know the objective of monitoring plan well. In addition, the 5 years monitoring plan is not be reflected from experience of current monitoring activities by CEM as much as possible. To cope with this issue, CEM and JET will invite the independent consultant to the workshop for preparation of a draft revised water quality monitoring plan for 2012-2016 in November 2011. CEM tries to coordinate PPC to invite the independent consultant to the workshop.

##### **(3) TT-HUE DONRE**

The environmental monitoring section of TT-HUE DONRE has not established a database management system such as preparation of format of monitoring result to be stored, setting rules for data inputting, data checking, data sharing, and data-back-up. Regarding to this issue, an environmental monitoring section and JET will establish provisional data management system through discussion meeting in September 2011. The environmental monitoring section will operate this system by the end of 2011 and revise it in early 2012.

##### **(4) HCMC DONRE**

In case of development of 5 years monitoring plan, HCMC DONRE and HEPA had only opportunity to make comment to the draft plan which was prepared by an independent consultant hired by PPC. Therefore HCMC DONRE and HEPA don't know the objective of monitoring plan well. In addition, the 5 years monitoring plan in not be reflected from experience of current monitoring activities by HCMC DONRE and HEPA as much as possible. To tackle this issue, HCMC DONRE, HEPA, and JET will invite the independent consultant to the workshop for preparation of a draft revised water quality monitoring plan for 2012-2016 in November or December 2011. HCMC DONRE tries to coordinate PPC to invite the independent consultant to the workshop.

##### **(5) BRVT DONRE**

The environmental monitoring division of CEMA has implemented water quality monitoring every two months, but the monitoring division receives its monitoring results after one month from delivery to laboratory section. This implies that the monitoring division cannot take action anything until receiving analytical results even if heavy polluted situation is occurred. To cope with this issue, the monitoring division and the environmental analysis division of CEMA and JET will start to consider solutions through the project activities such as installation on site monitoring and announcement of quick estimation from laboratory to the other relevant section.

#### **3.2 Other Concerns/ Activities**

##### **(1) Circular on application of Water Quality Index (WQI)**

MONRE has just issued a Circular (number is to be confirmed) on application of water quality index (WQI) to evaluate current water quality status. The target DONREs have just started to check the circular how to reflect to their monitoring activities. JET also has reviewed the circular and considered adding to the project activities as necessary.

##### **(2) Relation with Output 2-2**

As for relation with Output 2-2 (Water Quality Analysis), closely implementation of the Project activities each other is required. For example, monitoring section conducts sampling in the field and delivers it to laboratory section, and then laboratory section reports the results of analysis to monitoring section. In order to improve accuracy of monitoring results, it is necessary to work together between monitoring and analysis sections. Therefore, JET will implement training and OJT not only WG2-1 and WG2-2 regarding sampling and data interpretation, and data management system.

(3) Relation with Output 2-3, 2-4, and 4

As for relation with Output 2-3 (Inventory), Output 2-4 (Inspection), and Output 4 (Environmental Awareness), information sharing and dissemination on monitoring plan and its report are required in case of grasping current status of water quality and characteristic of water pollution. However these WG members are different division from the division under WG 2-1. This implies that it is not so much chance to share information and exchange opinions each Output. Thus, JET requested WG 2-1 members to disseminate outputs of the WG2 activities as basic information for their activities such as consideration of pollution control measures, identifying polluted area, and environmental awareness.

(4) Relation with Output 5

As for current relation with Output 5 (Information management and utilization), most of DONREs have already sent their annual report to CEM/VEA and CEM utilizes it for preparation of National Statement of Environment. With regard to sharing monitoring data, CEM prepared uniformed monitoring form for sharing data easily among CEM and DONREs. However, it doesn't work well at this moment because CEM has just provided the monitoring form to information section/division of DONRE not to the centers for monitoring and monitoring section of DONRE. Therefore most of the centers for monitoring and monitoring section of DONRE don't know existence of the monitoring form.

In this line, JET will discuss with CEM how to disseminate this monitoring form and request DONRE to utilize by DONRE. Then CEM and JET will inform the current situation of information management and utilization regarding monitoring to CEID (Center of Environmental Information and Data)/VEA.

## Work Plan of Output 2-2 (Water Quality Analysis)

### 1. General

#### 1.1 Objectives of the Work Plan (WP)

Objectives of the Work Plan (WP) are as follows:

- To clarify actual capacity development activities and scheduling,
- To identify indicators and targets of the activities for evaluation,
- To conduct activities in accordance with WP, and
- To reflect results and lessons to WP for the next working period.

#### 1.2 Review of the Current Situation of Water Quality Analysis

The current situation of water quality analysis of each DONRE is summarized in the Table below based on the Action Plan and discussion results with the Counterparts (C/Ps).

**Table1.2-1 Review Results of Water Quality Analysis**

Item	HNI	HPG	TT-HUE	HCMC	BRVT
1) Polity and planning on water quality analysis and laboratory	-CENMA in DONRE -high priority on lab analysis	-CEM in DONRE -high priority on lab analysis	-EPA in DONRE -Lab be set up in 2011	-No intention on water quality analysis by DONRE -No lab and outsourcing policy -HEPA in DONRE conducts water quality monitoring and outsources water quality analysis to an external lab	-CEMAB in DONRE -high priority on lab analysis
2) Lab management	a)staff -to be confirmed b)annual budget -to be confirmed c)accreditation -VILAS -ISO17025	a)staff -to be confirmed b)annual budget -to be confirmed c)accreditation -VILAS -ISO17025	a)staff -staff: 4persons (newcomer: 3 person) b)annual budget -to be confirmed c)accreditation -plan to get VILAS accreditation in 2012	No lab	a)staff -to be confirmed person b)annual budget -to be confirmed c)accreditation -VILAS -ISO17025 in 20 parameters.
3) Lab facility	a)substances analyzed -basic parameter (pH, EC, COD, BOD, Nutrients) -heavy metals -pesticides -biological b)facility & equip -GC/MS, AAS,HPLC	a)substances analyzed -basic parameter (pH, EC, COD, BOD, Nutrients) -heavy metals -pesticides -biological b)facility & equip - AAS	a) Lab is under construction. b)The Project will supply some equipment	No lab	a)substances analyzed -basic parameter (pH, EC, COD, BOD, Nutrients) -heavy metals(not accurate in low concentration) -biological b)facility & equip -GC, AAS
4) Lab operation	a)sample nos. analyzed -to be confirmed	a)sample nos. analyzed -to be confirmed	Lab has not been in operation	No lab	a)sample nos. analyzed -to be confirmed
5) Constraints	- knowledge of POPs - skill of POPs analysis -QA/QC of POPs analysis	-knowledge of Circular 10 - knowledge of TCVN's analysis method	-skilled staff - equipment for basic water quality analysis - knowledge of lab management and QA/QC	- QC for outsourced lab	-AAS needs an additional device to measure low concentration -No staff in lab has experience of using GC
6) Training needs	a)Lecture training of POPs -deciding the target material in the series of POPs -analysis method b)OJT for POPs analysis c)Lecture training of internal QA/QC	a)Lecture and OJT of sampling skill based on Circular 10 b)OJT for basic water quality analysis c)Lecture training of QA/QC	a)Lecture and OJT of sampling skill based on Circular 10 b)OJT for basic water quality analysis c)Lecture training of Lab management and QA/QC	a)Lecture training of QC of the data from outsourced lab, -relationship between parameters -analysis method applied in the external lab -reporting limit	a)checking the condition of AAS and GC by machinery technician b)OJT for pesticide analysis using GC c)OJT for heavy metal analysis using AAS

### 1.3 Approach

(1) Capacity Development (CD) Needs based on the Action Plan prepared by DONRE

The actual CD needs of each DONRE are summarized in the Table below based on the Action Plan prepared by DONRE.

**Table1.3-1 Draft CD Needs of each DONRE**

Item	HNI	HPG	TT-HUE	HCMC	BRVT
(1) key points to be improved	Improvement of POPs analysis	Improvement of basic water quality analysis	DONRE doesn't have know-how for operating the lab, sampling and analyzing basic parameters.	Lack of QA/QC controlling for the result from outsourced lab	Improvement of advanced water quality analysis, such as AAS and GC
(2) Approach of CD activity	Lecture, training, and OJT	Lecture, training, and OJT	Lecture, training, and OJT	Lecture and training (where and how?)	Lecture, training, and OJT
(3) Figures/ status of before the Project	Lab hasn't established the method to analyze POPs.	Lab conducts water quality analysis based on their SOP. But, they want to confirm their analysis method.	DONRE does not conduct water quality analysis, and the lab is under construction	Quality of the result from other lab is checked by the simple method (ex. comparing to the last data etc.)	Lab conducts water quality analysis based on their SOP. However, they face difficulty in AAS and GC analysis.
(4) Figures/ status of after Pjt	Ensure reliability of monitoring results on POPs analysis.	Achieve capability of water quality analysis and lab management to make trustable results	Establish the system of water sampling and analysis with ensuring reliability of data.	Achieve capability of checking the water quality analysis result of the external laboratory.	Achieve capability of water quality analysis of using AAS and GC to make trustable analysis results
(5) Expected outcomes	a) Improved water quality analysis result b) Revised SOPs for POPs analysis	a) Improved water quality analysis result b) Revised SOPs for Basic water quality analysis	a) Water quality analysis result b) SOPs for water quality analysis c) Records for laboratory management	Water quality monitoring report	a) Improved water quality analysis result b) Revised SOPs for water quality analysis
(6) Goal	Several staff measure POPs with QC	Lab staff measure basic parameter with QC	Lab staff measure basic parameter based on standard method	DONRE outsources water quality analysis with QC	Lab staff use GC and AAS with QC as regular activity
(7) Conceivable indicator and target	a) Linearity of each analytical parameter meet the provided criterion, in principle $R^2 > 0.99$ . b) Limit of quantization of each analytical parameter calculated from the MDL test is less than 1/10 of the limit value shown in Table 1, A1 grade in QCVN 08: 2008/BTMNT. c) Difference of duplicate analysis is less than 20%.	a) Linearity of each analytical parameter meet the provided criterion, in principle $R^2 > 0.99$ . b) Limit of quantization of each analytical parameter calculated from the MDL test is less than 1/10 of the limit value shown in Table 1, A1 grade in QCVN 08: 2008/BTMNT. c) Difference of duplicate analysis is less than 20%..	a) Linearity of each analytical parameter meet the provided criterion, in principle $R^2 > 0.98$ . b) Limit of quantization of each analytical parameter calculated from the MDL test is less than the limit value shown in Table 1, A1 grade in QCVN 08: 2008/BTMNT. c) Difference of duplicate analysis is less than 20%.	DONRE prepare the standard method for controlling the quality of data from outsourced lab.	a) Linearity of each analytical parameter meet the provided criterion, in principle $R^2 > 0.99$ ( $R^2 > 0.98$ in GC). b) Limit of quantization of each analytical parameter calculated from the MDL test is less than 1/10 of the limit value shown in Table 1, A1 grade in QCVN 08: 2008/BTMNT. c) Difference of duplicate analysis is less than 20% in AAS, and $\leq 30\%$ in GC.

## 2. CD Work Plan in each DONRE

### 2.1 HNI DONRE

The CD Work Plan for HNI DONRE is drafted in the Table below.

**Table2.1-1 Summaries of CD Work Plan for HNI DONRE**

Target Point/ Field of CD	Implementation Schedule	Outcomes	Dissemination	Note
1. Training for POPs analysis 1) Training of POPs analysis method	2011 -May: Review and planning of POPs analysis. -Sep: OJT for fundamental experiments to establish analytical methods. In this stage, staff makes analysis by tentative analysis method. Capacity of QC is increased to achieve the target shown in Table1.3-1.	1) Improved water quality analysis result 2) SOPs for POPs	SOPs and training contents will be used in lab	-

Target Point/ Field of CD	Implementation Schedule	Outcomes	Dissemination	Note
2) Training to identify unknown peak	2012: -Jan-Mar: OJT to finalize analytical methods and writing SOPs -May-Dec: Review of action plan, and OJT to identify unknown peaks and to analyze the real samples of water	analysis		

**Table2.1-2 Plan of Operation for HNI DONRE**

Joint Implementation of JET and Vietnamese C/P
  Continuous Implementation by Vietnamese side

Output 2-2: Water Quality Analysis		JFY 2010/2011												JFY 2012												JICA Expert in Charge		
		VFY 2011						VFY 2012						VFY 2013														
DONRE	activity	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3		
HNI	JET visit DONRE to discuss about the activity for this output.																											Shirane Yamamoto
HNI	CENMA prepares for the training of POPs analysis																											Shirane
HNI	JET carries out the training of POPs analysis/ Building tentative method																											Shirane
HNI	JET carries out the training of POPs analysis/ Setting up GC/MS condition and drawing Calibration Curve																											Shirane
HNI	JET carries out the training of POPs analysis/ Checking each procedure																											Shirane
HNI	JET carries out the training of POPs analysis/ QA/QC such as Blank check, Recovery test, MDL test																											Shirane
HNI	JET carries out the training of POPs analysis/ Finalizing analytical method, preparing SOP																											Shirane
HNI	JET carries out the training of detecting unknown material in water sample																											Shirane
HNI	JET evaluate the capacity of water quality analysis in DONRE.																											Shirane
	Shirane																											
	Yamamoto																											
	Takeda																											

**Table2.1-3 Working Group Member of Operation in HNI DONRE**

Name	Position	Organization
Dr. Nguyen Kim Thanh	Vice-Director	CENMA
Ms. Nguyen Phuong Lien	Officer in International and information Division	CENMA
Ms. Nguyen Hong Ngoc	Vice-head of Monitoring and Analysis of natural resources and environment Division	CENMA
Mr. Le Van Duc	Staff	CENMA
Mr. Hoang Duy Huan	Staff	CENMA
Ms. Dang Thi Lien	Staff	CENMA

## 2.2 HPG DONRE

The CD Work Plan for HPG DONRE is drafted in the Table below.

**Table2.2-1 Summaries of CD Work Plan for HPG DONRE**

Target Point/ Field of CD	Implementation Schedule	Outcomes	Dissemination	Note
1. Improving Basic Water Quality Analysis and QA/QC activity  1) Sampling and on-site measurement 2) Basic water quality analysis	2011: -May: Review current status and planning of training program -Sep: Lecture training and OJT for sampling and on-site measurement, -Oct-Dec: OJT for basic water quality analysis (COD, BOD, T-N, T-P, NH4, NO2, NO3, Phenol). In this stage, staff makes analysis by tentative analysis method. Capacity of QC is increased to achieve the target shown in Table1.3-1.  2012: -Feb: OJT to finalize analytical methods and revising SOPs	1) Water quality analysis result in CEM  2) SOPs for water quality analysis	SOPs and training contents be used in the lab	-

**Table2.2-2 Plan of Operation for HPG DONRE**

		Joint implementation of JET and Vietnamese CP												Continuous implementation by Vietnamese side												JICA Expert in Charge	
Output 2-2: Water Quality Analysis		JFY 2010/2011												JFY 2012													
		VFY 2011						VFY 2012						VFY 2013													
DONRE	activity	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
HPG	JET visit DONRE to discuss about the activity for this output.																										Yamamoto
HPG	JET carries out the training of water sampling																										Yamamoto
HPG	JET carries out the training of basic analysis/ Confirming current method, Selecting parameter is to be																										Yamamoto Takeda
HPG	JET carries out the training of basic analysis/ Checking each procedure																										Yamamoto Takeda
HPG	JET carries out the training of basic analysis/ QA/QC such as Blank check, Recovery test, MDL test																										Yamamoto Takeda
HPG	JET carries out the training of basic analysis/ Finalizing analytical method, preparing SOP																										Yamamoto Takeda
HPG	JET evaluate the capacity of water quality analysis in DONRE.																										Yamamoto Takeda
	Shirane																										
	Yamamoto																										
	Takeda																										

**Table2.2-3 Working Group Member in Hai Phong DONRE**

Name	Position	Organization
Ms. Nguyen Thi Tuyet Lan	Director	CEM
Mr. Dao Duc Thien	Vice-Director	CEM
Mr. Khong Minh Tien	Vice-Head of Analysis and monitoring division	CEM
- Mr. Dam Van Quynh	Vice-Head of Consultant and Training division	CEM
- Mr. Dao Van Vuong	Officer	CEM
- Ms. Nguyen Thu Huyen	Officer	CEM
- Mr. Le Tien Thanh	Officer	CEM
- Ms. Nguyen Thi Nhu Quynh	Officer	CEM
- Ms. Tran Thi Minh Huyen	Officer	CEM

**2.3 TT-HUE DONRE**

The CD Work Plan for TT-HUE DONRE is drafted in the Table below.

**Table2.3-1 Summaries of CD Work Plan for TT-HUE DONRE**

Target Point/ Field of CD	Implementation Schedule	Outcomes	Dissemination	Note
1. Improving Water Quality Analysis and QA/QC activity 1) Operation of the laboratory 2) Sampling and on-site measurement 3) Basic water quality analysis	<p>2011:</p> <p>-May-Jul: Capacity assessment, comment for new laboratory design, and requesting self-studying of the TCVN and Circular, Procuring equipment for on-site measurement (pH, EC, DO meter).</p> <p>-Aug-Oct: OJT for sampling and on-site measurement.</p> <p>-Aug-Dec: Procuring equipment for lab</p> <p>-Nov-Dec: OJT for Basic water quality analysis based on TCVN (pH, EC, Salinity, DO, COD, BOD, TSS, TDS, NO3, NO2, NH4, SO4, and PO4)</p> <p>-Nov-Dec: Lecture and OJT for laboratory management</p> <p>2012</p> <p>-Jan-Feb: Continue procuring equipment</p> <p>-Jan-Nov: Continue OJT for basic water quality analysis Capacity of QC is increased to achieve the target shown in Table1.3-1.</p> <p>-Jan-Nov: Continue Lecture and OJT for laboratory management</p> <p>-Oct-Dec: Training for VILAS accreditation by BOA, if possible</p>	Water quality analysis result in the Environmental Monitoring Section, EPA SOPs for water quality analysis Records for laboratory management	SOPs and training contents will be used in the laboratory	-





**Table2.4-3 Working Group Members in HCMC DONRE**

Name	Position	Organization
Mr. Huỳnh Thanh Nhâ*	Vice Head	HEPA
Mr. Nguyễn Thanh Huy	Vice Head	Monitoring Env. Quality Assessment Div., HEPA
Ms. Đặng Thị Tuyết Loan	Specialist	Monitoring Env. Quality Assessment Div., HEPA
Ms. Trần Minh Ngọc	Specialist	Monitoring Env. Quality Assessment Div., HEPA
Ms. Nguyễn Võ Quý Châu	Specialist	Monitoring Env. Quality Assessment Div., HEPA
Mr. Nguyễn Ngọc Hoàng Trung	Specialist	Monitoring Env. Quality Assessment Div., HEPA
Ms. Trương Hồng Hà	Specialist	Monitoring Env. Quality Assessment Div., HEPA
Ms. Đỗ Thị Thu Hằng	Specialist	Monitoring Env. Quality Assessment Div., HEPA

**2.5 BRVT DONRE**

The CD Work Plan for BRVT DONRE is drafted in the Table below.

**Table2.5-1 Summaries of CD Plans for BRVT DONRE**

Target Point/Field of CD	Implementation Schedule	Outcomes	Dissemination	Note
1. Improving Water Quality Analysis and QA/QC activity 1) Sampling and on-site measurement 2) Water quality analysis	<p>2011:</p> <ul style="list-style-type: none"> <li>-May: Review current status and planning of training program</li> <li>-Sep: Check the status of AAS and GC by Mr. Shirane. Then rearrange the training plan for BRVT lab.</li> <li>-Nov-Dec: OJT for sampling and on-site measurement</li> <li>-Nov-Dec: OJT of Fluoride and Phenol analysis, if it's necessary for monitoring activity;</li> </ul> <p>2012</p> <ul style="list-style-type: none"> <li>-Feb-Sep: OJT for GC and AAS, if possible Capacity of QC is increased to achieve the target shown in Table1.3-1.</li> </ul>	<p>Water quality analysis result</p> <p>SOPs for water quality analysis</p>	SOPs and training contents will be used in the laboratory	-

**Table2.5-2 Plan of Operation for BRVT DONRE**

Joint Implementation of JET and Vietnamese C/P
  Continuous implementation by Vietnamese side

Output 2-2: Water Quality Analysis		JFY 2010/2011												JFY 2012												JICA Expert In Charge		
		VFY 2011												VFY 2012														
DONRE	activity	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3		
BRVT	JET visit DONRE to discuss about the activity for this output.																											Shirane, Yamamoto
BRVT	JET carries out the training of water sampling																											Yamamoto
BRVT	JET checks DONRE's AAS and GC																											Shirane,
BRVT	DONRE fix AAS and GC																											Shirane, Yamamoto, Takeda
BRVT	JET carries out the training of AAS and GC/ Building tentative method																											Shirane Takeda
BRVT	JET carries out the training of AAS and GC/ Checking each procedure																											Shirane
BRVT	JET carries out the training of AAS and GC/ QA/QC such as Blank check, Recovery test, MDL test																											Shirane
BRVT	JET carries out the training of AAS and GC/ Finalizing analytical method, preparing SOP																											Shirane Takeda
BRVT	JET evaluate the capacity of water quality analysis in DONRE.																											Shirane
	Shirane																											
	Yamamoto																											
	Takeda																											

**Table2.5-3 Working Group Members in BRVT DONRE**

Name	Position	Organization
Ms. Nguyen Thi Hang	Deputy Chief	Division of Environmental Monitoring
Ms. Le Thi Thanh Lieu	Deputy Chief	Division of Environmental Monitoring
Ms. Mai Thi Hanh Dung	Expert	Division of Environmental Monitoring
Mr. Nguyen Vy Quang	Expert	Division of Environmental Monitoring

### 3. Others

#### 3.1 Provincial Specific Topics to be considered

(1) In the area of analysis, TT-HUE DONRE is left behind in skills and equipment compared with other target DONREs. The Work Plan is planned that more activities would be put into TT-HUE DONRE than other DONREs in order to strength capacity of TT- HUE DONRE.

(2) The AAS of BRVT DONRE has flame device but furnace device; therefore, it is difficult to measure low concentration level of heavy metals in the laboratory. Additional discussion with BRVT DONRE as for their equip procurement plan is necessary to set-up the training program.

(3) In BRVT DONRE, analysis staff that was in charge of GC went out and no one can use GC now. Therefore, JET will check the status in Sep. 2011, before deciding the training plan.

#### 3.2 Problems to be solved

(1) OM budget is not enough in lab of HPG and BRVT DONRE. JET is going to focus on the issue in the lecture of laboratory management.

(2) Output 2-2 (Water Quality Analysis) is to support the activities of Output 2-1(Monitoring) and Output 2-4 (Inspection). Therefore, the activities of Output 2-2 will be modified reflected in the progress and/or contents of these Outputs.

#### 3.3 Equipment to be procured by JICA

##### (1) Background

In the second JCC Meeting on 10th June 2011, the following points related to equip procurement of the Project are agreed;

- 1) Equip procurement for TT-HUE DONRE should be started based on the equip list approved at the first JCC on 1st November 2010,
- 2) JCC assigns a staff of VEA and members of JET to examine the needs for additional equip procurement for the Project activities, and
- 3) VEA and JET should prepared a list of necessary equipment, and submit it to JCC and JICA for further consideration by early September in 2011.

In this context, VEA and JET request the five (5) target DONREs for preparation of a long-list of equipment for the Project activities in accordance with this instruction. Based on the long-list prepared by DONRE, VEA and JET scrutinize necessary equip and prepare a short-list. The short-list should be reported to JCC and JICA. JICA will decide a final equip list based on the comments of JCC and the JICA's policy on technical assistance project.

##### (2) Equip Selection Procedure

The following three (3) steps are taken for the equip selection;

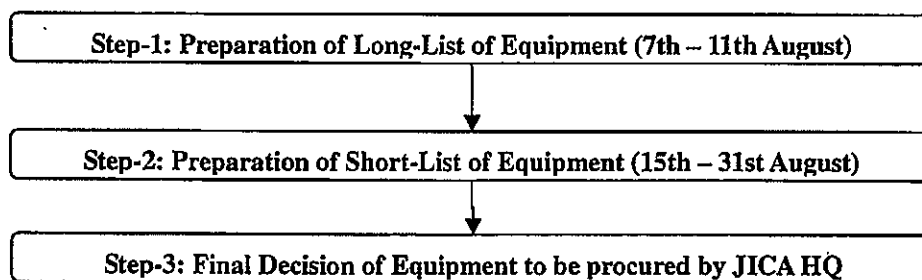


Figure3.3-1 Equip Selection Procedure

Step-1: Preparation long-list by DONRE: The five (5) target DONRE should prepare a long list in accordance with the following instruction, and submit it to VEA by 15th August in 2011.

Step-2: Preparation of a short-list: VEA and JET will visit target DONREs to select equip for the Project activities based on the long-lists from 17th August. VEA and JET will check the long-lists. Then VEA and

JET will prepare a short-list and submit it to JCC and JICA by the end of August. A tentative visit schedule of DONRE is shown in Table below.

**Table3.3-1 Tentative Schedule of DONRE Visits**

Province	Date and Time
Thua Thien-Hue	17th August (Wednesday)
Hanoi	18th August (Thursday)
Hai Phong	19th August (Friday)
Ba Ria Vung Tau	24th August (Wednesday)
Ho Chi Minh City	25th August (Thursday)

Step-3: Final decision of equip list to be procured by JICA: JICA HQ will make a final decision of equip to be procured through discussion with the JCC members based on the short-list prepared by VEA and JET.

**(3) Instruction for Preparation of Long-List**

To prepare the long list, JET and VEA give DONRE the instruction as follows.

- 1) To use a long-list format of equipment attached in this instruction (Attachment-1),
- 2) To update the current long-lists of TT-HUE DONRE submitted to JET on 25th May in 2011, HPG DONRE submitted to VEA on 4th January in 2011, HCMC DONRE submitted to VEA and BRVT DONRE submitted to VEA on 7th January in 2011.
- 3) To list up equip. be used for the Project activities based on the Capacity Development Plan of Laboratory Analysis,
- 4) To select equip be used on sampling and analysis for implementation of current water quality monitoring plan on surface water and wastewater,
- 5) To select equip covering the following items;
  - Sampling instruments,
  - Instruments for laboratory analysis,
  - Portable instruments and/or meter for on-site measurement/checking,
  - Standard solution,
  - Reagents and chemicals,
  - Glassware,
  - Spare parts for repairing existing equip, and
  - Parts for remodeling existing equipment
- 6) To exclude equip and instruments which are not mentioned in 5); such as a)boat and vehicle, b) automatic monitoring system, c) computers and printers, d) new equip not being used in the training of the Project, e.g. gas chromatography-mass (GC-MS), liquid chromatography-mass (LC-MS), and inductively-coupled plasma mass spectrometer (ICP-MS).
- 7) To submit the prepared long-list to VEA by 15th August (Monday).

**Attachment-1 Format of Long-List of Equipment for the Project Activities**

**1. General Information**

**Province:** \_\_\_\_\_

**Organization:** \_\_\_\_\_

**Contact Person:** \_\_\_\_\_

**2. Long-List of Equipment for the Project activities**

Category	No.	Name of Equipment	Specification (Model)	Technical Function	Parameter to be Measured	Quantity	Note
1) Sampling instruments							
2) Water quality meter in the fields							
3) Standard solution							
4) Reagent							
5) Glassware							
6) Spare parts for repairing existing equipment							
7) Parts for remodeling existing equipment							

## Work Plan of Output 2-3 (Inventory)

### 1. General

#### 1.1 Objectives of the Work Plan (WP)

Objectives of the Work Plan (WP) are as follows:

- To clarify actual capacity development activities and scheduling,
- To identify indicators and targets of the activities for evaluation,
- To conduct activities in accordance with WP, and
- To reflect results and lessons to WP for the next working period.

#### 1.2 Review of the Current Situation of Pollution Source Inventory (PSI)

##### (1) Objective and Function of Pollution Source Inventory (PSI)

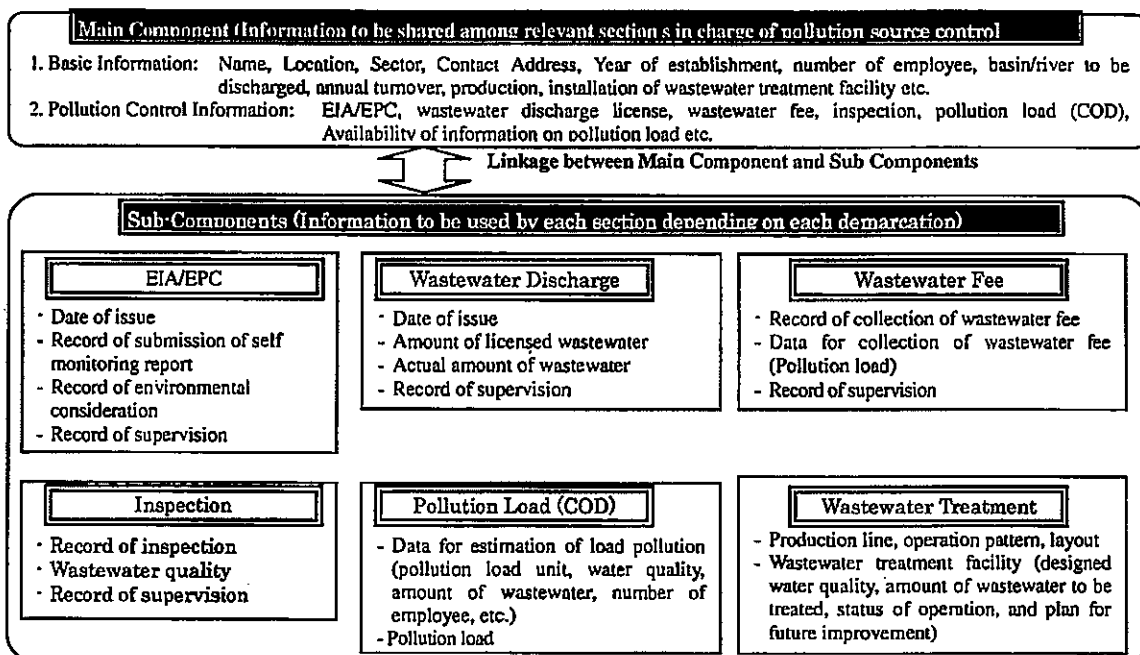
PSI is a tool which assists planning and implementing of water pollution control measures to address current water pollution issues. Thus, the objectives of PSI development are as follows:

- a) To share and refer required data and information on water pollution sources for organizations in charge for water pollution control,
- b) To provide information of water pollution sources to identify main industrial sectors by pollution load estimation, and nomination of pollution sources to be controlled based on the legislation circular No.07/2007/TT-BTNMT,
- c) To support effectiveness of water pollution control measures implementation, such as violation, sanction, environmental protection fee collection,
- d) To prepare tools which assists decision-making for water pollution control such as pollution source map to grasp distribution, and
- e) To provide information for environmental awareness on pollution sources and impact on water environment.

In order to achieve the objectives mentioned above, PSI should have the following functions:

- 1) To integrate data and information stored separately, and re-distribute them to the relevant sections in charge of water pollution control,
- 2) To accumulate data for the officers in charge of pollution control relevant sections, and
- 3) To provide data for planning and reviewing water pollution control measures.

For item 1) and 2), an inventory format and how to collect, input and update data and information should be designed taking requests by officers in charge of pollution control into consideration. For item 3), type of data and information to be stored should be selected considering requirements for water pollution control activities. The image of PSI structure in the Ic/R is shown as following figure.



(2) Review of Current Status on PSI Development

Current status on PSI development by DONREs is summarized in the Table 1.2-1.

**Table 1.2-1 Review Results of Pollution Source Inventory (PSI)**

Item	HNI	HPG	TT-HUE	HCMC	BRVT
(1) Policy and Needs on Inventory	1) EPA in DONRE 2) Develop PSI database	1) EPA in DONRE 2) Develop PSI database 3) Estimate annual pollution load of COD 4) Develop a map of pollution sources.	1) EPA in DONRE 2) Develop PSI database 3) Develop a map of pollution sources.	1) EMD 2) Develop PSI database 3) Develop a map of pollution sources, and sharing information between departments	1) EPA under Pollution Control Division in DONRE 2) Develop PSI database and update information on wastewater. 3) Develop a map of pollution sources in the province.
(2) Current Status of PSI	1) No PSI system but basic data is available. 2) Planning PSI database	1) No PSI system 2) Each section in DONRE collects the necessary data itself	1) No PSI system 2) Each section in DONRE collects the necessary data itself	1) No PSI system, but basic data is available. 2) Planning PSI database	1) No PSI system 2) Each section in DONRE collects the necessary data itself
(3) Available Information on Pollution Sources	1) Wastewater Discharge Fee: 82 entities / 1.766 billion VND in 2009 2) EIA: 123 in 2009 3) Wastewater Discharge Permit: 91 4) Wastewater Discharge: 43,240m <sup>3</sup> /day	1) Wastewater Discharge Fee: 136 entities / 1.343 billion VND 2) Wastewater Discharge Permit: 28 in 2009	1) Wastewater Discharge Fee: 21 entities / 1.184 million VND 2) EIA: 52 3) Wastewater Discharge Permit: 107 from 1999 to 2006	1) Wastewater Discharge Fee: 293 entities / 1.024 billion VND 2) EIA (Circular No.07) 100 3) Wastewater Discharge Permit: 56 4) Wastewater Discharge: 112,434m <sup>3</sup> /day	1) Wastewater Discharge Fee: 56 entities / 2.164 million VND 2) EIA: 209 from 2006 to 2010 3) Wastewater Discharge Permit: 26 4) Wastewater Discharge: 18,522m <sup>3</sup> /day
(4) Constraints	1) No department to prepare the database 2) Shortage of the budget for inventory activity 3) Lack of system to share information within DONRE	1) Few experiences to estimate the pollution loads 2) Less recognition why it's important to share necessary information within DONRE	1) Shortage of the budget for inventory activity 2) Shortage of human resources 3) Low awareness why it's important to share necessary information within DONRE	1) No department to prepare the database 2) Lack of system to share information within DONRE 3) Few experiences to evaluate the pollution loads	1) Shortage of the budget for inventory activity 2) Shortage of human resources 3) Low awareness why it's important to share necessary information within DONRE
(5) Training Needs	1) Information sharing procedure within DONRE 2) Preparation of data collection form 3) PSI preparing and updating method 4) PSI use for decision making for planning water pollution control measures	1) Information sharing procedure within DONRE 2) Preparation of data collection form 3) PSI preparing and updating method 4) Pollution loads estimation 5) PSI use for decision making for planning water pollution control measures	1) Information sharing procedure within DONRE 2) PSI preparing and updating method 3) PSI use for decision making for planning water pollution control measures	1) Information sharing procedure within DONRE 2) Preparation of data collection form 3) Pollution loads estimation 4) PSI updating method 5) PSI use for decision making for planning water pollution control measures	1) Information sharing procedure within DONRE 2) Preparation of data collection form 3) PSI preparing and updating method 4) PSI use for decision making for planning water pollution control measures

**1.3 Approach**

(1) Capacity Development (CD) Needs based on the Action Plan prepared by DONRE

The actual CD needs of each DONRE are summarized in the Table below based on the Action Plan prepared by DONRE.

**Table 1.3-1 Draft CD Needs of each DONRE**

Item	HNI	HPG	TT-HUE	HCMC	BRVT
(1) Key points to be improved	1) Grasping importance of the shared information within DONRE by holding the workshop 2) Instructing method of data collection 3) Instructing the method of updating	1) same as HNI DONRE 2) Preparing method of data collection form considering required information 3) Instructing procedure of preparing PSI 4) Instructing the	1) same as HNI DONRE 2) Instructing the procedure of preparing PSI 3) Instructing method of updating PSI continually 4) Urging data sharing	1) same as HNI DONRE 2) Instructing method of data collection form considering required information 3) Instructing procedure of pollution load estimation on Tan Quy Cluster, and	1) same as HNI DONRE 2) Instructing method of data collection form considering required information 3) Instructing the procedure of preparing PSI 4) Instructing the

Item	HNI	HPG	TT-HUE	HCMC	BRVT
	PSI continually 4) Using PSI for decision making 5) Urging data sharing	procedure of pollution load estimation 5) Urging data sharing		other priority area 4) Urging data sharing	method of updating PSI 5) Urging data sharing
(2) Approach of CD activity	1) Preparation of PSI 2) Usage of PSI 3) Data sharing	1) Preparation of PSI 2) Usage of PSI 3) Data sharing	1) Preparation of PSI 2) Usage of PSI 3) Data sharing	1) Preparation of PSI on Tan Quy Cluster 2) Usage of pollution load estimation 3) Data sharing	1) Preparation of PSI 2) Usage of PSI 3) Data sharing
(3) Expected outcomes	1) PSI in Hanoi for sharing information among relevant sections in charge of water pollution control 2) Data collection format 3) Updated PSI 4) Result of simple analysis training 5) Database planning, pollution loads estimate following the requirement in DONRE 6) Improvement of daily-work in DONRE by PSI and data sharing	1) PSI in Re river basin for sharing information among relevant sections in charge of water pollution control 2) Experience to prepared PSI 3) Data collection format 4) Updated PSI 5) Result of the simple analysis training (pollution loads) 6) Pollution loads estimate following the requirement in DONRE 7) Improvement of daily-work in DONRE by PSI and data sharing	1) PSI in TT-HUE for sharing information among relevant sections in charge of water pollution control 2) Experience to prepared PSI 3) Updated PSI 4) Result of the simple analysis training 5) Improvement of daily-work in DONRE by PSI and data sharing	1) PSI in Tan Quy Cluster, 2) Data collection format 3) General procedure on pollution load estimation 4) Improvement of daily-work in DONRE by PSI and data sharing	1) PSI among 100 facilities in BRVT province for sharing information among relevant sections in charge of water pollution control 2) Data collection format 3) Skill-up of capacity on pollution source map preparation 4) Updated PSI 5) Updating PSI to be selected more entities/industries 6) Improvement of daily-work in DONRE by PSI and data sharing

(2) Direction, approach, strategy of CD

There are five fields for capacity development. Each approach, strategy, actual activity, and target is shown in Table 1-3.2

**Table 1.3-2 Areas of Capacity Development related Inventory**

Fields	Approach and Strategy	Actual activity	Target	Note
(1) Basic understanding of PSI	1) To prepare inventory, DONRE officers needs to understand why PSI is important, how PSI is useful for their organization and why information sharing is important. Therefore, JET held a workshop to discuss on importance of "Information sharing within DONRE" in July 2011. 2) JET urges merits of information sharing continuously through OJT to develop PSI.	1) Holding a workshop to grasp importance of the shared information within DONRE 2) Discussion on importance of inventory through OJT to develop PSI	All DONRE	C2-1 Conduct capacity assessment of target DONREs regarding pollution sources inventory.
(2) Data collection form	1) JET introduces examples of data collection form as below. a. Before preparation of data collection form, it is necessary to set clear objectives, target area and priority data for PSI development. b. Data collection format should be prepared considering objectives, target area and priority data to be collected.	1) WG meetings to instruct method to prepare data collection form considering the required information	HNI, HPG, HCMC, and BRVT DONRE	C2-2 Review and modify existing inventory formats based on the current conditions of target DONREs.
(3) Preparation of PSI	1) Following the data collection form preparation, PSI is developed under initiative of DONRE. 2) JET instruct the followings a. Data and information to be inputted considering objectives of PSI b. Way of data storage to secure reliability of data and information inputted, and expand PSI to database in the future, such as data coding. 3) Considering lack of regulation for updating PSI, JET discuss with WG member on following contents. a. Which department has to maintain the PSI? b. How is the PSI data updated and reviewed?	1) OJT for PSI preparation, with instructing the procedure of preparing inventory 2) WG meetings to instructing the method of updating PSI continually	HNI, HPG, TT-HUE and BRVT DONRE	C2-2 (Refer to (2)) C2-5 Regularly conducting inventory survey and add/update information on main pollution sources.
(4) Usage of PSI	1) PSI is useful for DONRE daily activity for water pollution control. JET shows each DONRE several examples of PSI usage for decision making for water pollution control, and instruct the following the processes. a. Show examples to use the developed PSI (Calculation of Environmental protection fee for wastewater, Check of EIA approval status, and identification of industrial sectors to be controlled strictly) b. Trial usage of PSI by DONRE initiative	1) WG meetings and OJT for trial usage of the prepared inventory 2) WG meetings for instructing use of the PSI in the decision making	HNI, HPG, TT-HUE and BRVT DONRE	C2-3 Conduct inventory survey with the revised inventory formats.  C2-4 Organize collected information on main pollution sources.

Fields	Approach and Strategy	Actual activity	Target	Note
	<p>c. Discuss and review of the result of PSI usage by using PSI</p> <p>2) Pollution load estimation is one of the standard methods of the PSI usage, and JET instructs the general procedure as below.</p> <p>a. Explanation of the priority data and information to be collected</p> <p>b. Method for planning field survey to grasp regional water environment condition,, questionnaire survey on pollution sources, and how to collect accurate data</p> <p>c. Analysis of the collect data</p> <p>d. Calculation of the pollution load</p> <p>e. Impact evaluation on the target area</p>	1)WG meetings and OJT with instructing the procedure of pollution load estimation	HPG, and HCMC DONRE	
(5) Data sharing	<p>1) Following the progress of “(3) Preparation of PSI”, and “(4) Usage of PSI”, JET urges each DONRE to conduct data sharing by PSI to be improved within DONRE in daily works, and instruct the following contents.</p> <p>a. Which department has to instruct the improvement of PSI related to data sharing?</p> <p>b. Instruction of merit by data sharing</p> <p>c. Setting of the meeting assisting data sharing</p>	1) WG meetings and OJT for data sharing	All DONRE	C2-5 (Refer (3))

## 2. CD Work Plan in each DONRE

### 2.1 HNI DONRE

The CD Work Plan for HNI DONRE is drafted in the Table below.

**Table2.1-1 Draft CD Work Plan for Hanoi DONRE**

Target Point/ Field of CD	Sub-theme	Actual activities	Outcomes	Dissemination	Remark
1) Preparation of PSI	<p>1) Set objectives for PSI development</p> <p>2) Setting target area for PSI development</p> <p>3) Select priority data and information</p> <p>4) Preparation of PSI format</p> <p>5) Input collected data to inventory</p> <p>6) Review practicability of the prepared PSI</p>	<p>1) Aug - Oct in 2011: Set clear objectives, target area and priority data for PSI development, considering the provided data from Hanoi DONRE</p> <p>2) Sep - Nov in 2011. Prepare PSI format to be satisfied with the objective, target area and priority data on the above, and propose general procedure for sharing required information for water pollution control</p> <p>3) Sep - Nov in 2011. Input collected data and information to supplement the required data for PSI development</p> <p>4) Nov in 2011 - Review practicability of the prepared PSI, and Hanoi DONRE carries out itself in the next year.</p>	<p>1) PSI in Hanoi for sharing information among relevant sections in charge of water pollution control</p> <p>2) Data collection format</p> <p>3) Updated PSI</p>	1) Discussion how to review and update within DONRE	-
2) Usage of PSI	<p>1) Trial Usage</p> <p>2) Discuss on the further step</p>	<p>1) Nov in 2011 - Feb in 2012. Trial Usage such as supporting database planning, pollution loads estimate</p> <p>2) Feb in 2012 - Discuss on the further step, and improve the usage of PSI</p>	<p>4) Result of the simple analysis training</p> <p>5) Pollution loads estimate following the requirement in DONRE</p>	1) Dissemination on the importance of PSI within DONRE	-
3) Data sharing	1) Instruct the data sharing	<p>1) Jul in 2011: Workshop</p> <p>2) Jul - Nov in 2011 Urge merits of information sharing continuously by JET.</p> <p>3) Nov in 2011 - Improve data sharing by developed PSI, and Hanoi DONRE carries out itself in the next year.</p>	6) Improvement of daily-work in DONRE by PSI and data sharing	1) Dissemination on the importance of data sharing within DONRE	-



**Table2.1-2 Plan of Operation for HNI DONRE**

Joint Implementation of JET and Vietnamese C/P Continuous Implementation by Vietnamese side

Output 2-3:Inventory		JFY 2010/2011												JFY 2012												JICA Expert in Charge		
		VFY 2011						VFY 2012						VFY 2013														
activity		3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3		
1) Preparation of PSI	1) Set clear objectives, target area and priority data for PSI development																											Hosotani,
	2) Prepare PSI format to be satisfied with the objective, target area and priority data																											Sato
	3) Input collected data and information to supplement the required data for inventory development																											Hosotani,
	4) Review practicability of the prepared PSI.																											Hosotani, Sato
2) Usage of PSI	1) Trial Usage																											Sato
	2) Discuss on the further step, and improve the usage of PSI																											Sato, Hosotani
3) Data sharing	1) Workshop on Data Management for Established of PSI																											Hosotani, Sato
	2) Urge merits of data sharing continuously																											Hosotani, Sato
	3) Improve data sharing by developed PSI																											Hosotani, Sato
	Sato																											Main
	Hosotani																											Sub

**Table2.1-3 Working Group Member of Operation in HNI DONRE**

Name	Position	Organization
Ms. Dao Thi Anh Diep	Vice-Director	Environment Protect Agency - EPA
Mr. Pham Hung Cuong	Manager,	Water resource management and meteorology and hydrology division
Mr. Nguyen Tien Hung	Vice-Chief Inspector.,	DONRE Inspection
Mr. Nguyen Trong Dung	Officer,	Water resource management and meteorology and hydrology division
Mr. Nguyen Trong Truong	Officer,	Pollution control division, EPA
Mr. Ta Ngoc Son	Officer,	Project management and communication division, EPA

**2.2 HPG DONRE**

The CD Work Plan for HPG DONRE is drafted in the Table below.

**Table2.2-1 Draft CD Work Plan for HPG DONRE**

Target Point/ Field of CD	Sub-theme	Actual activities	Outcomes	Dissemination	Remark
1) Preparation of PSI	1) Set objectives for PSI development 2) Setting target area for PSI development 3) Select priority data and information 4) Preparation of PSI format 5) Collect existing priority information 6) Input collected data to PSI 7) Review practicability of prepared PSI	1) Jun - Jul in 2011 Set clear objectives and target area for PSI development for considering how to use for water pollution control by HPG. 2) Jul - Aug in 2011. Confirm the current condition, and select prior information to be collected for PSI data 3) Aug - Sep in 2011. Design data collection format based on the self-monitoring report by HPG DONRE 4) Sep - Nov in 2011. Collect data and information based on the data format considering the process 3) 5) Sep - Nov in 2011. Prepare PSI format, and input collected data and information 6) Nov in 2011 - Review practicability of prepared PSI, and HPG DONRE carries out itself in the next year.	1) PSI in Re river basin for sharing information among relevant sections in charge of water pollution control  2) Experience to prepared PSI  3) Data collection format 4) Updated PSI	1) Discussion how to review and update within DONRE	-
2) Usage of PSI	1) Trial Usage  2) Discuss on the further step	1) Nov in 2011 - Feb in 2012 Trial examination of existing issues on water pollution control measures based on the information stored in the prepared inventory. 2) Feb in 2012 - Discuss on the further step, and improve the usage of PSI	5) Result of the simple analysis training (pollution loads) 6) Pollution loads estimate following the requirement in DONRE	1) Dissemination on the importance of PSI within DONRE	-
3) Data sharing	1) Instruct the data sharing	1) Jul in 2011: Workshop 2) Jul - Nov in 2011	7) Improvement of daily-work in	1) Dissemination on the	-

Target Point/ Field of CD	Sub-theme	Actual activities	Outcomes	Dissemination	Remark
		Urge merits of information sharing continuously by JET. 3) Nov in 2011 - Improve data sharing by developed PSI, and HPG DONRE carries out itself in the next year.	DONRE by PSI and data sharing	importance of information and data sharing within DONRE	

**Table2.2-2 Plan of Operation for HPG DONRE**

		Joint implementation of JET and Vietnamese C/P												Continuous implementation by Vietnamese side									JICA Expert in Charge					
Output 2-3: Inventory		JFY 2010/2011						JFY 2012						JFY 2013														
DONRE	activity	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11		12	1	2	3	
1) Preparation of PSI	1) Set clear objectives for PSI development																										Sato	
	2) Select prior information to be collected data																											Hosotani
	3) Design data collection format																											Hosotani
	4) Collect data and information																											Hosotani
	5) Prepare PSI format, and input collected data and information																											Sato
	6) Review practicability of prepared PSI																											Hosotani, Sato
2) Usage of PSI	1) Trial examination of existing issues on water pollution control measures																											Sato
	2) Discuss on the further step, and improve the usage of PSI																											Sato, Hosotani
3) Data sharing	1) Workshop on Data Management for Established of PSI																											Hosotani, Sato
	2) Urge merits of data sharing continuously																											Hosotani, Sato
	3) Improve data sharing by developed PSI																											Hosotani, Sato
	Sato																											Main
	Hosotani																											Sub

**Table2.2-3 Working Group Member of Operation in HPG DONRE**

Name	Position	Organization
Mr. Lê Sơn	Deputy head	HPG Environmental Protection Agency - EPA
Ms. Nguyễn Thị Tuyết Lan	Director	HPG Centre for Environmental Monitoring - HPG CEM
Ms. Vũ Thị Thu Hương	Specialist	EIA appraisal, HPG EPA
Mr. Mai Đức Long	Inspector	Inspection Department

### 2.3 TT-HUE DONRE

The CD Work Plan for TT-Hue DONRE is drafted in the Table below.

**Table2.3-1 Draft CD Work Plan for TT-HUE DONRE**

Target Point/ Field of CD	Sub-theme	Actual activities	Outcomes	Dissemination	Remark
1) Preparation of PSI	1) Set objectives for PSI development 2) Setting target area for PSI development 3) Select priority data and information 4) Collect existing priority information 5) Preparation of PSI format	1) Jun - Jul. in 2011 Set objectives of PSI development for considering how to use for water pollution control by TT-HUE. 2) Jul. - Aug. in 2011. Set target area for PSI development considering regional characteristics of water pollution sources. 3) Jul. - Aug. in 2011. Select priority data and information to be inputted to PSI, considering regular work for water pollution control by TT-HUE. 4) Aug. - Nov. in 2011. Collect existing data and information on pollution sources from relevant sections in TT-Hue. 5) Aug. - Nov. in 2011. Prepare PSI format considering type of data and information to be inputted and users' accessibility	1) PSI in TT-HUE for sharing information among relevant sections in charge of water pollution control 2) Experience to prepared PSI 3) Updated PSI	1) Discussion how to review and update within DONRE	1) EPA will be expected to lead a series of activities for inventory.

Target Point/ Field of CD	Sub-theme	Actual activities	Outcomes	Dissemination	Remark
	6) Input collected data to PSI 7) Review practicability of the prepared PSI	6) Sep- Nov in 2011. Input collected data and information to the inventory format prepared. 7) Nov in 2011 - Review practicability of the prepared PSI, and TT-Hue DONRE carries out itself in the next year.			
2) Usage of PSI	1) Trial Usage 2) Discuss on the further step	1) Nov in 2011 - Feb. in 2012 Trial examination of existing issues on water pollution control measures based on the information stored in the prepared PSI. 2) Feb in 2012 - Discuss on the further step, and improve the usage of PSI	1) Result of the simple analysis training	1) Dissemination on the importance of PSI within DONRE	-
3) Data sharing	1) Instruct the data sharing	1) Jul in 2011: Workshop 2) Jul - Nov in 2011 Urge merits of information sharing continuously by JET. 3) Nov in 2011 - Improve data sharing by developed PSI, and TT-Hue DONRE carries out itself in the next year.	2) Improvement of daily-work in DONRE by PSI and data sharing	1) Dissemination on importance of information and data sharing within DONRE	-

**Table2.3-2 Plan of Operation for TT-HUE DONRE**

     Joint implementation of JET and Vietnamese C/P
      Continuous implementation by Vietnamese side

Output 2-3: Inventory		JFY 2010/2011												JFY 2012												JICA Expert in Charge			
		VFY 2011						VFY 2012						VFY 2013															
DONRE	activity	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3			
1) Preparation of PSI	1) Set objectives of PSI development																											Hosotani	
	2) Set target area for PSI development																												Hosotani
	3) Select priority data and information to be inputted to PSI																												Hosotani
	4) Collect existing data and information on pollution sources																												Hosotani
	5) Prepare PSI format																												Sato
	6) Input collected data and information to the PSI																												Hosotani
	7) Review practicability of prepared PSI																												Hosotani, Sato
2) Usage of PSI	1) Trial examination of existing issues on water pollution control measures																											Sato	
	2) Discuss on the further step, and improve the usage of PSI																											Sato, Hosotani	
3) Data sharing	1) Workshop on Data Management for Established of PSI																											Hosotani, Sato	
	2) Urge merits of data sharing continuously																											Hosotani, Sato	
	3) Improve data sharing by developed PSI																											Hosotani, Sato	
	Sato																											Sub	
	Hosotani																											Main	

**Table2.3-3 Working Group Member of Operation in TT-HUE DONRE**

Name	Position	Organization
Mr. Nguyễn Việt Hùng	Head	Environmental Protection Agency- EPA
Ms. Nguyễn Trần Thế Anh	Inspector	Inspection division
Ms. Trần Thị Ngọc Diệp	Inspector	Inspection division
Mr. Nguyễn Mạnh Đại Lân	Specialist	Water Resources division
Mr. Nguyễn Đình Phước	Technical staff	Environmental Protection Agency- EPA
Mr. Trần Mạnh Quỳnh	Technical staff	EIA appraisal division

## 2.4 HCMC DONRE

The CD Work Plan for HCMC DONRE is drafted in the Table below.

**Table 2.4-1 Draft CD Work Plan for HCMC DONRE**

Target Point/ Field of CD	Sub-theme	Actual activities	Outcomes	Dissemination	Remark
1) Preparation of PSI on Tan Quy Cluster	<ol style="list-style-type: none"> <li>1) Set objectives for PSI development</li> <li>2) Setting target area for PSI development</li> <li>3) Select priority data and information</li> <li>4) Format (Data collection)</li> <li>5) Collect existing priority information</li> <li>6) Sampling</li> <li>7) Preparation of PSI format</li> <li>8) Input collected data to PSI</li> </ol>	<ol style="list-style-type: none"> <li>1) Jun –Jul in 2011 Review of existing data and information</li> <li>2) Jul - Aug in 2011. Identification of critical information to be updated, newly collected and/or digitized</li> <li>3) Aug - Sep in 2011. Preparation of update questionnaire survey sheet on the target industries</li> <li>4) Aug - Oct in 2011. Implementation of update questionnaire survey sheet on the target industries</li> <li>5) Sep – Oct in 2011. Sampling and analysis of effluents and channel waters</li> <li>6) Sep - Nov in 2011. Preparation of PSI in Tan Quy Industrial Cluster and investigate the database in HCMC DONRE</li> </ol>	<ol style="list-style-type: none"> <li>1) PSI on Tan Quy Cluster</li> <li>2) Data collection format</li> </ol>	1) Dissemination on the importance of the information and data sharing within DONRE	-
2) Usage of pollution load estimation	<ol style="list-style-type: none"> <li>1) Estimate pollution loads</li> <li>2) Evaluation</li> <li>3) Summarization</li> </ol>	<ol style="list-style-type: none"> <li>1) Oct - Nov in 2011. Estimate of pollution loads from Tan Quy industrial cluster</li> <li>2) Oct - Nov in 2011. Evaluation of pollution loads impact on water quality of Ba Bep channel and connecting rivers</li> <li>3) Nov in 2011 - Jan in 2012. Summarizing pollution load analysis and evaluation procedure</li> <li>4) Nov in 2011 - Jan in 2012. Discussion on possible measures to solve found issues related to water pollution source management and effective management tools in Tan Quy Industrial Cluster</li> <li>5) Jan - Feb in 2012 Prepare pollution source map / Report writing</li> <li>6) Mar in 2012- Application for the other area</li> </ol>	3) General procedure on pollution load estimation	1) Dissemination on the process of pollution load estimation within DONRE and discuss the 2 <sup>nd</sup> target area in the next year	-
3) Data sharing	1) Instruct the data sharing	<ol style="list-style-type: none"> <li>1) Jul in 2011: Workshop</li> <li>2) Jul - Nov in 2011 Urge merits of information sharing continuously by JET.</li> <li>3) Nov in 2011 - Improve data sharing by developed PSI, and HCMC DONRE carries out itself in the next year.</li> </ol>	4) Improvement of daily-work in DONRE by PSI and data sharing	1) Dissemination on the importance of data sharing within DONRE	-

**Table2.4-2 Plan of Operation for HCMC DONRE**

Joint Implementation of JET and Vietnamese CP

Continuous implementation by Vietnamese side

Output 2-3:Inventory		JFY 2010/2011												JFY 2012												JICA Expert in Charge			
		VFY 2011						VFY 2012						VFY 2013															
DONRE	activity	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3			
1) Preparation of PSI	1) Review of existing data and information																											Hosotani	
	2) Identification of critical information to be updated, newly collected and/or digitized																												Hosotani
	3) Preparation of update questionnaire survey sheet on the target industries																												Hosotani
	4) Implementation of update questionnaire survey sheet on the target industries																												Hosotani
	5) Sampling and analysis of effluents and channel waters																												Hosotani
	6) Preparation of PSI in Tan Quy Industrial Cluster																												Sato
2) Usage of PSI	1) Estimate of pollution loads from Tan Quy industrial cluster																											Sato, Hosotani	
	2) Evaluation of pollution loads impact on water quality of Ba Bep channel and connecting rivers																											Sato, Hosotani	
	3) Summarizing pollution load analysis and evaluation procedure																											Sato, Hosotani	
	4) Discussion on possible measures to solve found issues related to water pollution source management and effective management tools in Tan Quy																												Hosotani
	5) Prepare pollution source map / Report writing																												Sato, Hosotani
	6) Application for the other area																												Hosotani, Sato
3) Data sharing	1) Workshop on Data Management for Established of PSI																											Hosotani, Sato	
	2) Urge merits of data sharing continuously																											Hosotani, Sato	
	3) Improve data sharing by developed PSI																											Hosotani, Sato	
	Sato																											Sub	
	Hosotani																											Main	

**Table2.4-3 Working Group Members in HCMC DONRE**

Name	Position	Organization
Ms Le Thi Thanh Dung	Expert	Environment Management Division - EMD
Ms. Nguyen Thi Tuyet Hoa	Expert	Environment Management Division - EMD
Mr. Dang Le Hien	Expert	Inspection Division
Ms. Nguyen Thi Thu Hang	Expert	Water Resources Department & minerals Management Division
Ms. Nguyen Minh Hang	Vice Head	Environmental pollution inspection and Supervision – EPA

**2.5 BRVT DONRE**

The CD Work Plan for BRVT DONRE is drafted in the Table below.

**Table2.5-1 Draft CD Work Plan for BRVT DONRE**

Target Point/ Field of CD	Sub-theme	Actual activities	Outcomes	Dissemination	Remark
1) Preparation of PSI	1) Set objective for PSI development 2) Set target area to develop PSI 3) Select priority Information to be inputted in PSI 4) Prepare format for data collection 5) Collect information and data to be inputted 6) Prepare PSI format	1) Jun –Jul in 2011 Set clear objectives for PSI development considering regular pollution control work in BRVT DONRE 2) Jun –Jul in 2011 Select 100 of enterprises by BRVT DONRE for PSI development 3) Jun –Sep in 2011. Collect and input existing data to preliminary PSI format, and select prior information to be collected, considering objectives of PSI development 4) Sep - Oct in 2011. Design collection format of pollution source data and information 5) Sep - Nov in 2011. Collect pollution sources data and information by the designed data, and analyze 30 wastewater quality from representative target enterprises 6) Oct in 2011 - Jan in 2012. Prepare PSI, and input collected data and information	1) PSI among 100 facilities in BRVT province for sharing information among relevant sections in charge of water pollution control 2) Data Collection Format 3) Updated PSI	1) Dissemination on the importance of the information and data sharing within DONRE 2) Dissemination on the importance of preparing database in DONRE 3) Discussion how to review and update within DONRE	1) Main Dept: Pollution Control Div under EPA

Target Point/ Field of CD	Sub-theme	Actual activities	Outcomes	Dissemination	Remark
	7) Data input 8) Review practicability of prepared PSI	7) Jan in 2012 - Review practicability and plan update of the developed PSI, and BRVT DONRE carries out itself in the next year.			
2) Usage of PSI	1) Trial Usage  2) Discuss on the further step	1) Nov in 2011- Feb in 2012. Prepare pollution source map based on the prepared PSI 2) Feb in 2012 - Discuss on the further step such as the pollution map, estimating pollution loads and prepare database planning, , and improve the usage of PSI.	1) Skill-up of capacity on pollution source map preparation  2) Updated PSI to be selected more entities/industries	1) Dissemination on the importance of PSI within DONRE	-
3) Data sharing	1) Instruct the data sharing	1) Jul in 2011: Workshop 2) Jul - Nov in 2011 Urge merits of information sharing continuously by JET. 3) Nov in 2011 - Improve data sharing by developed PSI, and BRVT DONRE carries out itself in the next year.	3) Improvement of daily-work in DONRE by PSI and data sharing	1) Dissemination on the importance of data sharing within DONRE	-

**Table2.5-2 Plan of Operation for BRVT DONRE**

		Joint implementation of JET and Vietnamese C/P												Continuous Implementation by Vietnamese side									JICA Expert in Charge						
Output 2-3:Inventory		JFY 2010/2011												JFY 2012															
DONRE	activity	VFY 2011												VFY 2012										VFY 2013					
		3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3			
1) Preparation of PSI	1) Set clear objectives for inventory development																											Hosotani	
	2) Select 100 of enterprises by BRVT DONRE for inventory development																												Hosotani
	3) Collect and input existing data to preliminary inventory format																												Hosotani
	4) Design collection format of pollution source data & information																												Hosotani
	5) Collect pollution sources data and information by the designed data																												Hosotani
	6) Prepare inventory format, and input collected data and information																												Sato, Hosotani
	7) Review practicability and plan update of the developed PSI																												Hosotani, Sato
2) Usage of PSI	1) Prepare pollution source map																											Sato, Hosotani	
	2) Review practicability and plan update of the developed inventory																											Sato, Hosotani	
3) Data sharing	1) Workshop on Data Management for Established of PSI																											Hosotani, Sato	
	2) Urge merits of data sharing continuously																											Hosotani, Sato	
	3) Improve data sharing by developed PSI																											Hosotani, Sato	
	Sato																											Sub	
	Hosotani																											Main	

**Table2.5-3 Working Group Members in BRVT DONRE**

Name	Position	Organization
Mr. Le Tan Cuong	Head	EPA
Ms. Tang Thi Dum My	Expert of Inspector	DONRE
Mr. Le Thanh Tam	Expert	Water Resources Management
Mr. Luong Hung Phi	Expert	Pollution Control Division under EPA

### 3. Others

#### 3.1 Problems to be solved

- (1) There are not any regulations to prepare PSI in DONRE, and JET concerns that it makes negative impacts on the activity of preparing PSI like data collection, data input and update. JET supports activities for PSI development which are difficult without the regulations, and proposes countermeasures to be solved in the Project.

- (2) Each DONRE does not have enough budgets and human resources for PSI development, maintenance and updating, based on the survey in each DONRE. JET concerns that enough budgets and human resources for PSI development should be prepared after the Project. JET will appeal importance of securing enough budgets, through WG meetings and OJT for PSI development to make DONRE understand importance of developing, maintaining and updating PSI.
- (3) Currently, each DONRE does not have enough information exchange system among different sections. It's important for DONRE to enhance awareness on information sharing through the activity to prepare PSI, hold workshops for data management and show examples on effectiveness of data sharing by JET, and appeals the merits of information sharing continuously under the project activity.

### **3.2 Other Concerns/ Activities**

#### **(1) Relation with Output 2-1**

As for relation with Output 2-1 (Monitoring), after developing the PSI, WG2-3 can provide WG2-1 pollution sources information stored in the PSI for water quality data interpretation, based on the request of WG2-1.

#### **(2) Relation with Output 2-4**

As for relation with Output 2-4 (Inspection), data and information obtained by inspection can be shared by the PSI, following the circular No.117/2009/ND-CP, and is expected to be updated continuously. WG 2-3 of each DONRE has a member from Inspection Department, so JET and WG will discuss and prepare proposals on the process to update data and information in PSI which are obtained by inspection.

#### **(3) Relation with Output 3**

As for relation with Output 3 (Water Pollution Control Measures), both activities are carried out by same counterparts. Consequently, when trial usage of PSI is implemented, experiences obtained through analysis of pollution source table (PST) prepared under Output 3 will be utilized for trial usage of PSI prepared under Output 2-3.

#### **(4) Relation with Output 4**

As for relation with Output 4 (Environmental Awareness), HCMC DONRE and HPG DONRE set same target areas for Output 2-3 and Output 4, namely Tan Quy Cluster and Re river basin. Therefore, data and information of pollution sources stored in the PSI can be used for activities planned by WG 4.

#### **(5) Relation with Output 5**

As for relation with Output 5 (Information management and utilization), the prepared PSI by each DONRE are expected to be one of basic components of environmental information database which should be developed based on the circular 07/2009/TT-BTNMT. JET will assist each DONRE to plan developing database through preparation and trial usage of PSI.

*End*

## Work Plan of Output 2-4 (Inspection)

### 1. General

#### 1.1 Objectives of the Work Plan (WP)

Objectives of the Work Plan (WP) are as follows:

- To clarify actual capacity development activities and scheduling,
- To identify indicators and targets of the activities for evaluation,
- To conduct activities in accordance with WP, and
- To reflect results and lessons to WP for the next working period.

#### 1.2 Review of Inspection Processes and Activity

Existing resources and overall processes related to the current environment check and inspection activities of each DONRE are reviewed and summarized in Table 1.2-1.

**Table 1.2-1 Review Results of Environment Check and Inspection**

Item	HNI	HPG	TT-HUE	HCMC	BRVT
1) Number of officers in Inspection Division	25 officers	13 officers	6 officers	20 officers	6 officers
2) Implementation of environment check and inspection	<p>Times of inspection on environmental issues and environment check implemented.</p> <p>2008: 110 times 2009: 216 times 2010: 256 times</p> <p>Given sanctions and collected fines on environmental issues are as follows.</p> <p>2008: 18 cases (Total fine: VND 308 million) 2009: 87 cases (Total fine: VND 1,217 million) 2010: 90 cases (Total fine: 3,948 million)</p>	<p>Times of inspection on environmental issues and environment check implemented.</p> <p>2007: 50 times 2008: 33 times</p> <p>Given sanctions and collected fines on environmental issues are as follows.</p> <p>2007: 8 cases (Total fine: VND 79 million) 2008: 9 cases (Total fine: VND 118 million)</p>	<p>Times of inspection on environmental issues and environment check implemented.</p> <p>2010: 3 times</p> <p>In 2010, no sanctions and fines on environmental issues.</p>	<p>Times of inspection on environmental issues implemented.</p> <p>2010: 318 times</p> <p>Given sanctions and collected fines on environmental issues are as follows.</p> <p>2010: 160 cases (Total fine: VND 1,024 million)</p>	<p>Times of inspection on environmental issues implemented.</p> <p>2010: 78 times</p> <p>Given sanctions and collected fines on environmental issues are as follows.</p> <p>2010: 21 cases (Total fine: VND 319 million)</p>
3) On-site inspection skills	<p>Format of M/M for inspection (On-site check list): Exist</p> <p>Inspection process at site: <i>To be confirmed after October.</i></p>	<p>Format of M/M for inspection (On-site check list): Exist</p> <p>Inspection process at site: <i>To be confirmed after October.</i></p>	<p>Format of M/M for inspection (On-site check list): Exist</p> <p>Inspection process at site: JET confirmed that environment check was conducted based on the regulated procedure by TT-Hue on shrimp firm.</p>	<p>Format of M/M for inspection (On-site check list): Exist</p> <p>Inspection process at site: <i>To be confirmed after October.</i></p>	<p>Format of M/M for inspection (On-site check list): Exist</p> <p>Inspection process at site: JET confirmed that environment check was conducted based on the regulated procedure by TT-Hue on livestock facility.</p>
4) Wastewater sampling and analysis	Inspection Division cooperates with Environmental Monitoring Center for analysis.	Inspection Division cooperates with Environmental Monitoring Center for analysis.	Lab is under construction, and wastewater sampling and analysis is sub-contracted.	HCMC DONRE does not have laboratory, and wastewater sampling and analysis is sub-contracted.	Inspection Division cooperates with Environmental Monitoring Center for analysis
5) Management of environment check and inspection records and reports	Annual inspection and environment check report is prepared, and submitted to PPC.	Annual inspection and environment check report is prepared, and submitted to PPC.	Annual inspection and environment check report is prepared, and submitted to PPC.	Annual inspection and environment check report is prepared, and submitted to PPC.	Annual inspection and environment check report is prepared, and submitted to PPC.
6) Plan of environment check and inspection in 2011	<p>Inspection plan: prepared</p> <p>Environment check plan: prepared</p>	<p>Inspection plan: prepared</p> <p>Environment check plan: prepared</p>	<p>Inspection plan: prepared</p> <p>Environment check plan: prepared</p>	<p>Inspection plan: prepared</p> <p>Environment check plan: prepared</p>	<p>Inspection plan: prepared</p> <p>Environment check plan: prepared</p>
7) Constraints based on	- Criteria for selecting enterprises to be	- Filed work capacity should be enhanced on	- Knowledge and experiences to plan,	- Gaps on level of knowledge and	- Environment check and inspection should



Item	HNI	HPG	TT-HUE	HCMC	BRVT
discussion with each DONRE	<p>inspected should be reviewed.</p> <ul style="list-style-type: none"> <li>- Knowledge to check wastewater treatment facility (WWTF) at sites should be enhanced.</li> <li>- Reporting should be reviewed whether all required information is described or not.</li> <li>- Measures to address water environment incidents should be developed.</li> </ul>	<p>the priority industrial sectors.</p> <ul style="list-style-type: none"> <li>- A system to check enterprise self-monitoring reports should be improved to select the target enterprises to be inspected strictly, and to identify key issues to be checked at sites.</li> </ul>	<p>implement and report inspection on water environment issues should be developed.</p>	<p>experiences by each officer should be reviewed and solved to secure reliability of environmental check and inspection in DONRE.</p> <ul style="list-style-type: none"> <li>- Environment check and inspection should be carried out to have gap, so environment check and inspection should be enhanced and shared for better water pollution control by evaluating impact of wastewater discharge based on the</li> </ul>	<p>contribute to preparation of proposals of countermeasures on serious water pollution sources.</p>
8) Training needs	<ul style="list-style-type: none"> <li>- Assistance on preparation of annual inspection plan</li> <li>- Lecture and OJT on wastewater treatment facilities and their operating condition</li> <li>- Assistance on reviewing information to be included in an annual report</li> <li>- Assistance on developing measures to address water environment incidents</li> </ul>	<ul style="list-style-type: none"> <li>- Assistance on preparation of annual inspection plan using information of enterprise self-monitoring reports</li> <li>- Assistance to prepare and use a tool to assist field work of environment check and inspection</li> <li>- Assistance to prepare and use unified format of enterprise self-monitoring reports and instructions for reviewing them</li> </ul>	<ul style="list-style-type: none"> <li>- Assistance on preparation of annual inspection plan</li> <li>- Lecture and OJT on technical information for planning, implementing and reporting environment check and inspection.</li> </ul>	<ul style="list-style-type: none"> <li>- Assistance on preparation of annual inspection plan</li> <li>- Providing technical information for planning, field work and reporting environment check and inspection.</li> </ul>	<ul style="list-style-type: none"> <li>- Assistance on preparation of annual inspection plan</li> <li>- Assistance on preparation of countermeasures on serious pollution sources.</li> </ul>

### 1.3 Approach

#### (1) General Approach

Inspection can be divided into three stages, preparation work, field work, and post-field work, and each stage has several tasks as shown in Figure 1-3-1. Capacity development (CD) activities will be carried out to improve key capacities of the selected tasks by each DONRE through discussions from May to August 2011.

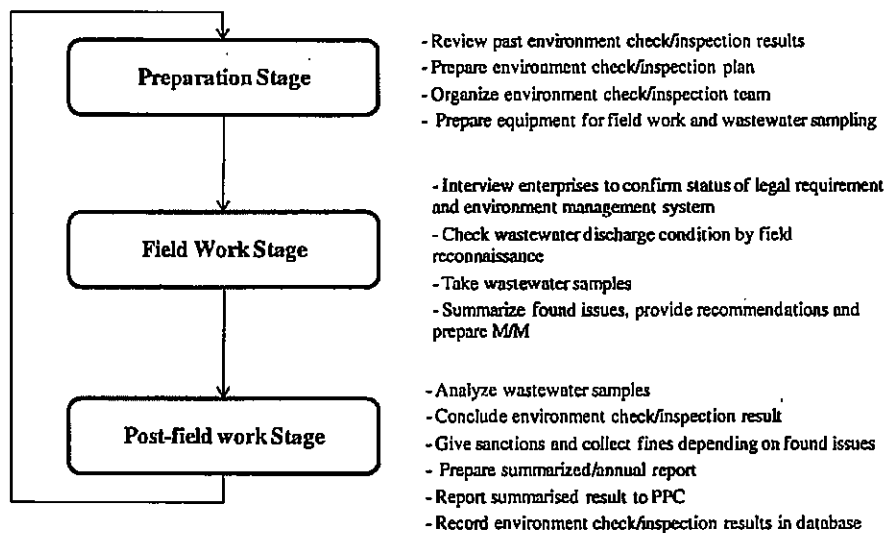


Figure 1.3-1 Work Stage and Tasks of Environment Check and Inspection

Through discussion with each DONRE from April to August 2011, JET found constraints on current environment check and inspection shown in Table 1.2-1. Based on the findings, JET proposed key capacities to be improved and proposed CD activities for each DONRE by the selected tasks, as shown in Table 1.3-1.

**Table 1.3-1 Key Capacities to be Improved and Proposed CD Activities by Each DONRE**

Stage	Tasks	Key capacities to be improved	Proposed CD Activities	Target DONRE				
				HNI	HPG	TT-Hue	HCMC	BRVT
Preparation stage	Review relevant information on pollution sources	Improve check system of enterprise self-monitoring reports	Assist to prepare unified format of enterprise self monitoring reports with instruction for reviewing them	-	*	-	-	-
	Prepare inspection plan	Enhance capacity to select target industries to be inspected.	Assist preparation of annual inspection plan	*	*	*	*	*
	Organize environment check/inspection team	-	-	-	-	-	-	-
	Prepare equipment for field work and wastewater sampling	Improve preparation work capacities	Join preliminary work and implement OJT	*	*	*	*	*
Field work stage	Interview enterprises to confirm status of legal requirement and environment management system	-	-	-	-	-	-	-
	Check wastewater discharge condition by field reconnaissance	Improve knowledge to check WWTF at sites.	Provide lecture	*	*	*	*	*
	Take wastewater samples	Improve wastewater sampling, pre-treatment, and field survey capacity	Join field work and implement OJT	*	*	*	*	*
	Summarize found issues, and prepare M/M	-	-	-	-	-	-	-
Post-field work Stage	Analyze wastewater samples	-	-	-	-	-	-	-
	Prepare individual environment check/inspection report	-	-	-	-	-	-	-
	Give sanctions and collect fines depending on found issues	<i>See Note 2</i>						
	Prepare summarized/annual report	Clarify key information to be included in an annual report every year.	Assist preparation of annual inspection report	*	*	*	*	*
	Report summarized results to PPC	-	-	-	-	-	-	-
	Recommend measures for better water pollution control based on environment check/inspection results	Enhance capacity to propose measures for water pollution control on serious water pollution sources	Recommend measures for water pollution control on regional serious pollution sources	-	-	-	*	*
	Record environment check/inspection results in database	<i>See Note 3</i>						
Specific topic	Address on water environment incidents	Develop measures to address water environment incident.		*	-	-	-	-

Note 1: \* : CD activities are planned. - : CD activities are not planned.

Note 2: Given sanctions will be reviewed by JET, and provide recommendations to enhance functions of inspection for water pollution control as necessary.

Note 3: For improving current data and information recording system of environment check/inspection results, Output 2-4 will cooperate with Output 2-3 (Inventory) and Output 5 (Environmental Information Management).

(2) Capacity Development (CD) Needs based on the Action Plan prepared by DONRE  
 The actual CD needs of each DONRE are summarized in the Table 1.3-2 based on the Action Plans prepared by DONRE, and discussions from May to August 2011, and.

**Draft CD Approach in each DONRE**

Item	HNI	HPG	TT-HUE	HCMC	BRVT
(1) Key points to be improved	1) Clarifying criteria for selecting target industries to be inspected 2) Improving knowledge to check WWTF at sites 3) Clarifying key information to be included in an annual report every year 4) Developing measures to address water environment incident	1) Enhancing inspectors' field work capacities by preparing supporting tools for field work 2) Improving check system of enterprise self-monitoring reports by preparation of unified format and instructions for reviewing them	1) Enhancing capacities for planning inspection on water pollution sources 2) Introducing knowledge and experiences of field work of inspection on water pollution sources 3) Clarifying key information to be included in an annual report every year	1) Sharing required knowledge and experiences to secure reliability of environment check and inspection in DONRE 2) Enhancing capacities for planning inspection to collect information for evaluating impacts from pollution sources 3) Enhancing capacities to find issues on wastewater discharge in field work 4) Preparing recommendations for better water pollution control	1) Enhancing capacities for planning inspection to propose countermeasures on serious water pollution sources 2) Enhancing capacities to find issues on water pollution control during field work 3) Preparing recommendations for better water pollution control
(2) Approach of CD activity	1) Joint-work for preparing outputs 2) OJT for planning inspection plan, implementing field work and reporting 3) Lecture by JET	1) Joint-work for preparing outputs 2) OJT for using prepared outputs 3) Internal workshop to review prepared outputs	1) OJT for planning inspection plan, implementing field work and reporting 2) Lecture by JET	1) Cross-training of environmental officers of HCMC DONRE(HEPA, EMD, ID and WRMD) 2) OJT for planning inspection plan, implementing field work and reporting	1) OJT for planning inspection plan, implementing field work and reporting
(3) Figures/status of before the Project	1) Criteria for selecting target enterprises should be reviewed and improved. 2) Number of inspectors who can evaluate adequacy of wastewater discharge condition at the site is not enough. 3) Some of key information such as wastewater discharge license is not reported every year. 4) Measures to address water environment incidents are not developed.	1) Number of inspectors who have well-knowledge for field work is not enough. 2) It is difficult to review enterprise self-monitoring reports for planning and implementing environment check and inspection, due to lack of unified format of reporting, and instructions how to review them.	1) Number of inspections on water pollution sources is a few, and serious pollution sources should be inspected more.	1) Level of knowledge on environment check is different by each officer. 2) Number of inspectors who can collect required information by environment check and inspection and use them for evaluating impacts of pollution sources is not enough.	1) Number of inspectors who can collect required information by environment check and inspection and use them for recommending countermeasures is not enough.
(4) Figures/status of after the Project	1) Criteria for selecting target enterprises will be improved. 2) Number of inspectors who can check operation condition of WWTF at the site will increase. 3) Key information to be included in an annual report will be clarified. 4) Measures to address water environment incident will be developed and shared.	1) Number of inspectors who have well-knowledge for field work will increase. 2) Unified format for enterprise self-monitoring reports will be prepared with instructions for using data and information for planning and implementing environment check and inspection	1) Number of inspections on water pollution sources is increased with focusing priority pollution sources.	1) Gaps on level of knowledge on environment check by each officer will be smaller. 2) Number of inspectors who can collect and use environment check and inspection results for evaluating impacts of pollution sources will increase.	1) Number of inspectors who can collect required information by environment check and inspection and use them for recommending countermeasures will increase.

Item	HNI	HPG	TT-HUE	HCMC	BRVT
(5) Expected outcomes	<p>1) Criteria for selecting target enterprises to be inspected</p> <p>2) Inspectors having well-knowledge on WWTF</p> <p>3) Guidance on information to be included in annual report</p> <p>4) Document on measures to address water environment incidents</p>	<p>1) Documents, named handy reference cards to support officers related to inspection and environmental checking at sites</p> <p>2) Unified format and instructions for reviewing enterprise self-monitoring reports</p> <p>3) Annual inspection plans including suggestion by the Project</p> <p>4) Inspectors having well-knowledge for field work</p>	<p>1) Inspection plan in 2012 including suggestion by the Project</p> <p>2) Inspection plan in 2013 including suggestion by the Project</p> <p>3) Summary report of inspection in 2011</p> <p>4) Recommendation on unscheduled environment check and inspection planning</p>	<p>1) Inspection plan in 2012 including suggestion by the Project</p> <p>2) Inspection plan in 2013 including suggestion by the Project</p> <p>3) Summary report of inspection in 2011 including suggestion by the Project</p> <p>4) Recommendations for better water pollution control in Tan Quy Cluster</p> <p>5) Improved knowledge of officers related to environment check and inspection</p>	<p>1) Inspection plan in 2012 including suggestion by the Project</p> <p>2) Inspection plan in 2013 including suggestion by the Project</p> <p>3) Recommendation for improving wastewater discharge condition of pollution sources in Cua Lap river basin</p> <p>4) Knowledge on alternative measures on food processing industries</p>

## 2. CD Work Plan in each DONRE

### 2.1 HNI DONRE

#### (1) CD Work Plan

The CD work plan for HNI DONRE has been drafted through discussion with EPA in August 2011. The drafted CD work plan is shown in Table 2.1-1

Table 2.1-1 Draft CD Work Plan for HNI DONRE

Target Point/ Field of CD	Actual activities	Outcomes	Dissemination	note
1) Improving planning process of inspection	<p><u>2011:</u> -Oct-Nov: Review planning process of environment check and inspection plan in 2011 by JET.</p> <p>-Nov: Prepare draft proposals on criteria to select pollution sources for environment check and inspection by WG and JET.</p> <p><u>2012:</u> -May-Sep: Review and revise draft proposals on criteria to select pollution sources for environment check and inspection by WG and JET.</p> <p>Oct-Nov: Assist preparation of environment check and inspection plan in 2013.</p>	1) Criteria for selecting target enterprises to be inspected	<p>1) The prepared criteria will be shared among relevant sections in HNI DONRE.</p> <p>2) HNI DONRE will be expected to disseminate the prepared criteria to other DONRES.</p>	When criteria to select target enterprises are examined, discussion process and outcomes of Output 3 will be referred.
2) Improving capacities for checking wastewater treatment facilities and their operation condition at the site	<p><u>2011:</u> -Oct-Dec: Plan 1st internal workshop to provide technical knowledge on wastewater treatment facilities and checking their operating condition by WG and JET.</p> <p><u>2012:</u> -Jan: Hold 1st internal workshop, and review effectiveness</p> <p>-Jan-Dec: Join environment check and inspection for OJT to check wastewater treatment facility at site by HNI DONRE and JET.</p> <p>-May-Jul: Plan 2nd internal workshop to provide technical knowledge on wastewater treatment facilities and checking their operating condition by WG and JET.</p> <p>-Aug: Hold 2nd internal workshop, and review</p>	1) Inspectors having well-knowledge on WWTF	1) Inspectors of HNI DONRE will be expected to use obtained knowledge at sites, and to share the experiences to other DONRES.	Major sectors to be focused on: - Food/beverage - Restaurant and hotel - Machinery - Hospital - Solid waste dumping site - Livestock

Target Point/ Field of CD	Actual activities	Outcomes	Dissemination	note
	effectiveness  -Sep-Oct: Plan 3rd internal workshop to provide technical knowledge on wastewater treatment facilities and checking their operating condition by WG and JET.  -Nov: Hold 3rd internal workshop, and review effectiveness			
3) Upgrading annual summary inspection and environment check report	<u>2011:</u> -Aug: Review contents of existing inspection reports in 2008, 2009 and 2010 by JET.  -Oct-Dec: Discuss on expected items to be included in a summary report such as trend of illegal cases, characteristics of major industrial sector inspected, and proposal on the target facilities to be nominated for Circular 07 by WG and JET  <u>2012</u> -Jan-Feb: Prepare recommendations on contents to be included in a summary report of environment check and inspection in 2012 by JET.  -Sep-Dec: Assist on preparation of a summary report of environment check and inspection in 2012 by JET.	1) Guidance on key information to be included in annual report every year	1) The prepared guidance will be shared among relevant sections in HNI DONRE.  2) HNI DONRE will be expected to disseminate the prepared guidance to other DONRES.	When key information to be included in an annual report is examined, discussion process and outcomes of Output 3 will be referred.
4) Assisting for developing regulations to address water environment incidents	-Oct-Dec: Collect information on past major water pollution incidents by WG and JET.  -Jan-Feb: Clarify definition of "water environment incidents", identify stakeholders to be involved and issues to be regulated to address water environment incident by WG and JET.  -May-Sep: Prepare recommendations on procedures to address water environment incidents by WG and JET.	1) Document on measures to address water environment incidents	1) The prepared document will be shared with Output 1	

(2) C/P List

A working group of HNI DONRE for inspection consists of 4 members from the Inspection Division and EPA as shown in Table 2.1-2.

**Table 2.1-2 Working Group Member for Inspection of HNI DONRE**

Name	Organization	Position
1) Ms. Dao Thi Anh Diep *	EPA	Vice-director
2) Mr. Nguyen Tien Hung	Inspection Division	Manager
3) Mr. Nguyen Trong Truong	EPA	Officer
4) Mr. Ta Ngoc Son	EPA	Officer

\* WG leader

(4) Plan of Operation

Plan of operation for HNI DONRE for inspection is shown in Table 2.1-3.



## 2.2 HPG DONRE

### (1) CD Work Plan

The CD work plan for HPG DONRE has been drafted through discussion with Inspection Division and EPA in August 2011. The drafted CD work plan is shown in Table 2.2-1

**Table 2.2-1 Draft CD Work Plan for HPG DONRE**

Target Point/ Field of CD	Actual activities	Outcomes	Dissemination	note
1. Enhancing inspection capacity for priority sectors	<p><b>2011:</b></p> <p>-Aug: Confirm WG member's current technical capacities on environment check and inspection on priority industrial sectors by JET.</p> <p>-Oct: Review existing issues of pollution sources in the priority industrial sectors by WG.</p> <p>-Oct-Nov: Identify key capacities to be improved for better inspection and environment check by WG and JET.</p> <p>-Aug-Nov: Prepare handy reference cards describing technical information related to the identified technical key capacities that can be referred at the inspection/environmental checking sites by WG and JET.</p> <p>-Oct- Nov: Hold a lecture on the draft handy reference cards for HPG DONRE by JET.</p> <p>-Oct-Nov: Assist to prepare scheduled inspection plan in 2012 by WG and JET.</p> <p>-Dec: Hold an internal workshop for providing lectures and introducing prepared handy reference cards.</p> <p>-Dec-Jan 2012: Revise the prepared handy reference cards by WG and JET.</p> <p><b>2012:</b></p> <p>-Jan-Dec: Trial using of handy reference cards at the inspection/environmental checking by HPG DONRE.</p> <p>-Jan: Review requirements on further capacity development by WG and JET.</p> <p>-Oct-Nov: Assist to prepare scheduled inspection plan in 2013 by WG and relevant officers, supported by JET.</p>	<p>1) Inspection plan in 2012 including suggestion by the Project</p> <p>2) Inspection plan in 2013 including suggestion by the Project</p> <p>3) Technical documents, named handy reference cards to support officers related to inspection and environmental checking on site.</p> <p>4) Knowledge characteristics of wastewater on target industrial sectors</p> <p>5) Knowledge on how to control water pollution by the priority industrial sectors in HPG city by officers related to environment check and inspection.</p>	<p>1) Technical documents, named handy reference cards to support officers related to environment check and inspection on site.</p> <p>2) EPA and Inspection Division of HPG DONRE use the prepared handy reference cards.</p> <p>3) Collected pollution sources information by environment check and inspection will be used to prepare and update the PSI by WG2-3.</p> <p>4) HPG DONRE will be expected to disseminate the prepared handy reference cards to other DONREs.</p>	Priority industrial sectors shall be selected in the Re River basin
2. Improving reviewing system of enterprises self-monitoring report	<p><b>2011:</b></p> <p>-Aug-Sep: Review of existing enterprise self-monitoring report by JET.</p> <p>-Oct: Confirm lack of required information in current enterprise self-monitoring report by JET.</p> <p>-Oct-Nov: Prepare recommended format of enterprise self-monitoring report by JET.</p> <p>-Oct-Nov: Prepare a supporting guidance document for checking of enterprise self-monitoring report by WG and JET.</p> <p>-Dec: Hold an internal workshop to share the prepared-guidance document.</p> <p>-Dec: Revise the prepared guidance document based on the comments in the internal workshop.</p> <p><b>2012:</b></p> <p>-Jan-Dec: Trial using of the prepared format and guidance for checking self-monitoring report by</p>	<p>1) Unified format of enterprise self-monitoring report</p> <p>2) Instruction documents how to check enterprises self-monitoring reports on priority industrial sectors</p>	<p>1) Unified format and instruction document to check self-monitoring reports will be shared in HPG DONRE.</p> <p>2) For dissemination of the prepared unified format, WG 2-4 will be expected to cooperate with WG 4.</p> <p>3) HPG DONRE will be expected to disseminate the prepared unified format to other DONREs.</p>	Major sectors to be focused on: <ul style="list-style-type: none"> <li>- Food/beverage</li> <li>- Shoes</li> <li>- Shipbuilding</li> <li>- Limestone</li> <li>- Plastic</li> <li>- Steal</li> <li>- Chemical</li> </ul>





## 2.3 TT-HUE DONRE

### (1) CD Work Plan

The CD work plan for TT-Hue DONRE has been drafted through discussion with Inspection Division and EPA in August 2011. The drafted CD work plan is shown in Table 2.3-1

**Table 2.3-1 Draft CD Work Plan for TT-HUE DONRE**

Target Point/ Field of CD	Actual activities	Outcomes	Dissemination	note
Enhancing inspection activities on water pollution control focusing priority sectors	<p><b>2011:</b></p> <p>-Aug: Confirm target enterprises for inspection by TT-Hue in 2011, and identify needs on technical information to be provided for TT-Hue DONRE.</p> <p>-Aug-Dec: Join environment check and inspection to review current on-site activity by JET.</p> <p>-Oct-Dec: Provide technical information for preparation work stage, field work stage, and post-field work stage by JET.</p> <p>-Oct-Nov: Review past environment check and inspection results and complaints from local residents on water pollution sources, such as shrimp firms and food processing enterprises, and prepare recommendation on unscheduled environment check/inspection plan by WG and JET.</p> <p>-Oct-Nov: Prepare scheduled inspection plan in 2012 by WG and JET.</p> <p><b>2012</b></p> <p>-Jan-Feb: Review effectiveness of provision of technical information, and select important topics to be lectured/trained continuously in 2012 by WG and JET.</p> <p>-Jan-Feb: Assist to prepare summary report of inspection in 2011 by JET.</p> <p>-Jan-Dec: Implement scheduled inspection based on the planned environment check and inspection plan in 2012 by WG and relevant officers.</p> <p>-Oct-Nov: by WG and relevant officers, supported by JET.</p>	<p>1) Inspection plan in 2012 including suggestion by the Project</p> <p>2) Inspection plan in 2013 including suggestion by the Project</p> <p>3) Summary report of inspection in 2011</p> <p>4) Recommendation on unscheduled environment check and inspection planning</p>	<p>1) TT-Hue DONRE shares technical information among sections related to environment check and inspection.</p> <p>2) Collected pollution sources information by environment check and inspection will be used to update PSI prepared by WG2-3.</p> <p>3) Information of characteristics of pollution sources will be shared with WG-4.</p>	<p>1) Tentatively, priority industrial sector to be inspected/checked is shrimp aquaculture firm and seafood processing industry.</p>

### (2) C/P List

Working group of TT-Hue DONRE for inspection consists of 4 members from the Inspection Division and EPA, as shown in Table 2.3-2.

**Table 2.3-2 Working Group Member for Inspection of TT-Hue DONRE**

Name	Organization	Position
1) Mr. Duong Van Thanh *	Inspection Department	Vice-chief inspector
2) Ms. Nguyen Tran The Anh	Inspection Department	Inspector
3) Ms. Tran Thi Ngoc Diep	Inspection Department	Inspector
4) Mr. Ly Thanh Trung	Pollution Control Division, EPA	Officer

\* WG leader

### (3) Plan of Operation

Plan of operation for TT-Hue DONRE for inspection is shown in Table 2.3-3.

Table 2.3-3 Plan of Operation for Inspection of TT-Hue DONRE

Joint implementation of JET and Vietnamese C/P

Continuous implementation by Vietnamese side

Output 2-4: Inspection		JFY 2010/2011												JFY 2012												JFY 2013			JICA Expert in Charge
DONRE	activity	VFY 2011												VFY 2012												VFY 2013			
		3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3			
HUE	Confirm target enterprises for inspection by TT-Hue in 2011, and identify needs on technical information to be																										Ohi Naganuam		
HUE	Join environment check and inspection to review current on-site activity by TT-Hue.																										Ohi Naganuam		
HUE	Provide technical information to support inspection TT-Hue in 2011.																										Ohi Naganuam		
HUE	Review past environment check and inspection results and complaints from local residents on water pollution source and prepare recommendation on unscheduled environment check/inspection plan.																										Ohi		
HUE	Prepare scheduled inspection and environmental checking plan in 2012																										Ohi Naganuam		
HUE	Review effectiveness of provision of technical information, and select important topics to be lectured/trained continuously in 2012.																										Ohi Naganuam		
HUE	Assist to prepare summary report of inspection in 2011.																										Ohi Naganuam		
HUE	Implement scheduled inspection based on the planned environment check and inspection plan in 2012.																										Ohi Naganuam		
HUE	Prepare scheduled inspection plan in 2013.																										Ohi Naganuam		
	Ohi																												
	Naganuam																												

2.4 HCMC DONRE

(1) CD Work Plan

The CD work plan for HCMC DONRE has been drafted through discussion with Inspection Division and EPA in from May to August 2011. The drafted CD work plan is shown in Table 2.4-1

Table 2.4-1 Draft CD Work Plan for HCMC DONRE

Target Point/ Field of CD	Actual activities	Outcomes	Dissemination	note
Planning and implementing cross-training on relevant officers for sharing knowledge and upgrading HCMC DONRE capacities on environmental check and inspection	<p>2011:</p> <p>-Jul-Aug.: Distribute questionnaires, collect answers and confirm cross-training needs by JET.</p> <p>-Aug.: Plan 1st cross-training workshop on inspection and environment check by WG and JET.</p> <p>-Aug: Hold 1st cross-training workshop, of which contents are:</p> <p>a) A presentation for sharing information of pollution sources obtained through environment check and inspection by HCMC DONRE.</p> <p>b) A lecture to introduce Japanese pollution control system, approach and classification of pollution sources, investigation &amp; evaluation and detection of pollution sources, legal tools and policies for implementation of check and inspection by JET,</p> <p>c) A lecture to provide technical knowledge on assessment on environmental management measures by enterprises at site, and introduce basic idea on water environment risk assessment by JET.</p> <p>-Sep-Nov: Review the workshop effectiveness, and propose training activities be implemented furthermore by WG and JET.</p> <p>-Oct-Nov: Assist preparation of environment check and inspection plan in 2011 by JET.</p>	<p>1) Inspection plan in 2012 including suggestion by the Project</p> <p>2) Inspection plan in 2013 including suggestion by the Project</p> <p>3) Summary report of inspection in 2011 including suggestion by the Project</p> <p>4) Recommendations for better water pollution control in Tan Quy Cluster</p> <p>5) Improved technical knowledge of officers related to environment check and inspection on wastewater characteristics and water pollution control</p>	<p>1) Obtained information and knowledge through cross-training workshop be shared among HEPA, EMD, ID and WRMD</p> <p>2) Above information and knowledge be disseminated to other DONREs through information sharing workshop.</p> <p>3) Environment check and inspection results on enterprises in Tan Quy Cluster will be used to update the PSI prepared by WG2-3.</p> <p>4) Information of characteristics of pollution sources will be shared with WG-4.</p>	<p>1) The activities related to inventory will be carried out in Tan Quy industrial cluster.</p> <p>2) The activities be carried out considering multiplier effect with outcomes obtained through the activities related to inventory.</p>

Target Point/ Field of CD	Actual activities	Outcomes	Dissemination	note
	<p>-Nov-Dec: Join inspection and environment check by JET, and find key issues to be improved by JET.</p> <p>-Dec: Plan 2nd cross-training workshop by WG and JET based on the found issues in field work.</p> <p><u>2012:</u></p> <p>-Jan: Hold 2nd cross-training workshop.</p> <p>-Jan: Review the workshop effectiveness, and propose training activities be implemented furthermore by WG and JET.</p> <p>-Jan-Feb: Prepare recommendation on contents to be included in summary reports of environmental check and inspection in 2011.</p> <p>Jan-Dec: Join environment check and inspection at Tan Quy Industrial Cluster and provide recommendation by JET.</p> <p>-Jul: Plan 3rd cross-training workshop by WG and JET based on the findings obtained through inspections in Tan Quy Industrial Cluster.</p> <p>-Aug: Hold 3rd cross-training workshop and review the workshop effectiveness, and propose training activities be implemented furthermore by WG and JET.</p> <p>-Sep: Plan 4th cross-training workshop by WG and JET considering recommendations to be provided to Tan Quy Industrial Cluster.</p> <p>-Oct: Hold 4th cross-training workshop and review the workshop</p> <p>-Oct-Nov: Assist preparation of environment check and inspection plan in 2013 by JET</p> <p>2013</p> <p>-Mar: Planning cross-training program in post-project phase.</p>			

## (2) C/P List

Working group of HCMC DONRE for inspection consists of 5 members from the Inspection Division, EMD, and EPA as shown in Table 2.4-2.

**Table 2.4-2 Working Group Member for Inspection of HCMC DONRE**

Name	Organization	Position
1) Ms Le Thi Thanh Dung *	EMD	Expert
2) Ms. Nguyen Thi Tuyet Hoa	EMD	Expert
3) Mr. Dang Le Hien	Inspection Division	Expert
4) Ms. Nguyen Thi Thu Hang	Water Resources Department & minerals Management Division	Expert
5) Ms. Nguyen Minh Hang	EPA	Vice Head

\* WG leader

## (3) Plan of Operation

Plan of operation for HCMC DONRE for inspection is shown in Table 2.4-3.

### Table 2.4-3 Plan of Operation for Inspection of HCMC DONRE

Joint implementation of JET and Vietnamese CP

Continuous implementation by Vietnamese side

Output 2-4: Inspection		JFY 2010/2011												JFY 2012												JICA Expert In Charge		
DONRE	activity	VFY 2011						VFY 2012						VFY 2013														
		3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3		
HCM	Distribute questionnaires, collect answers and confirm cross-training needs																											Naganuam
HCM	Plan 1st cross-training workshop on inspection and environmental checking.																											Ohi Naganuam
HCM	Hold 1st cross-training workshop																											Naganuam
HCM	Review the workshop effectiveness, and propose training activities to be implemented furthermore																											Ohi Naganuam
HCM	Assist preparation of inspection plan in 2011 by JET																											Ohi Naganuam
HCM	Join inspection and environment check by JET, and find key items to be improved suggest for enhancement																											Ohi Naganuam
HCM	Plan 2nd cross-training workshop																											Ohi Naganuam
HCM	Hold 2nd cross-training workshop																											Naganuam
	Review the workshop effectiveness, and propose training activities to be implemented furthermore																											Naganuam
HCM	Prepare recommendation on contents to be included in summary reports of environmental check and inspection in 2011																											Ohi Naganuam
HCM	Join environment check and inspection at Tan Quy Industrial Cluster and provide recommendation by JET																											Ohi Naganuam
HCM	Plan 3rd cross-training workshop to discuss planning of environment check and inspection																											Ohi Naganuam
HCM	Hold 3rd cross-training workshop.																											Naganuam
HCM	Plan 4th cross-training workshop to discuss management of data and information obtained by environment check and inspection																											Ohi Naganuam
HCM	Hold 4th cross-training workshop.																											Ohi
HCM	Assist preparation of inspection plan in 2012 by JET																											Ohi Naganuam
HCM	Prepare cross-training plan in post-project phase																											Ohi Naganuam
	Ohi																											
	Naganuam																											

## 2.5 BRVT DONRE

### (1) CD Work Plan

The CD work plan for BRVT DONRE has been drafted through discussion with Inspection Division and EPA in August 2011. The drafted CD work plan is shown in Table 2.5-1

The CD Work Plan for BRVT DONRE is drafted in the Table below.

Table 2.5-1 Draft CD Work Plan for BRVT DONRE

Target Point/ Field of CD	Actual activities	Outcomes	Dissemination	note
Enhancing capacities to propose countermeasures on water pollution sources based on environment check and inspection	<u>2011:</u> -Aug-Sep: Collect existing water quality monitoring data of Cua Lap river by JET -Aug-Sep: Identify key capacities to be improved for better inspection and environment check by WG and JET. -Aug: Implement field reconnaissance along Cua Lap river by WG and JET -Oct: Collect pollution source information from Long Dien district DONRE by WG and JET -Aug-Dec: Join environment check and inspection to review current on-site activity by	1) Inspection plan in 2012 including suggestion by the Project 2) Inspection plan in 2013 including suggestion by the Project 3) Recommendation for improving wastewater discharge condition of pollution sources in Cua Lap	1) BRVT DONRE shares technical knowledge among sections 2) Above information and knowledge be disseminated to other DONREs through information sharing workshop. 3) Collected pollution sources information by environment check and inspection will be used to	1) Target area is Qua Lap basin.



### **3. Others**

#### **3.1 Provincial Specific Topics to be considered**

(1) Hai Phong DONRE pointed out priority industrial sectors to be controlled in Hai Phong city, as (i) Beverage industries, (ii) Food processing industries, (iii) Paper mill industries, (iv) Textile and dyeing industries and (v) Leather (shoe) industries.

(2) TT-Hue province pointed out the priority industrial sectors to be controlled are (i) shrimp aquaculture farm, (ii) seafood processing industry, and (iii) solid waste dumping site.

(3) HCMC DONRE pays attention to Tan Quy Industrial cluster, where is located northern part of Ho Chi Minh city. According to the inspection report by Department of Inspection in 2009, there are 12 enterprises operate in the cluster, such as textile industry, paper manufacturing industry, automobile production industry, and one landfill site. All inspected enterprises have environmental registration, such as EPC and EPP. However, only 7 enterprises have wastewater discharge licenses, and 3 enterprises discharged wastewater of which qualities were not complied with effluent standard. Wastewater from Tan Quy industrial cluster was discharged to small channel connecting with Ba Bep channel, flowing into Saigon river. HCMC DONRE concerns impact of wastewater to water quality of Ba Bep channel, and plans to estimate pollution loads from Tan Quy industrial cluster, and trial wastewater impact evaluation on Ba Bep channel. This pilot activity will be implemented to support HCM DONRE, and develop capacity for pollution loads analysis and wastewater impact evaluation through development of pollution source inventory in the Tan Quy Industrial Cluster.

(4) BRVT DONRE pays attention to The Cua Lap river in Long Dien district which is one of serious polluted rivers in Ba Ria Vung Tau province. Main factors affecting to the river are wastewater from seafood processing industry, domestic wastewater, livestock waste and municipal solid waste dumping disorderly. BRVT DONRE received complaints from local residents. However, detail information on pollution sources has not been collected, and measures have not been proposed. BRVT DONRE intends to confirm current status of water pollution sources along the Cua Lap river, and examine measures to mitigate water pollution.

#### **3.2 Problems to be solved**

(1) In planning process, criteria and procedure to select target enterprises should be improved. Currently, environment check and inspection results and relevant information such as enterprise self-monitoring report are stored separately, and it is difficult to refer them at once to prepare inspection plan. This situation makes it difficult to select target enterprise to be inspected strictly. Output 2-4 reviews current planning process, and assist to prepare criteria to select target enterprise to be inspected to clarify which information should be referred for planning. Regarding data and information sharing among relevant sections, Output 2-4 will cooperate with Output 2-3 (Inventory).

(2) Each DONRE implements field work of inspection by regulated procedure. Based on the observation of field work in TT-Hue and BRVT, JET found that checking of legal status related to environmental legislation was done well. On the other hand, JET considers that it is better to enhance field work capacities to check wastewater discharge condition to examine and propose measures for improving wastewater management by enterprises. In the Project, Output 2-4 will provide technical information on wastewater treatment facilities and how to check their operating condition.

(3) Each DONRE summarizes environment check and inspection results, and prepares annual environment check and inspection report. Currently, the report focuses on number of environment check/inspection, number of sanction and amount of collected fine. To improve water pollution control by enterprises, it is recommended that annual report includes detail information on status of environmental management system and wastewater discharge condition to contribute to find key issues to be solved, and provide information to examine countermeasures. Output 2-4 will assist to improve annual environment check and inspection report.

(4) Currently, each DONRE does not have database to share information of inspection results in DONRE. For preparation of annual plan, and review effectiveness of inspection, it is recommended that inspection results are stored in database to refer them timely, and analyze for examination of water pollution control

measures. Regarding this issue, Output 2-4 will cooperate with Output 2-3 (Inventory) and Output 5 (Environmental Information Management).

*End*

## Work Plan of Output 3 (Water Pollution Control Measures)

### 1. General

#### 1.1 Objectives of the Work Plan (WP)

##### (1) Background

In Output 3, the outline of water pollution control measures for industrial wastewater in the model area will be drafted through series of activities such as review of existing environment management tools, examination of the amendment of policies, investigation of environment protection measures at pollution sites. The Vietnamese Counterparts (CPs) will formulate the Outline of Water Pollution Control Measures with the support and advice of experts of JICA Expert Team (JET). In this wise, Output 3 will take series of activities to mainly focus on industrial wastewater from manufacturing firms, including just overall assessment of pollution loads generated from other sources.

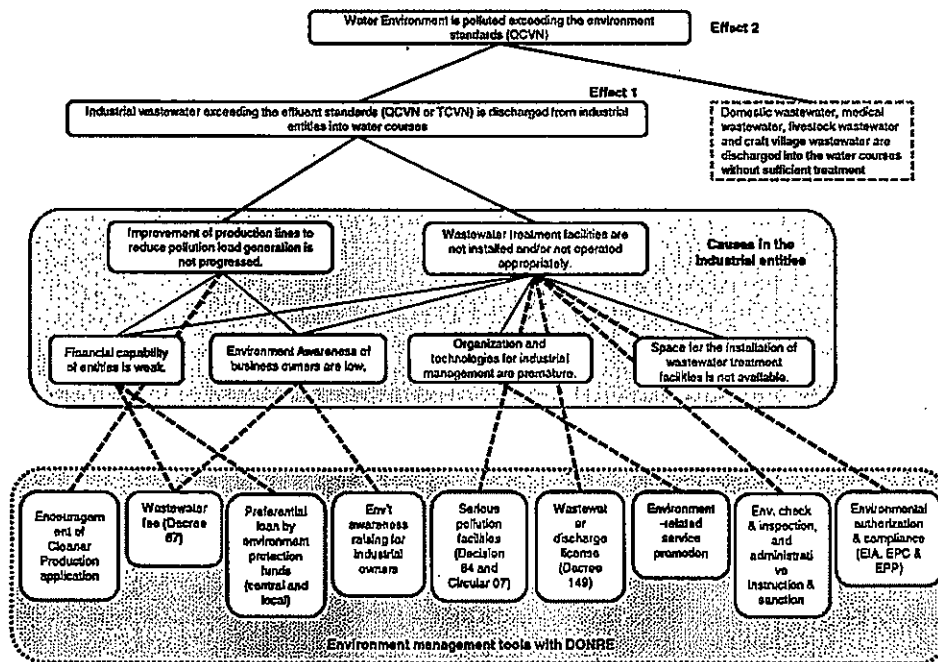
Objectives of the Work Plan (WP) are as follows:

- To clarify actual capacity development activities and scheduling,
- To identify indicators and targets of the activities for evaluation,
- To conduct activities in accordance with WP, and
- To reflect results and lessons to WP for the next working period.

#### 1.2 Review of the Current Situation of Water Quality Analysis

##### (1) Causes of Industrial Wastewater Pollution

Effluent standards of industrial wastewater have been set in QCVNs and TCVNs of Vietnam and all industrial business owners have the responsibilities for discharging wastewater to the public water courses, after treating appropriately meeting the effluent standards. However, many business owners fail to comply with the effluent standards. This situation is caused by the delay in the improvement of production lines to reduce generated pollution loads, due to lack of environment awareness and of finances. No provision and appropriate operation of wastewater treatment facilities are other causes resulting from premature technologies and organizational regimes to preserve the environment. As seen in Figure 1, there are diverse causes for incompliance, depending on business owners.



**Figure 1 Causes and Effects of Industrial Wastewater Pollution**

##### (2) DONREs' Responsibilities and Environment Management Tools

The Vietnam's Government has been actively tackling the environment control since 2000s, empowering series of related policies. Representatively, they are National Strategy on Environment Protection till 2010 and Orientation towards 2020 (Decision No.256/2003/ND-CP) and amended Law on Environment Protection (Law No.52, promulgated in 2005). Along these, MONRE has established series of environment



management tools (EIA system, designation of serious pollution facilities, wastewater fee system, etc.) to enforce national policies and programs for the environment management and also has taken guiding activities to promote the actual enforcement of them in local governments. Meanwhile, DONRE has the responsibility for supervising environment protection measures to be taken by business owners and has enforced in the frontline the administrative management against industrial wastewater by means of environment management tools, receiving implementation schemes and guiding of MONRE. The environment management tools being employed by DONRE are aiming to promote and encourage the appropriate environment protection measures to be taken by business owners themselves, by overcoming diverse causes leading to the incompliance of business owners.

Management tools being employed by DONRE are diverse as shown in Table 1, and they are commonly classified by measures to be applied, into the approach of regulatory, economic and information and others. While DONRE has diverse management tools against industrial wastewater, they are not functioning sufficiently or not activated as of now. Therefore, incompliance against the effluent standards and the requirements of environment protection have been repeated by business owners. It may be enumerated as major causes of this situation that DONRE has no sufficient capacity of enforcing these environment management tools, and basic mechanisms and/or guiding of tools performed by MONRE are not sufficient.

**Table 1 Major Tools of Environment Management in Vietnam**

Management Tools (Main grounding regulations)	Objectives and Functions	Actual Status
Environmental authorization & compliance (Decree 80 (2006))	All pollution generators must be authorized through EIA or EPC (or EPP) under their environmental protection measures to comply with environmental protection requirements, including the provision of wastewater treatment meeting the effluent standards and self-monitoring.	This is a major regulation tools in Vietnam and is conducted as regular tasks of DONREs. Some pollution generators without authorization are existing. Besides, many violations against the effluent standard are found repeatedly, because many have no provision of appropriate treatment facilities.
Environmental inspection and administrative sanction -Inspection Law and LEP Article 125, Decree 117 (2009)	Environmental inspection are carried out to examine the compliance status and administrative sanctions (warning, monetary fines, cease of the operation, etc.) against violations are imposed against violations.	The frequencies of inspection are very low. Though many monetary fines have been imposed, environmental violations are repeated in many cases.
Serious pollution facilities and additional pollution facilities -Decision 64 (2003), Circular 07 (2007)	The Government designated and publicized seriously polluting facilities (pollution source generators) which are requested to take urgent responses.	As of today, around 70% of designated pollution source generators have completed necessary countermeasures.
Wastewater discharge license -Decree 149 (2005), grounded on Law on Water Resources	Pollution generators to discharge wastewater into water sources must obtain wastewater license.	The numbers of application are very limited. So, this tool has not been activated fully, yet.
Wastewater fee (environment protection fee for wastewater) -Decree 67 (2003)	Wastewater fees are collected from all pollution generators of domestic wastewater or of industrial wastewater, giving the economic incentive for reducing pollution load.	The pollution generators paying the fee are still less.
Preferential loan -LEP Article 110, Article 115, Article 117	Pollution generators taking environmental protection measures can use preferential loans through VEPP with fund capitals.	The capital fund of VEPP is still limited and not many pollution generators can use it.
Application of Cleaner Production -LEP Article 6-5 and 6, Article 108	The application of cleaner production to reduce pollution load in production lines is promoted. (Mainly the production sector leads this system)	The numbers of pollution generators employing CP is still limited.
Good practice awarding system -LEP Article 106	Good practices are awarded to promote environment-friendly technologies and practices.	This is almost not practiced.
Environment-related service promotion -LEP Article 109, Article 116	The information on specialized institutions of measurement & analysis of water quality, consulting, design, construction, etc. are diffused, so that pollution generators access and consult them, easily.	This is not activated yet.
Environmental information disclosure -LEP Article 104)	Environment management information like water quality monitoring, good practices, incompliance and violations are publicized to raise the environment awareness of citizens.	This is almost not practiced.

Note: LEP stands for the Law on Environment Protection.

## 2. Drafting of Outline of Water Pollution Control Measures

## 2.1 Common Issues of Existing Environment Management Tools

Diverse environment management tools are in place in Vietnam. However, management tools being applied to actual administrative management are deviated mainly to regulatory approach including environmental authorization, environmental check and inspection with administrative sanctions, etc. It is assessed that management tools being applied now contain issues on the effectiveness and efficiency, since they contains individual issues and are separately implemented by different units in charge. Considering such situations, environment management tools are in need of empowerment and improvement for synergy effects, so that DONRE gets the enhanced power of industrial wastewater management.

## 2.2 What is "Outline of Water Pollution Control Measures"?

A certain industrial group in the model area located in the subject province will be selected for Output 3. The working group will conduct a survey to clarify the status of operation and treatment of industrial wastewater in industrial entities and the situation of environment management activities by DONRE. On the basis of survey results and also the draft amendment of water management policy and tools to be proposed in Output 1, the working group will draft and recommend an outline of the plan on the strengthened water pollution management, including strategies on how to effectively improve and/or mobilize management tools. In this Project, this final outcome of Output 3 is called the Outline of Water Pollution Control Measures.

More detail planning will be necessary to implement environment management tools to be recommended by the working group. It has been confirmed that this detail planning for the implementation will be made by DONRE separately, following up the Project. In this wise, Output 3 is aiming to draft just key points and direction on the strengthening and improvement. Thus, the report to be drafted in Output 3 is titled the "Outline."

As seen above, the model area will be selected as a typical area to formulate the Outline of Water Pollution Control Measures against industrial wastewater problems. The working group will thoroughly survey and verify various problems related to industrial wastewater, consciousness and responses of business owners and effectiveness and issues in environment management tools of DONRE. It is not the case that some pilot projects or trial activities will be carried out in the model area of Output 3. Output 3 will analyze environment management tools to be applied in the model area as a total system including basic mechanism and guiding implemented by MONRE as the central state authority as well as the enforcement by DONRE. Based on this, findings on the improvement and strengthening of tasks belonging to MONRE will be fed back to Output 1, separately.

## 3. Capacity Development

The objective of Output 3 is that DONRE's capacity of making effective water pollution control measures is strengthened. As seen above, the outline of water pollution control measures will be drafted through series of surveys and examinations, like data/information collection, analysis on DONRE's environment management and environment protection measures by industrial entities, identification of issues to be addressed and examination of strengthening. The capacity development for drafting the water pollution control measures is scheduled to be attained by proactive activities of DONRE staffs throughout the whole project period, under the technical support and advice of JET experts. Accordingly, positive attendance of DONRE staffs in the output 3 activities is one of essential conditions for successful achievement of the Output 3 objective. Table 2 shows the overall program consisting of elements, activities, expected outputs and effect to be scheduled in Output 3.

**Table 2 Overall Program of Capacity Development for Output 3**

Element of CD	Activity of CD	Expected Output	Expected Effect
Collection of environment management information	Collecting data/information on environment management, environment protection measures at sources, etc.	To be able to make a plan and prepare for information collection and implement it.	To be able to formulate the effective water pollution control measures to be enforced by DONRE.
Arrangement and storing of collected environment management information	Arranging and storing collected information by means of spreadsheets and/or database soft application.	To be able to arrange, store and update collected information efficiently and effectively.	
Analysis of collected information and identification of issues	Identifying issues on DONRE's environment management and environment protection measures at sources, by analyzing collected information and site survey results.	To be able to analyze collected information on pollution control measures and to identify issues to be addressed.	
Formulation of	Formulating and recommending effective	To be able to formulate and	

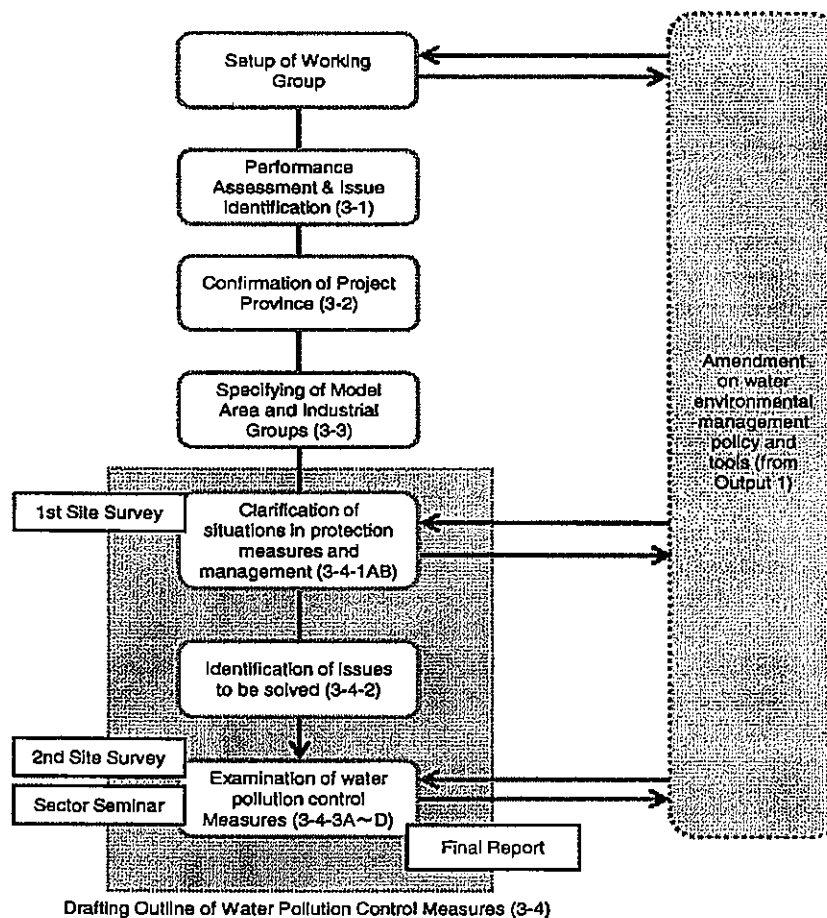
Element of CD	Activity of CD	Expected Output	Expected Effect
improvement measures of environment management	improvement measures against identified issues based on of DONRE's environment management policies and strategies.	recommend effective water pollution control measures by the improvement of environment management tools.	

#### 4. Plan of Output 3 Activities

##### 4.1 Drafting Process of Outline of Water Pollution Control Measures

First of all, the working group will survey on the overall current status of the environment management being conducted by DONRE in the whole Hanoi City. Then, the model area and industrial groups subject to Output 3 will be selected, considering the objectives of Output 3 and also the application of "the draft amendment of water management policy and tools" to be proposed in Output 1.

Secondarily, the working group will thoroughly survey the environment management being conducted by DONRE and environment protection measures being taken by industrial entities belonging to the selected industrial group in the model area, including site surveys. After identifying issues in the model area, the working group will examine how to strengthen environment management tools. Based on these results, plain schemes of environment protection measures for representative selected entities will be prepared. The working group will verify the validity of these schemes by explaining the contents to business owners. By taking account of the results of verifications, the working group will prepare the Outline of Effective Water Pollution Control Measures. Figure 2 shows the drafting process of the final report for the Outline of Water Pollution Control Measures. Together, the overall schedule of Output 3 is shown in Figure 3 on the next page.



**Figure 2 Drafting Process of Outline of Effective Water Pollution Control Measures**

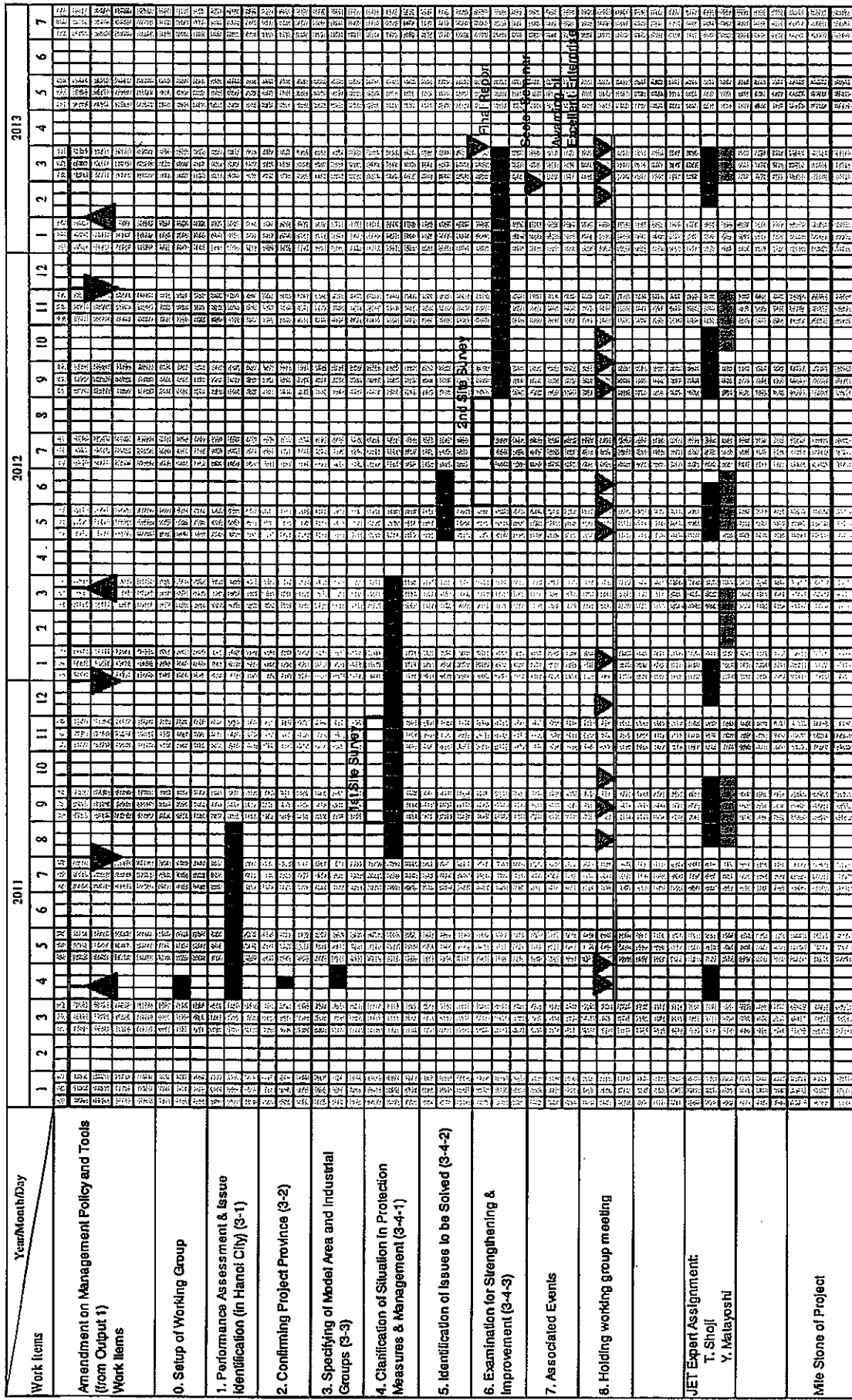


Figure 3 Plan of Operation of Output 3

#### **4.2 Setup of Working Group**

The working group of Output 3 to be comprised of persons concerned of the Vietnam side and JET will be set up. Members of the working group will proactively perform related tasks with drafting water pollution control measures, under the support and advice of JET. The working group will be organized by members nominated from the following units concerned with water pollution control (a member from a unit) led by the working group leader from Hanoi City Environment Protection Agency (HEPA).

- a) Hanoi City Sub-Department of Environment Protection (Environment Protection Agency, HEPA): Engaged in EIA approval, environmental check, wastewater fee, serious pollution facilities (Decision No.64, 2003), environment protection fund of Hanoi City, introduction of C/P, environment awareness raising/dissemination.
- b) Water Resources Division and Inspection Division in Hanoi City DONRE
- c) District-level DONRE in the model area

The working group will carry out and supervise works necessary for drafting water pollution control measures over the whole period of the Project, holding meeting once every about three (3) week plus when necessary. Additional staffs from units concerned will be mobilized with the instruction of the working group leader, when necessary.

#### **4.3 Performance Assessment and Identification of Issues (Activity 3-1)**

In the subject province (Hanoi City planned), the working group will collect information on the environment management tools being implemented by DONRE. By analyzing collected information, problems and constraints of individual management tools will be clarified and the effects of current water pollution control measures will be assessed from the point of comprehensive view. Then, the working group will identify issues to be addressed in the environment management of DONRE.

Various existing environment management tools being currently employed in the whole Hanoi City will be studied. Among them are environmental authorization/compliance (EIA, EPP and EPC), environmental check/inspection, serious pollution facilities, wastewater fee, wastewater discharge license, introduction of CP and others. This study will be carried out by collecting information and hearing Hanoi DONRE and a part of district DONREs, along with site surveys. The information to be collected here will focus on data showing the implementing and achievement status of environment management tools.

#### **4.4 Confirmation of Subject Province (Activity 3-2)**

It has been already agreed in the discussion between the Japan side and the Vietnam side that Hanoi City is subject to the activities of Output 3. It will be reconfirmed that Hanoi City is the subject province of Output 3, taking account of activities to be taken in Output 3.

#### **4.5 Specifying of Model Area and Industrial Groups (Activity 3-3)**

The working group will discuss and specify the model area in Hanoi City and industrial groups subject to the study of Output 3. The model area should be a site which accommodates industrial entities with diverse types, in view of water pollution control measures to be aimed in Output 3. Together, the model area should be small as long as it encompass diverse-type entities, taking account of the workload necessary for site surveys. In addition, the model area should be located in the territory of a district, considering survey works by district-level DONRE.

#### **4.6 Clarification of Current Situations in Model Area (Activity 3-4-1)**

The existing situations related to water pollution control measures in the model area will be surveyed and clarified. Survey items are existing situations of; i) the environment protection measures at industrial entities, ii) the environment management in Hanoi DONRE (partly including district-level DONREs) by means of various management tools, and iii) pollution of the water environment in the model area and the surrounding areas. The detail of this activity is as follows:

##### **(1) Preparation of Pollution Source Inventory (Activity 3-4-1A)**

The Working Group will prepare a pollution source table (PST) for all pollution sources in the model area. The PST will carry data/information on such existing environment tools as environment authorization /compliance, environmental check/inspection, wastewater fee, wastewater discharge license, introduction of CP and others. By using PST, the enforcement status of the environment management which DONRE (including district-level DONRE) conduct in the model area will be clarified. On the basis of these results, problems and constraints in the environment management by DONRE will be clarified. The PST will be

prepared by using data/information collected from Hanoi DONRE and district-level DONRE.

**(2) Survey on Industrial Entities in the Model Area (First Site Survey) (Activity 3-4-1B)**

The first site survey is aiming to identify problems and constraints, by clarifying existing situations of environment protection measures being taken by industrial entities. In case some incompliance against the effluent standards and other requirements are found out, the survey will focus on clarifying underlying causes why business owners fail to comply with. This survey will take place on about 30 industrial entities selected from the industrial group in the model area through site survey, by using a questionnaire as shown in Table 3. The site survey will be conducted by members of the working group including staffs of Hanoi DONRE, district-level DONRE, JET expert and local assistants. The format of pollution source survey which is prepared in Output 2 may be used for the first site survey, if it is available and useful for the survey.

**Table 3 Survey Items for Environment Protection Measures (Example)**

Categories	Data/Information to be Collected
1. Basic information	<ul style="list-style-type: none"> <li>• Title of entity, responsible persons, contact</li> <li>• Address, Latitude, longitude</li> <li>• Category of environment authorization (EIA, EPP, EPC)</li> </ul>
2. Information of pollution source facilities	<ul style="list-style-type: none"> <li>• Industrial category, Main product, Number of employees</li> <li>• Lot area of entities, Annual sales amount</li> </ul>
3. Production process	<ul style="list-style-type: none"> <li>• Reduction of water consumption, Raw material, secondary raw material</li> <li>• Improvement of production line, Reuse of water, Reuse of by-products</li> </ul>
4. Measures of wastewater treatment	<ul style="list-style-type: none"> <li>• Wastewater flow, Type and capacity of wastewater treatment facilities</li> <li>• Destination of wastewater discharge</li> <li>• Wastewater qualities (before and after treatment) (pH, BOD, COD, T-N, TKN, PO<sub>4</sub>, SS, Oil and greases, T-Coliform, Toxic substances and others)</li> <li>• Treatment and disposal of sludge, System of operation and supervision</li> </ul>
5. Environment management information	<ul style="list-style-type: none"> <li>• Designation of serious pollution facilities, Monitoring report</li> <li>• Payment of wastewater fee, Implementation record of environmental inspection</li> <li>• Record of environmental compliance and violation</li> <li>• Record of administrative sanctions and instructions</li> </ul>

**4.7 Identification of Issues on Environment Protection Measures and Management Tools (Activity 3-4-2)**

The working group will analyze the survey results in the model area. Based on these results, issues to be solved by DONRE will be identified, taking account of the mandates owned by DONRE. If some outside constraints in environment management tools are found out, they are handled, separately. The survey results will be analyzed from the viewpoint of inputs (resources of personnel, physical, financial and information), activities to be mobilized, outputs to be generated and effects in the objectives of environment protection measures and management. Problems will be examined, especially focusing on the relationship and interactive effects between issues in environment protection measure and characteristics of environment management tools.

**4.8 Examination of Water Pollution Control Measures (Activity 3-4-3)**

In response to identified issues to be solved, the working group will discuss how to strengthen environment management tools to realize the effective water pollution control measures by DONRE. The strengthening of management tools will be examined by considering the improvement of existing tools and/or the mobilization of newly-introduced tools. By means of strengthened environment management tools, the working group will prepare the outlines of environment protection measures for selected typical industrial entities. The effectiveness and viability of these outlines will be verified through the consultation with business owners.

The detail of this activity is as follows:

**(1) Strengthening of Environment Management Tools (Activity 3-4-3A)**

The strengthening of environment management tools by the improvement and mobilization will be examined on the industrial group in the model area, concerning the following three (3) categories:

a) Existing Environment Management Tools

To discuss strengthening and improvement of existing environment management tools (including environment authorization, environmental check/inspection, serious pollution facilities, wastewater fee,

cultivation of environment service provider, wastewater discharge license, etc.)

b) Draft Amendment of Water Management Policy and Tools to be Proposed in Output 1

To discuss the management policy and tools for the viewpoint of necessary resources/ activities and expected outputs/effects (for the compliance against the effluent standards).

c) Industrial Wastewater Management Rating (IWMR) to be proposed by JET

In this Project, the Industrial Wastewater Management Rating System (IWMR) to be applied to the assessment of industrial entities is proposed by JET.

IWMR is, in the essence, different from PROKASI being employed in Indonesia and the environment performance rating system which had been tried in Vietnam in the past, involving general citizens. IWMR is the rating system which DONRE evaluates and rate the environment protection measures taken in industrial entities, based on the management data of DONRE. For example, the achievement of environment protection measures in industrial entities are classified into four (4) ranking from A to D, as shown in Table 4.

**Table 4 Rating in Industrial Wastewater Management Rating (IWMR) (Example)**

Ranking	Required Performances
Gold	"Excellent Performance" so as to serve as a model, meeting the effluent standard and other environment requirements and applying the environment-friendly technologies in the production lines.
Silver	"Fine Performance", meeting the effluent standard and other environment requirements.
Red	"Bad Performance", not meeting the effluent standard due to insufficient capacity of wastewater treatment plant or inappropriate operation and maintenance. (Requiring the administrative instruction by DONRE)
Black	"Worst Performance", discharging untreated wastewater due to no provision of wastewater treatment. (Requiring the immediate and strict administrative instruction and sanction by DONRE)

The IWMR is proposed in this Project by JET, aiming:

- a) To enhance the environmental awareness and behaviors of business owners, by publicizing and awarding the excellent business owners.
- b) To enhance the skills for environmental check and assessment and to establish work practices on processing and updating the environment information of DONRE.

The working group will rate the industrial wastewater management of industrial entities in the model area by using data/information collected during the Project. As a result, business owners showing excellent performance will be publicized and awarded in this Project in the appropriate opportunity set up in the cooperation with Output 4.

**(2) Verification of Strengthened Environment Management Tools (Second Site Survey) (Activity 3-4-3B)**

Consultation and interview meeting with responsible persons of industrial entities will take place in the secondary site survey. In this second survey, it will be assessed and verified whether strengthened and improved environment management tools works effectively in promoting environment protection measures to be taken by industrial entities. The second site survey will be carried out to some 10 typical entities which will be selected based on the result of the first site survey and are in need of some environment protection measures.

Specifically, by means of strengthened management tools, the working group will examine and prepare the outline plan of environment protection measure including necessary protection measures (with necessary wastewater treatment facilities, rough construction cost, financing plan, operation and management plan, etc.) and supporting scheme by DONRE for selected respective industrial entities. The working group will assess and verify the effectiveness of strengthened and improved management tools, through the consultation and interview with industrial entity sides.

For example, the outline plans of environment protection measures to be used for selected industrial entities are shown in Box 1. The working group will meet and interview with responsible persons of entities in order to hear their responses to the outline plans of environment protection measures.

**Box 1 Outline Plan of Environment Protection Measures to be used for Second Site Survey (Example)**

**<Example 1: Company A (Medium-Scale Food)>**

**Current situation:** Company A which is a medium-scale food processing firm have no provision of wastewater treatment facilities and discharging wastewater without treatment. The business owner explains that, though he knows of the effluent standards, it is difficult to install it, because no financial sources. Company A does not pay the wastewater fee, because it has been not informed from DONRE. Together, Company A does not submit a self-monitoring report, because it does not know of any firm of water quality measurement.

**Outline plan of environment protection measures:** The outline plan shows the abstract of wastewater treatment plant including the construction and operation cost, and explains that the Company can use soft loans of Hanoi Environment Protection Fund. The working group tells the necessity of the payment of wastewater fee, explaining the duty of the payment of wastewater fee. Together, The working group instructs periodical submission of self-monitoring reports responding to the requirements in EIA approval, introducing firms of water quality measurement.

**Related environment tools:** Environment protection fund, wastewater fee, self-monitoring report, network development of environment service provider.

**<Example 2: Company B (Large-scale pulp and pulp product manufacturing)>**

**Current situation:** Company B, ex-state-run pulp product firm, has wastewater treatment plant. However, the company has repeatedly violated the effluent standards due to overloading, because the production lines are outdated and generates massive and high-concentration wastewater. Residents oftentimes complains the water pollution to Hanoi PC. Although the company knows of wastewater discharge license, it has not made application to the authority, because the capacity of wastewater treatment plant is not sufficient. The EIA of the company was approved 8 years ago. It has been found that the company has not applied the alteration of EIA, despite the production capacity has become double.

**Outline plan of environment protection measure:** The outline plan suggests that the company receive the consultation with the Vietnam Cleaner Production Center (VCPC, as an example) on improvement and renewal of production lines. Together, the outline plan explains that the company may use the soft loan of the environment protection fund for the improvement and renewal. It is instructed that the company apply wastewater discharge license and the alteration of EIA at an early date.

**Related environment tools:** Cleaner Production, environment protection fund, wastewater discharge license, EIA approval (application of the alteration)

**<Example 3: Company C (Small-scale Metal Processing)>**

**Current situation:** The company, a small-scale metal processing firm (including metal surface treatment) discharges wastewater containing toxic substances like cyanide, hexavalent chromium and others. The existing wastewater treatment plant with the function of pH adjustment cannot remove toxic substances. The company has been aware of the necessity of the expansion of wastewater treatment plant's capacity but cannot implement it due to the lack of land space (because the company is located in urban center densely populated).

**Outline plan of environment protection measure:** The outline plan suggests the relocation of the company to an industrial park nearby or other locations in the city, based on the survey and discussion in the working group. It will be explained that the company can use preferential supporting measures for land-use and the soft loan of Hanoi environment protection fund (after calculating necessary costs).

**Related environment tools:** Relocation of the firm, preferential land-use, environment protection fund.

**<Example 4: Company D (Small-Scale Seafood Processing)>**

**Current situation:** The small-scale seafood processing company which was established with several employees 50 years ago has no provision of wastewater treatment plant and is discharging some 30 m<sup>3</sup>/day. A surrounding river is seriously polluted by the discharge of no treated wastewater. However, the company maintains good relationship with local communities, providing residues generated in the production to households operating pig and poultry farming. The business owner has no knowledge on the Law on Environment Protection and the enterprise's duty for wastewater treatment, not submitting EPC registration. In this wise, the owner has no idea on how to install necessary wastewater treatment facilities.

**Outline plan of environment protection measure:** It will be explained to the owner that the installation of wastewater treatment is an owner's responsibility grounded by the Law on Environment Protection. The outline plan will instruct, introducing environment service providers related to water quality measurement, institute for wastewater planning and engineering, that the owner should install and operate the wastewater treatment plant at an early date, after making the plan of the wastewater treatment and register EPC in district-level DONRE.

**Outline plan of environment protection measure:** Environment awareness raining to business owners, EPC registration, network development of environment service providers.

The secondary site survey will take place in some 10 entities selected from entities to be rated in the Black Level in the IWMR. Results coming from the secondary site survey will be incorporated to the re-examination of strengthening and improvement.

**(3) Estimation on Effect of Pollution Load Reduction (Activity 3-4-3C)**

The pollution load to be generated in the model area will be reduced as the result of the progress in the water pollution control measures to be proposed in Output 3. The effect in the pollution load reduction along the proposed water pollution control measures will be calculated and estimated.

**(4) Final Report on Outline of Effective Water Pollution Control Measures (Activity 3-4-3D)**

On the basis of results of all studies and surveys, the Outline of Effective Water Pollution Control Measures will be drafted, containing the strengthening and improvement scheme of existing environment management tools and examination results of management tools to be newly applied. The Output 3 will deal with environment management tools as total system from the viewpoint of not only the enforcement



by DONRE but also basic mechanism and guiding by MONRE. Thus, Output 3 will raise measures to improve MONRE's tasks, also.

The planned framework of the Outline of Effective Water Pollution Measures is shown in Box 2. The Outline of Effective Water Pollution Control Measures to be completed will be reported to Hanoi City PC, through the discussions in PMU and JCC.

<b>Box 2 Framework of Outline of Effective Water Pollution Measures</b>	
1. Profile of Model Area	
2. Present Status of Environment Protection Measures at Sources	
3. Current Situation of Environmental Management by DONRE	
4. Main Issues in Water Pollution Control	
5. Identified Challenges in Water Pollution Control	
6. Proposed Measures for Effective Water Pollution Control	
7. Conclusion and Recommendation	

**(5) Holding of Sector Seminar (Activity 3-4-3E)**

A sector seminar on industrial wastewater management will be opened, aiming to publicize the Outline of Effective Water Pollution Control Measures to be promoted by DONRE and to transfer related regulations and technologies in Japan, as shown in Table 5. In this seminar, business owners, environment-related service providers, administrative officers from environment management and JET will be participated.

**Table 5 Sector Seminar on Industrial Wastewater Management (Scheduled)**

Presentation	Resource Person
1. Effective water pollution control measures in Hanoi DONRE	Leader of Output 3 Working Group
2. Applicable technologies of industrial wastewater treatment in Vietnam	Expert from Vietnamese Wastewater Engineering Firm
3. Introduction of Cleaner Production and related technologies	Expert of Vietnam Cleaner Production Center
4. Activities and utilization of Hanoi City Environment Protection Fund	Expert of Hanoi City Environmental Protection Fund
5. Industrial wastewater regulations in Japan	JET expert
6. Industrial wastewater treatment technologies in Japan	JET expert

## Work Plan of Output 4 (Environmental Awareness)

### 1. General

#### 1.1 Objectives of the Work Plan (WP)

Objectives of the Work Plan (WP) are as follows:

- To clarify actual capacity development activities and scheduling,
- To identify indicators and targets of the activities for evaluation,
- To conduct activities in accordance with WP, and
- To reflect results and lessons to WP for the next working period.

The existing resources and overall processes related to the current environmental awareness activities of each DONRE are reviewed and summarized in the Table below.

**Review Results of Environment Awareness**

Item	HNI	HPG	TT-HUE	HCMC	BRVT
1) Framework of environmental awareness	a) Responsible section Project Management and Communication Division of EPA (Not specialized in environmental awareness) b) No. of staff 7 staff c) Activity 7 activities in 2010	a) Responsible section Administrative Division of EPA (Not specialized in environmental awareness) b) No. of staff 8 staff c) Activity 3 activities in 2010	a) Responsible section EIA Appraisal Division of EPA (Not specialized in environmental awareness) b) No. of staff 4 staff c) Activity 9 activities in 2010	a) Responsible section Environmental Information and Training Division of EPA b) No. of staff 14 staff c) Activity 20 activities in 2010	a) Responsible section Pollution Control Division of EPA (Not specialized in environmental awareness) b) No. of staff 8 staff c) Activity 4 activities in 2010
2) Summary of current awareness activity in 2010	a) Training course lectures on environmental legislation for district officers b) Event organize annual events to encourage environmental consciousness for public c) Mass media broadcasting environmental information by radio and TV program d) Pilot activity raising awareness of residents focusing on water environment in Tu Lich River	a) Training course lectures on environmental legislations for district officers b) Event same as HNI	a) Training course lectures on environmental legislations and provincial environmental management for district officers, residents, enterprises, etc. b) Event same as HNI c) Contest eco-quiz contest for officers and farmers d) Mass media same as HNI	a) Training course lectures and study tour on community based environmental management for officers, residents, etc. b) Event same as HNI some original events organized by HEPA c) Contest eco-quiz and various contest for women, worker, students, farmers, pupils d) Mass media same as HNI e) Pilot activity community based environmental management program in 4 wards f) Workshop workshop for district officers to discuss ideas to improve environmental awareness activity	a) Training course lectures on environmental legislations for enterprises and workers b) Event same as HNI
3) Constrains	-No section specialized in environmental awareness - Little experience on awareness activity targeted on industrial wastewater	-No section specialized in environmental awareness -Little experience to implement awareness activity	-No section specialized in environmental awareness -Little experiences to implement awareness activity on water pollution issue	- Little experience on awareness activity targeted on industrial wastewater -Few activities utilizing information obtained by relevant sections of DONRE	-No section specialized in environmental awareness - Little experience to implement awareness activity
4) Training needs	a) OJT on awareness activity focusing on industrial wastewater pollution b) Enhancement of current environmental awareness activity by utilizing information obtained by relevant sections of DONRE	a) Lecture on planning and implementation of awareness activity b) OJT on awareness activity to protect source water area	a) Lecture on planning and implementation of awareness activity b) OJT on awareness activity to protect lagoon area	a) OJT on awareness activity focusing on industrial cluster b) Enhancement of current environmental awareness activity by utilizing information obtained by relevant sections of DONRE.	a) Lecture on planning and implementation of awareness activity b) OJT on awareness activity focusing on food processing factories

## 1.2 Approach

### (1) Goal

By reviewing of past activities, it was found that target DONREs have little experience to conduct environmental awareness activity in specific area and pollution source directly contributing to their water environmental management. Therefore capacity development on environmental awareness should focus on planning and implementation of environmental awareness raising activity in critical area and/or pollution source to improve or conserve water environment.

In line with this, collaboration and coordination with Output2 (Monitoring/Inventory/Inspection) and Output3 (Water Pollution Control Measures) activities shall be indispensable in order to analyze current condition, problems and countermeasures. Moreover, it is also important to exchange experiences among DONREs in order to continuously improve effectiveness of environmental awareness activity.

Therefore, the goals of Output4 are set as below.

- To implement environmental awareness activity on specific water environmental problem;
- To improve planning skills on environmental awareness activity;
- To conduct environmental awareness activities by using outcomes of the Output 2 and Output 3 in the Project; and
- To exchange and disseminate experiences and lessons learnt on environment awareness activities among DONREs.

### (2) Capacity Development (CD) Needs

The actual CD needs of each DONRE are summarized in the Table below.

**Draft CD Approach in each DONRE**

Item	HNI	HPG	TT-HUE	HCMC	BRVT
<p>(1) Key points to be improved</p> <p>Commonly required that</p> <ul style="list-style-type: none"> <li>-Implement environmental awareness activity on specific water environmental problem</li> <li>-Skill of planning capacity on environmental awareness activity</li> <li>-Collaboration with monitoring, inspection and inventory activities.</li> <li>-Experience exchange on environment awareness</li> </ul>	<p>1) Conducting environmental awareness activity for enterprises on industrial wastewater management</p> <p>2)Producing dissemination tool by collaboration with relevant sections of DONRE</p>	<p>1)Gain experience on environmental awareness activity</p> <p>2)Organizational set-up to implement environmental awareness activity</p> <p>3)Examination of appropriate target and mean for environmental awareness activity</p>	<p>1)Organizational set-up to implement environmental awareness activity</p> <p>2)Examination of appropriate target and mean for environmental awareness activity</p>	<p>1)Collaboration with EMD and HEPA in planning of environmental awareness activity</p> <p>2)Conducting environmental awareness activity for enterprises on industrial wastewater management</p>	<p>1)Gain experience on environmental awareness activity</p> <p>2)Organizational set-up to implement environmental awareness activity</p> <p>3)Examination of appropriate target and mean for environmental awareness activity</p>
<p>(2) Approach of CD activity</p> <p>Commonly required that</p> <ul style="list-style-type: none"> <li>-Technical training such as organizational set-up, stakeholders and problem analysis, strategy/approach examination, reviewing and improvement of activity</li> </ul>	<p>1) Conducting awareness activity for enterprises and craft villages in Tu Liem and Ha Dong District</p> <p>2)Conducting workshop and awarding ceremony by utilizing outcome obtained from Output 2&amp;3</p>	<p>1)Conducting environmental awareness activity focusing on source water protection in Re River</p> <p>2)Continuously conducting environmental awareness activity by utilizing outcome obtained from Output 2&amp;3</p>	<p>1)Conducting environmental awareness activity focusing on water pollution by shrimp farming in Tam Giang - Cau Hai Lagoon</p> <p>2)Conducting environmental awareness activity focusing on water pollution by industries in TT-Hue</p>	<p>1) Conducting awareness activity for enterprises in Tan Quy Industrial Cluster in collaboration with EMD and HEPA</p> <p>2)Continuously conduct awareness activity for enterprises by utilizing guidance manual prepared by EMD and HEPA</p>	<p>1)Conducting environmental awareness activity focusing on water pollution in Cua Lap River in Vung Tau City and Long Dien District</p> <p>2)Continuously conducting environmental awareness activity by utilizing outcome obtained from Output 2&amp;3</p>
	3)Exchanging experiences and lessons with other DONREs				
<p>(3) Figures/ status of before the Project</p>	DONRE has little experience to conduct environmental awareness activity for industries	DONRE has not conducted environmental awareness activity on specific target area	DONRE has not conducted environmental awareness activity on specific target area	DONRE has little experience to conduct environmental awareness activity for industries	DONRE has not conducted environmental awareness activity on specific pollution source
<p>(4) Figures/ status of after the Project</p>	Achieve capability on environmental awareness activity	Achieve capability to conduct environmental	Achieve capability to conduct environmental	Achieve capability on environmental awareness activity	Achieve capability to conduct environmental

Item	HNI	HPG	TT-HUE	HCMC	BRVT
	for industries by utilizing resources in relevant section of DONRE	awareness activity in Re River.	awareness activity in Tam Giang - Cau Hai Lagoon	for enterprises by utilizing resources in relevant section of DONRE	awareness activity for seafood processing factories
(5) Expected outcomes  Commonly required that -Procedural manual for environmental awareness activity	1)Environmental awareness activity report for Tu Liem and Ha Dong District 2)Presentation and handouts on industrial wastewater management and record of awarding ceremony 3)Presentation for environmental awareness seminar	1)Environmental awareness activity report for Re River 2)Presentation and study tour program for district DONRE officers, residential group and enterprises and leaflets for residents	1)Environmental awareness activity report in Tam Giang – Cau Hai Lagoon 2)Presentation and study tour program for district officers and residential group	1)Environmental awareness activity report targeted in Tan Quy industrial cluster 2)Presentation and guidance manual for enterprises in Tan Quy Industrial Cluster	1)Environmental awareness activity report for Cua Lap River 2)Presentation for district DONRE officers, residential group and seafood processing factories and leaflet for residents

### (3) Collaboration with Output2 & Output3

Environmental awareness activities by utilizing outcomes obtained by Output 2 and Output3 will be implemented in the 2<sup>nd</sup> year of the Project as described below. Besides, environmental awareness activities in the 1<sup>st</sup> year of the Project shall also be implemented in the target areas considering improved activities to be implemented in the 2<sup>nd</sup> year.

### Environmental Awareness Activities by Utilizing Outcomes Obtained by Output2&3

DONRE	Item	Description	
HNI	Target area	Tu Liem and Ha Dong District	
	Goal	Capacity of HNI DONRE promoting awareness of enterprises and craft villages in Tu Liem and Ha Dong District on industrial water environment is strengthened.	
	1 <sup>st</sup> year	Activity	Workshops for enterprises and craft villages
		Purpose	Enterprises and craft village in Tu Liem and Ha Dong District understand relevant water environmental legislations and industrial wastewater management measures
		Target	Enterprises and craft villages
		Timing	December 2011
		Program	1) Presentation on current water environmental condition in Nhue and Day River -Outline of the Project (by HNI EPA) -Water quality condition in Nhue and Day River (by HNI CENMA) -Pollution source in Tu Liem and Ha Dong District (by HNI EPA) 2) Introduction of industrial wastewater management -Lecture on industrial wastewater management (environmental regulations; application of cleaner production and EMS; access method to preferential loan, land use and tax; access method to service provider associated with environmental protection measures. (by JET) 2) Discussion on applicable measures on industrial wastewater management -Discussion on problems/weakness, needs, strengths/potentials of enterprises on industrial wastewater management -Examination on applicable measures on industrial wastewater management -Examination of action to be taken in next year by collaboration with HNI DONRE and attendants
	2 <sup>nd</sup> year	Activity	-Continuously implementing workshops for enterprises and craft villages -Holding awarding ceremony
		Purpose	-Enterprises and craft village in Tu Liem and Ha Dong District understand relevant water environmental legislations and industrial wastewater management measures -Enterprises showing excellent performance is awarded and publicized to residents
		Target	Enterprises and residents
Timing		September – November, 2012	
Program		1) Workshops for enterprises and craft villages on industrial wastewater management - Implementing workshop for enterprises and craft villages in Tu Liem and Ha Dong District by updating program based on findings of 1 <sup>st</sup> year activity as well as utilizing outcome obtained from Output 2&3. 2) Holding Awarding Ceremony - Announcement to residents, enterprises and mass-media by means of local newspaper, environmental newspaper, website, radio, etc. - Awarding enterprise showing excellent performance based on Industrial Wastewater Management Rating - Publicizing of awarding ceremony by means of local newspaper, environmental newspaper, website, TV and radio.	
HPG	Target area	Re River Basin	
	Goal	Capacity of HPG DONRE promoting awareness of public and enterprises on water environment in Re River is strengthened.	
	1 <sup>st</sup> year	Activity	Workshop and study tour
		Purpose	Leaders of social organizations understand current water environmental condition in Re River and examine environmental awareness activity to be implemented in the 2 <sup>nd</sup> year of the Project.
		Target	Leaders of WU, YU, FA as well as district DONRE officers
Timing		December 2011	

DONRE	Item	Description	
	Program	<p>1) <b>Presentation on current water environment in Re River</b></p> <ul style="list-style-type: none"> <li>-Outline of the Project (by HPG EPA)</li> <li>-Water quality condition in Re River (by HPG CEM)</li> <li>-Major water pollution sources in Re River (by HPG EPA)</li> </ul> <p>2) <b>Study tour to Re River</b></p> <ul style="list-style-type: none"> <li>-Visiting intake point, An Duong Water Supply Plant, polluted spot, monitoring point (by EPA and CEM)</li> </ul> <p>3) <b>Introduction of environmental awareness activity on water environmental management</b></p> <ul style="list-style-type: none"> <li>-Environmental awareness activities in Vietnam (by Hanoi Water Resource University)</li> <li>-Example of environmental awareness activities in the foreign countries (by JET)</li> </ul> <p>4) <b>Discussion on environmental awareness activity for Re River</b></p> <ul style="list-style-type: none"> <li>-Examination on actions to be taken by district officers and related social organizations</li> <li>-Examination on awareness activity to be conducted in next year by collaboration with HPG DONRE and attendants</li> </ul>	
	2 <sup>nd</sup> year	Activity	<ul style="list-style-type: none"> <li>-Workshop for enterprises</li> <li>-Distributing leaflets for residents</li> </ul>
		Purpose	<ul style="list-style-type: none"> <li>-Enterprises in Re River Basin understand measures on industrial wastewater management</li> <li>-Residents understand measures on water environmental management in Re River</li> </ul>
		Target	Enterprises and residents in Re River Basin
		Timing	September – November, 2012
		Program	<p><b>A: Workshop for Enterprises</b></p> <p>1) <b>Presentation on current water environmental condition in Re River</b></p> <ul style="list-style-type: none"> <li>-Water environmental condition in Re River (Output2-1&amp;2)</li> <li>-Pollution source in Re River basin (Output2-3)</li> </ul> <p>2) <b>Presentation on industrial wastewater management in Re River Basin</b></p> <ul style="list-style-type: none"> <li>-Outline of effective water pollution control measures in Hanoi (Output3)</li> <li>-Introduction of countermeasures and format of self-monitoring report for priority sectors (Output2-4)</li> </ul> <p>3) <b>Discussion on industrial wastewater management in Re River Basin</b></p> <p><b>B: Distributing leaflets for residents</b></p> <p>Producing and distributing leaflets for residents on environmental condition in Re River and its impact on drinking water as well as countermeasures in collaboration with residential groups.</p>
TT-HUE	Target area	Tam Giang – Cau Hai Lagoon	
	Goal	Capacity of TT-HUE DONRE promoting awareness of district officers and social organizations on water environment in Tam Giang – Cau Hai Lagoon is strengthened.	
	1 <sup>st</sup> year	Activity	Workshop and study tour
		Purpose	District officers and leaders of social organizations understand current water environmental condition in TGCH lagoon and necessary countermeasures on shrimp farming
		Target	District officers and leaders of social organizations
		Timing	November 2011
		Program	<p>1) <b>Presentation on current water environment in Tam Giang – Cau Hai Lagoon</b></p> <ul style="list-style-type: none"> <li>-Outline of the Project and TGCH Lagoon (by TT-Hue EPA)</li> <li>-Water quality condition in TGCH Lagoon (by TT-Hue EPA)</li> <li>-Water environmental management by TT-HUE DONRE (by TT-Hue EPA)</li> </ul> <p>2) <b>Presentation on shrimp farming in Tam Giang – Cau Hai Lagoon</b></p> <ul style="list-style-type: none"> <li>-Outline of shrimp farming in TT-HUE (by DARD)</li> <li>-Environmental impact by shrimp farming in TGCH lagoon (by DARD)</li> <li>-Countermeasures on aquaculture management (by DARD)</li> </ul> <p>3) <b>Study tour to Tam Giang – Cau Hai Lagoon</b></p> <ul style="list-style-type: none"> <li>-Visiting lagoon by focusing shrimp farming such as open pond and closed pond.</li> <li>-Visiting shrimp feeding factory with WWTP and pilot area of eco-friendly shrimp farming by IMOLA</li> </ul> <p>4) <b>Group discussion on environmental management in Tam Giang – Cau Hai Lagoon</b></p> <ul style="list-style-type: none"> <li>-Examination on actions to be taken by district officers and related social organizations</li> <li>-Examination on awareness activity to be conducted by collaboration with TT-HUE DONRE and attendants</li> </ul>
	2 <sup>nd</sup> year	Activity	Workshop and study tour
		Purpose	District officers and social organization understand current water environmental condition in TT-Hue and necessary countermeasures on industrial wastewater
		Target	District officers and leaders of social organizations
	Timing	September – November, 2012	
	Program	<p>1) <b>Presentation on current water environmental condition in TT-Hue</b></p> <ul style="list-style-type: none"> <li>-Water environmental condition in TT-Hue (Output2-1&amp;2)</li> <li>-Major pollution source in TT-Hue (Output2-3)</li> </ul> <p>2) <b>Presentation on industrial wastewater management</b></p> <ul style="list-style-type: none"> <li>-Outline of effective water pollution control measures in Hanoi (Output3)</li> <li>-Introduction of countermeasures and good practices for priority sectors (Output2-4)</li> </ul> <p>3) <b>Discussion on industrial wastewater management in TT-Hue</b></p>	
HCMC	Target area	Tan Quy Industrial Cluster	
	Goal	Capacity of HCMC DONRE promoting awareness of enterprises in Tan Quy Industrial Cluster on industrial water environment is strengthened.	
	1 <sup>st</sup> year	Activity	Workshop
		Purpose	Target enterprises understand current water environmental management in Tan Quy Industrial Cluster
		Target	20 enterprises in Tan Quy Industrial Cluster
		Timing	November 2011
	Program	<p>1) <b>Presentation on current water environmental management in Tan Quy Industrial Cluster</b></p> <ul style="list-style-type: none"> <li>-Outline of the Project and Tan Quy Industrial Cluster (by EMD and EPA)</li> </ul>	

DONRE	Item	Description
		<ul style="list-style-type: none"> <li>-Water quality condition in Ba Bep Channel and Sigon River (by EMD and EPA)</li> <li>-Wastewater quality discharged from enterprises in Tan Quy Industrial Cluster (by EMD and EPA)</li> <li>-Environmental management by enterprises in Tan Quy Industrial Cluster (by EMD and EPA)</li> <li><b>2) Introduction of industrial wastewater management in industrial cluster</b></li> <li>-Lecture on industrial wastewater management (environmental regulations; application of cleaner production and EMS; access method to preferential loan, land use and tax; access method to service provider associated with environmental protection measures. (by JET)</li> <li><b>2) Discussion on applicable measures on industrial wastewater management</b></li> <li>-Discussion on problems/weakness, needs, strengths/potentials of enterprises on industrial wastewater management</li> <li>-Examination on applicable measures on industrial wastewater management</li> <li>-Examination of action to be taken in next year by collaboration with HCMC DONRE and attendants</li> </ul>
2 <sup>nd</sup> year	Activity	Workshop and follow-up activity
	Purpose	Enterprises understand applicable water pollution control measures and guidance manual on water environmental management in Tan Quy Industrial Cluster
	Target	Enterprises in Tan Quy Industrial Cluster
	Timing	September – November, 2012
	Program	<ul style="list-style-type: none"> <li><b>1) Presentation on effective water pollution control measures</b></li> <li>-Outline of effective water pollution control measures in Hanoi (Output3)</li> <li>-Introduction of countermeasures and good practices by sectors (Output2-4)</li> <li><b>2) Proposal of guidance manual on environmental management in Tan Quy Industrial Cluster</b></li> <li>-Proposal of guidance manual on environmental management (by EMD and HCMC EPA)</li> <li>-Discussion on guidance manual among stakeholders</li> <li><b>3) Following up activity</b></li> <li>- Trial implementation of activities proposed in guidance manual by enterprises</li> </ul>
BRVT	Target area	Cua Lap River
	Goal	Capacity of BRVT DONRE promoting awareness of public and seafood processing factories on water environment in Cua Lap River is strengthened.
1 <sup>st</sup> year	Activity	Workshop and field reconnaissance
	Purpose	Leaders of social organizations understand current water environmental condition in Cua Lap River and examine environmental awareness activity to be implemented in the 2 <sup>nd</sup> year of the Project.
	Target	Leaders of WU, YU, FA as well as officers of Vung Tau City and Long Dien District
	Timing	December 2011
	Program	<ul style="list-style-type: none"> <li><b>1) Presentation on current water environment in Cua Lap River</b></li> <li>-Outline of the Project (by BRVT EPA)</li> <li>-Water quality condition in Cua Lap River (by BRVT CENMA)</li> <li>-Pollution sources in Vung Tau City and Long Dien District (by BRVT EPA)</li> <li><b>2) Field reconnaissance to Cua Lap River</b></li> <li>-Visiting polluted spot, channel, seafood processing factories, monitoring point, etc. (by BRVT EPA)</li> <li><b>3) Introduction of environmental awareness activity on water environmental management</b></li> <li>-Environmental awareness activities in Vietnam (by Hanoi Water Resource University)</li> <li>-Example of environmental awareness activities in the foreign countries (by JET)</li> <li><b>4) Discussion on environmental awareness activity for Cua Lap River</b></li> <li>-Examination on actions to be taken by district officers and related social organizations</li> <li>-Examination on awareness activity to be conducted by collaboration with BRVT DONRE and attendants</li> </ul>
2 <sup>nd</sup> year	Activity	<ul style="list-style-type: none"> <li>-Workshop for enterprises</li> <li>-Eco-patrol by social organizations or distributing leaflets for residents</li> </ul>
	Purpose	<ul style="list-style-type: none"> <li>-Seafood processing factories in Vung Tau City and Long Dien District understand industrial wastewater management measures.</li> <li>-Residents understand measures on water environmental management in Cua Lap River.</li> </ul>
	Target	Seafood processing factories and residents in Vung Tau City and Long Dien District
	Timing	September – November, 2012
	Program	<ul style="list-style-type: none"> <li><b>A: Workshop for enterprises</b></li> <li><b>1) Presentation on current water environmental condition in Cua Lap River</b></li> <li>-Water environmental condition in Cua Lap River (Output2-1&amp;2)</li> <li>-Pollution source in Cua Lap River basin (Output2-3)</li> <li><b>2) Presentation on wastewater management for seafood processing factories</b></li> <li>-Outline of effective water pollution control measures (Output3)</li> <li>-Introduction of countermeasures and good practices for priority sectors (Output2-4)</li> <li><b>3) Discussion on industrial wastewater management in Cua Lap River Basin</b></li> <li><b>B: Eco-patrol by social organizations / Distributing leaflets for residents</b></li> <li>-Conducting eco-patrol by social organizations in collaboration with BRVT DONRE.</li> <li>-Producing and distributing leaflets for residents on environmental condition in Cua Lap River as well as countermeasures to be taken by residents in collaboration with social organizations.</li> </ul>

#### (4) Holding Seminar

To exchange and disseminate experiences and lessons learnt from environment awareness activities conducted by the Project among DONREs, seminar on environmental awareness will be held in December 2012. The experiences and lessons obtained in the Project will be summarized as procedural manual on environmental awareness activity so as to be utilized in target DONREs and other DONREs.

#### **Seminar on Environmental Awareness**

Purpose	Exchanging experiences and lessons learnt from environmental awareness activities in the Project
Target	Staff in charge of environmental awareness in target DONREs and VEA
Timing	December, 2012
Program	<b>1) Presentation on lessons learnt from environmental awareness activity (by target DONREs)</b> - Environmental awareness activity on industrial wastewater management in Tu Liem and Ha Dong District (by Hanoi EPA) - Environmental awareness activity on source water protection in Re River Basin (by HPG EPA) - Environmental awareness activity on lagoon water environment in Tam Giang – Cau Hai Lagoon (by TT-Hue EPA) - Environmental awareness activity on industrial wastewater management in Tan Quy Industrial Cluster (by HCMC EPA) - Environmental awareness activity on water environmental management in Cua Lap River (by BRVT EPA) <b>2) Summarization of environmental awareness activity in the Project (by VEA and JET)</b> <b>3) Discussion on procedural manual on environmental awareness activity</b>

## 2. CD Work Plan in each DONRE

### 2.1 HNI DONRE

The CD Work Plan of Output4 for HNI DONRE is drafted in the Table below.

**Draft CD Work Plan of Output4 for HNI DONRE**

Target Point/ Field of CD	Actual activities	Outcomes	Dissemination	Note
1) Conducting awareness activity for enterprises and craft villages in Tu Liem and Ha Dong District	<p><b>2011:</b> <b>May-Jul:</b> 0. Review of current organizational system and past activities on environmental awareness 1. Identification of target area for environmental awareness activity</p> <p><b>Aug-Sep:</b> 2. Formulating environmental awareness activity plan for 1<sup>st</sup> year - Setting target of awareness activity Raising awareness of enterprises and craft villages in Tu Liem and Ha Dong District on industrial wastewater management - Selection of mean/tool for awareness activity Workshop for enterprises and craft villages on environmental legislations and industrial wastewater management - Involving partners to implement awareness activity Collaboration with Tu Liem and Ha Dong District DONREs to conduct workshop</p> <p><b>Sep-Oct:</b> 3. Preparation for workshop</p> <p><b>Nov-Dec:</b> 4. Implementation of workshop - Implementation of workshop for enterprises and craft villages - Questionnaire for enterprises to evaluate effect of activity. 5. Reviewing of activity and improvement for 2<sup>nd</sup> year</p> <p><b>2012:</b> <b>Jan-Mar:</b> 6. Preparation of environmental awareness activity report (1<sup>st</sup> year)</p>	<p>1) Environmental awareness activity report for Tu Liem and Ha Dong District (1<sup>st</sup> year)</p> <p>2) Presentation for enterprises and craft villages on industrial wastewater management</p>		
2) Continuously conducting workshop and holding awarding ceremony by utilizing outcome obtained from Output 2&3	<p><b>2011</b> <b>Apr-Jun:</b> 1. Formulating environmental awareness activity plan for 2<sup>nd</sup> year - Setting target of awareness activity Raising awareness of enterprises and craft villages as well as residents in Tu Liem and Ha Dong District on industrial wastewater management - Selection of mean/tool for awareness activity. - Workshops for enterprises and craft villages by updating program based on findings of 1<sup>st</sup> year activity - Awarding enterprises showing excellent performance by IWMR and publicizing them by utilizing outcome of Output3 - Involving partners to implement awareness activity. Collaboration with Tu Liem and Ha Dong District DONREs to conduct workshop</p> <p><b>Jul-Aug:</b> 2. Preparation for workshop, awarding ceremony and publicity - Exchanging information with Output 3 (water pollution control measures).</p> <p><b>Sep-Nov:</b> 3. Implementing workshop, awarding ceremony and publicity - Implementation of workshop for enterprises and craft villages</p>	<p>3) Updated presentation material and handouts for enterprises and craft villages on industrial wastewater management</p> <p>1) Environmental awareness activity report for Tu Liem and Ha Dong District (2<sup>nd</sup> year)</p>		1) Collaborated activity with Output 3 (water pollution control measures)



	<ul style="list-style-type: none"> <li>-Implementation of awarding ceremony for enterprises showing excellent performance</li> <li>-Publicity for residents on enterprises showing excellent performance</li> <li>-Questionnaire for attendants to evaluate effect of activity</li> <li>4.Reviewing of activity and evaluation of achievement</li> </ul>			
3)Exchanging experiences and lessons with other DONREs	<p><b>2012</b> <u>Dec:</u> 1.Holding seminar on environmental awareness</p> <p><b>2013:</b> <u>Jan-Mar:</u> 2.Preparation of environmental awareness activity report (2<sup>nd</sup> year) 3.Preparation of procedural manual for environmental awareness activity by lessons obtained from activities</p>	5) Presentation for environmental awareness seminar	1)Procedural manual for environmental awareness activity to be prepared by lessons obtained from activities in 5 DONREs will be used in HNI DONRE	

The overall schedule of Output4 for HNI DONRE is drafted in the Table below.

### Overall Schedule of Output4 for HNI DONRE

Joint implementation of JET and Vietnamese C/P
  Continuous implementation by Vietnamese side

Output 4:Environmental Awareness		JFY 2010/2011												JFY 2012												JFY 2013	JICA Expert in Charge	
		VFY 2011												VFY 2012														
activity		3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3		
1)-1	Identification of target area for environmental awareness activity																											Hosono Ibayashi
1)-2	Formulating environmental awareness activity plan for 1st year																											Hosono
1)-3	Preparation for workshop																											Hosono
1)-4	Implementation of workshop																											Hosono
1)-5	Reviewing of activity and improvement for 2nd year																											Hosono
1)-6	Preparation of environmental awareness activity report (1st year)																											Hosono
2)-1	Formulating environmental awareness activity plan for 2nd year																											Hosono
2)-2	Preparation for workshop, awarding ceremony and publicity																											Hosono
2)-3	Implementing workshop, awarding ceremony and publicity																											Hosono
2)-4	Reviewing of activity and evaluation of achievement																											Hosono
3)-1	Holding seminar on environmental awareness																											Hosono Ibayashi
3)-2	Preparation of environmental awareness activity report (2nd year)																											Hosono
3)-3	Preparation of procedural manual for environmental awareness activity by lessons obtained from activities																											Hosono
	Hosono																											
	Ibayashi																											

The list of Counterparts of Output 4 for HNI DONRE is drafted in the Table below.

### Working Group Member of Output4 for HNI DONRE

Name	Organization	Position	Mobile	Email
Mr. Duc A	Project Management and Communication Division, EPA	Head	0989309650	vuduca@gmail.com
Mr. Ta Ngoc Son	Project Management and Communication Division, EPA	Expert	0982685858	soncadas@gmail.com
To be named	Tu Liem District DONRE			
To be named	Ha Dong District DONRE			

Note: Additional C/P is requested by JET to HNI DONRE.

## 2.2 HPG DONRE

The CD Work Plan of Output 4 for HPG DONRE is drafted in the Table below.

**Draft CD Work Plan of Output4 for HPG DONRE**

Target Point/ Field of CD	Actual activities	Outcomes	Dissemination	note
1)Conducting environmental awareness activity focusing on source water protection in Re Ri ver	<p><u>2011:</u> <u>May-Jul:</u> 0.Review of current organizational system and past activities on environmental awareness 1.Identification of target area for environmental awareness activity</p> <p><u>Aug-Sep:</u> 2.Formulating environmental awareness activity plan for 1<sup>st</sup> year - Setting target of awareness activity Raising awareness of district officers and leaders of residential groups on water pollution in Re River -Selection of mean/tool for awareness activity Workshop and study tour on source water protection in Re River basin -Involving partners to implement awareness activity Collaboration with district DONREs to implement workshop and study tour</p> <p><u>Sep-Oct:</u> 3.Preparation for workshop and study tour</p> <p><u>Nov-Dec:</u> 4.Implementation of workshop and study tour -Workshop on current condition of water pollution in Re River -Study tour to source water area and pollution sources -Questionnaire for attendants to evaluate effect of activity 5.Reviewing of activity and improvement for 2<sup>nd</sup> year</p> <p><u>2012:</u> <u>Jan-Mar:</u> 6.Preparation of environmental awareness activity report (1<sup>st</sup> year)</p>	<p>1)Environmental awareness activity report for Re River (1<sup>st</sup> year)</p> <p>2)Presentation and study tour program for district DONRE officers and residential group</p>		
2)Continuously conducting environmental awareness activity by utilizing outcome obtained from Output 2&3	<p><u>2012</u> <u>Apr-Jun:</u> 1.Formulating environmental awareness activity plan for 2<sup>nd</sup> year -Setting target of awareness activity. Raising awareness of residents and enterprises on water pollution in Re River by utilizing outcomes of Output 2&amp;3 - Selection of mean/tool for awareness activity. [for enterprises] -Workshop for enterprises on wastewater management and applicable countermeasures [for residents] -Production and distribution of leaflet for residents on environmental condition in Re River and its impact on drinking water</p> <p><u>Jul-Aug:</u> 2.Preparation for workshop for enterprises and leaflets for residents -Exchanging information with Output 2&amp;3</p> <p><u>Sep-Nov:</u> 3.Implementation of workshop and distributing leaflets -Implementation of workshop for enterprises -Distribution of leaflets for residents -Questionnaire for enterprises and residential group to evaluate effect of activity. 4.Reviewing of activity and evaluation of achievement</p>	<p>3)Environmental awareness activity report for Re River (2<sup>nd</sup> year)</p> <p>4)Presentation for enterprises and leaflets for residents</p>		1)Collaborated activity with Output 2 (monitoring, inventory and inspection)

3) Exchanging experiences and lessons with other DONREs	<u>2012</u> <u>Dec:</u> 1. Holding seminar on environmental awareness	5) Presentation for environmental awareness seminar	1) Procedural manual for environmental awareness activity to be prepared by lessons obtained from activities in 5 DONREs will be used in HPG DONRE
	<u>2013:</u> <u>Jan-Mar:</u> 2. Preparation of environmental awareness activity report (2 <sup>nd</sup> year) 3. Preparation of procedural manual for environmental awareness activity by lessons obtained from activities		

The overall schedule of Output4 for HPG DONRE is drafted in the Table below.

### Overall Schedule of Output4 for HPG DONRE

     Joint implementation of JET and Vietnamese C/P
      Continuous implementation by Vietnamese side

Output 4: Environmental Awareness		JFY 2010/2011												JFY 2012												JICA Expert in Charge				
		VFY 2011												VFY 2012													VFY 2013			
activity		3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3				
1)-1	Identification of target area for environmental awareness activity																													Hosono Ibayashi
1)-2	Formulating environmental awareness activity plan for 1st year																													Hosono
1)-3	Preparation for workshop and study tour																													Hosono
1)-4	Implementation of workshop and study tour																													Hosono
1)-5	Reviewing of activity and improvement for 2nd year																													Hosono
1)-6	Preparation of environmental awareness activity report (1st year)																													Hosono
2)-1	Formulating environmental awareness activity plan for 2nd year																													Hosono
2)-2	Preparation for workshop for enterprises and leaflets for residents																													Hosono
2)-3	Implementation of workshop and distributing leaflets																													Hosono
2)-4	Reviewing of activity and evaluation of achievement																													Hosono
3)-1	Holding seminar on environmental awareness																													Hosono Ibayashi
3)-2	Preparation of environmental awareness activity report (2nd year)																													Hosono
3)-3	Preparation of procedural manual for environmental awareness activity by lessons obtained from activities																													Hosono
	Hosono																													
	Ibayashi																													

The list of Working Group member of Output4 for HPG DONRE is drafted in the Table below.

### Working Group Member of Output4 for HPG DONRE

Name	Organization	Position	Mobile	Email
Mr. Le Son	EPA	Vice Director	0913244393	lesonmeiph@gmail.com
To be named	Administrative Division, EPA			
Mr. Pham Khac Thanh	Center for Information of Resources & Environment, EPA	Vice Head	0913244108	khacthanh183@gmail.com
To be named	District DONRE			

Note: Additional C/P is requested by JET to HPG DONRE.

## 2.3 TT-HUE DONRE

The CD Work Plan for TT-HUE DONRE is drafted in the Table below.

Draft CD Work Plan for TT-HUE DONRE

Target Point/ Field of CD	Actual activities	Outcomes	Dissemination	note
1) Conducting environmental awareness activity focusing on water pollution by shrimp farming in Tam Giang - Cau Hai Lagoon	<p><u>2011:</u> <u>May-Jul:</u> 0. Review of current organizational system and past activities on environmental awareness 1. Identification of target area for environmental awareness activity</p> <p><u>Aug-Sep:</u> 2. Formulating environmental awareness activity plan for 1<sup>st</sup> year - Setting target of awareness activity Raising awareness of District DONRE and DARD officers as well as leaders of related social unions on water pollution in Tam Giang – Cau Hai Lagoon by shrimp farming - Selection of mean/tool for awareness activity Workshop and study tour to understand water pollution by shrimp farming and its countermeasures - Involving partners to implement awareness activity Collaboration with Provincial DARD to implement workshop and study tour</p> <p><u>Sep-Oct:</u> 3. Preparation for workshop and study tour</p> <p><u>Nov-Dec:</u> 4. Implementation of workshop and study tour - Workshop on environmental condition in TGCH Lagoon, impact of shrimp feeding and its countermeasures - Study tour to good practices such as IMOLA's pilot activity - Questionnaire for attendants to evaluate effect of activity</p> <p>5. Reviewing of activity and improvement for 2<sup>nd</sup> year</p> <p><u>2012:</u> <u>Jan-Mar:</u> 6. Preparation of environmental awareness activity report (1<sup>st</sup> year)</p>	<p>1) Environmental awareness activity report in Tam Giang – Cau Hai Lagoon (1<sup>st</sup> year)</p> <p>2) Presentation and study tour program for district officers and residential group</p>		1) Continuous information exchange with IMOLA and DARD for environmental awareness activity on water pollution in Tam Giang – Cau Hai Lagoon
2) Conducting environmental awareness activity focusing on water pollution by industries in TT-Hue	<p><u>2012</u> <u>Apr-Jun:</u> 1. Formulating environmental awareness activity plan for 2<sup>nd</sup> year - Setting target of awareness activity. Raising awareness of District DONRE officers as well as leaders of related social unions on water pollution in Tam Giang – Cau Hai Lagoon by industrial wastewater - Selection of mean/tool for awareness activity. Workshop on water environmental management focusing on industrial wastewater</p> <p><u>Jul-Aug:</u> 2. Preparation for workshop and/or study tour - Exchanging information with Output 2&amp;3</p> <p><u>Sep-Nov:</u> 3. Implementation of workshop - Implementation of workshop on industrial wastewater management - Questionnaire for attendants to evaluate effect of activity. 4. Reviewing of activity and evaluation of achievement</p>	<p>3) Environmental awareness activity report in Tam Giang – Cau Hai Lagoon (2<sup>nd</sup> year)</p> <p>4) Presentation and study tour program for district officers and residential group</p>		2) Collaborated activity with Output 2 (monitoring, inventory and inspection)

3)Exchanging experiences and lessons with other DONREs	<u>2012</u> <u>Dec:</u> 1.Holding seminar on environmental awareness  <u>2013:</u> <u>Jan-Mar:</u> 2.Preparation of environmental awareness activity report (2 <sup>nd</sup> year) 3.Preparation of procedural manual for environmental awareness activity by lessons obtained from activities	5) Presentation for environmental awareness seminar	1)Procedural manual for environmental awareness activity to be prepared by lessons obtained from activities in 5 DONREs will be used in TT-HUE DONRE	
--	---	---	--	--

The overall schedule of Output4 for TT-HUE DONRE is drafted in the Table below.

**Overall Schedule of Output4 for TT-HUE DONRE**

Joint implementation of JET and Vietnamese C/P
  Continuous implementation by Vietnamese side

Output 4:Environmental Awareness activity		JFY 2010/2011												JFY 2012												JICA Expert in Charge			
		VFY 2011												VFY 2012													VFY 2013		
		3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2		3		
1)1	Identification of target area for environmental awareness activity																										Ibayashi		
1)2	Formulating environmental awareness activity plan for 1st year																										Hosono		
1)3	Preparation for workshop and study tour																										Hosono		
1)4	Implementation of workshop and study tour																										Hosono		
1)5	Reviewing of activity and improvement for 2nd year																										Hosono		
1)6	Preparation of environmental awareness activity report (1st year)																										Hosono		
2)1	Formulating environmental awareness activity plan for 2nd year																										Hosono		
2)2	Preparation for workshop and/or study tour																										Hosono		
2)3	Implementation of workshop																										Hosono		
2)4	Reviewing of activity and evaluation of achievement																										Hosono		
3)1	Holding seminar on environmental awareness																										Hosono Ibayashi		
3)2	Preparation of environmental awareness activity report (2nd year)																										Hosono		
3)3	Preparation of procedural manual for environmental awareness activity by lessons obtained from activities																										Hosono		
Hosono																													
Ibayashi																													

The list of Working Group member of Output4 for TT-HUE DONRE is drafted in the Table below.

**Working Group Member of Output4 for TT-HUE DONRE**

Name	Organization	Position	Mobile	Email
Mr. Nguyen Viet Hung	EPA	Director	0913453983	hahahuho@yahoo.com.vn
Mr. Nguyen Xuan Khuong	EIA Appraisal Division, EPA	Head	0914351345	khuongemk@yahoo.com.vn
Ms. Le Thi Hanh	General Division, EPA	Vice Head	0948156800	hanhmoitruong@gmail.com

## 2.4 HCMC DONRE

The CD Work Plan for HCMC DONRE is drafted in the Table below.

**Draft CD Work Plan for HCMC DONRE**

Target Point/ Field of CD	Actual activities	Outcomes	Dissemination	Note
1) Conduct awareness activity for enterprises in Tan Quy Industrial Cluster in collaboration with EMD and HEPA	<p><u>2011:</u>  <u>May-Jul:</u>            0. Review of current organizational system and past activities on environmental awareness            1. Identification of target area for environmental awareness activity by discussion with relevant sections of HCMC DONRE</p> <p><u>Aug-Sep:</u>            2. Formulating environmental awareness activity plan for 1<sup>st</sup> year            - Setting target of awareness activity            Raising awareness of enterprises in Tan Quy industrial cluster on water pollution in Ba Bep Channel            - Selection of mean/tool for awareness activity            Workshop for enterprises in Tan Quy Cluster by utilizing output obtained by Output 2-3 (inventory)            - Involving partners to implement awareness activity            Collaboration with Cu Chi District DONRE officers to implement workshop</p> <p><u>Sep-Oct:</u>            3. Preparation for workshop            - Exchanging information on Tan Quy industrial cluster and Ba Bep channel with EMD and relevant sections of EPA</p> <p><u>Nov-Dec:</u>            4. Implementation of workshop            - Implementation of workshop for enterprises in Tan Quy Cluster            - Implementation of study tour to good practices (if appropriate)            - Questionnaire for enterprises to evaluate effect of activity.            5. Reviewing of activity and improvement for 2<sup>nd</sup> year</p> <p><u>2012:</u>  <u>Jan-Mar:</u>            6. Preparation of environmental awareness activity report (1<sup>st</sup> year)</p>	<p>1) Environmental awareness activity report targeted in Tan Quy industrial cluster (1<sup>st</sup> year)</p> <p>2) Presentation for enterprises in Tan Quy Industrial Cluster</p>		1) Collaborated activity with Output 2-3 (inventory)
2) Continuously conduct awareness activity for enterprises by utilizing guidance manual prepared by EMD and HEPA	<p><u>2012</u>  <u>Apr-Jun:</u>            1. Formulating environmental awareness activity plan for 2<sup>nd</sup> year            - Setting target of awareness activity            Continuously raising awareness of enterprises in Tan Quy industrial cluster on industrial wastewater management            - Selection of mean/tool for awareness activity            Guidance manual on environmental management for enterprises in Tan Quy industrial cluster by utilizing outcome of Output 2&amp;3</p> <p><u>Jul-Aug:</u>            2. Preparation of guidance manual in collaboration with relevant sections of DONRE            - Exchanging information with Output 2&amp;3</p> <p><u>Sep-Nov:</u>            3. Distribution and explanation of guidance manual for enterprises in Tan Quy industrial cluster            - Distributing of manual and implementation by enterprises            - Questionnaire for enterprises to evaluate effect of activity            4. Reviewing of activity and evaluation of</p>	<p>3) Environmental awareness activity report targeted in Tan Quy industrial cluster (2<sup>nd</sup> year)</p> <p>4) Guidance manual for enterprises in Tan Quy Industrial Cluster</p>		1) Collaborated activity with Output 2-4 (inspection)

	achievement		
3)Exchanging experiences and lessons with other DONREs	<p><b>2012</b> <b>Dec:</b> 1.Holding seminar on environmental awareness</p> <p><b>2013:</b> <b>Jan-Mar:</b> 2.Preparation of environmental awareness activity report (2<sup>nd</sup> year) 3.Preparation of procedural manual for environmental awareness activity by lessons obtained from activities</p>	5)Presentation for environmental awareness seminar	1)Procedural manual for environmental awareness activity to be prepared by lessons obtained from activities in 5 DONREs will be used in HCMC DONRE

The overall schedule of Output4 for HCMC DONRE is drafted in the Table below.

### Overall Schedule of Output4 for HCMC DONRE

Joint implementation of JET and Vietnamese C/P
  Continuous implementation by Vietnamese side

Output 4:Environmental Awareness		JFY 2010/2011												JFY 2012													
		VFY 2011						VFY 2012						VFY 2013													
activity		3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
1)-1	Identification of target area for environmental awareness activity																										
1)-2	Formulating environmental awareness activity plan for 1st year																										
1)-3	Preparation of workshop																										
1)-4	Implementation of workshop for enterprises in Tan Quy Cluster																										
1)-5	Reviewing of activity and improvement for 2nd year																										
1)-6	Preparation of environmental awareness activity report (1st year)																										
2)-1	Formulating environmental awareness activity plan for 2nd year																										
2)-2	Preparation of guidance manual in collaboration with relevant sections of DONRE																										
2)-3	Distribution and explanation of guidance manual for enterprises in Tan Quy industrial cluster																										
2)-4	Reviewing of activity and evaluation of achievement																										
3)-1	Holding seminar on environmental awareness																										
3)-2	Preparation of environmental awareness activity report (2nd year)																										
3)-3	Preparation of procedural manual for environmental awareness activity by lessons obtained from activities																										
	Hosono																										
	Ibayashi																										

The list of Working Group member of Output4 for HCMC DONRE is drafted in the Table below.

### Working Group Member of Output4 for HCMC DONRE

Name	Organization	Position	Mobile	Email
Mr. Huynh Thanh Nha	EPA	Vice Director	0913615522	huynhtuha@yahoo.com
Ms. Huynhh Thu Van	Environmental Information and Training Division, EPA	Head	0909034717	
Ms. Nguyen Thi Tu Uyen	Environmental Information and Training Division, EPA	Vice Head	0903392691	uyennt@gmail.com
Ms. Nguyen Thi Tuyet Hoa	EMD	Expert	0903609545	tuyethoa211@yahoo.com
Ms. Le Thanh Dung	EMD	Expert	0989622627	tdung88811@yahoo.com
Ms. Nguyen Thi Thu Hang	Water Resources and Mineral Management Department	Expert	0988869422	aidienchau@gmail.com
Mr. Dang Le Hien	Inspection Division, EPA	Expert	0908940599	danglehien@yahoo.com
To be named	Cu Chi District DONRE			

Note: Additional C/P is requested by JET to HCMC DONRE

## 2.5 BRVT DONRE

The CD Work Plan for BRVT DONRE is drafted in the Table below.

### Draft CD Work Plan for BRVT DONRE

Target Point/ Field of CD	Actual activities	Outcomes	Dissemination	Note
1)Conducting environmental awareness activity focusing on water pollution in Cua Lap River in Vung Tau City and Long Dien District	<p><u>2011:</u> <u>May-Jul:</u> 0.Review of current organizational system and past activities on environmental awareness 1.Identification of target area for environmental awareness activity</p> <p><u>Aug-Sep:</u> 2.Fomulating environmental awareness activity plan for 1<sup>st</sup> year -Setting target of awareness activity Raising awareness of district officers and leaders of residential groups on water pollution in Cua Lap River -Selection of mean/tool for awareness activity Workshop and field reconnaissance on water pollution in Cua Lap River in Vung Tau City and Long Dien District -Involving partners to implement awareness activity Collaboration with Vung Tau City and Long Dien District DONRE officers to implement workshop and field reconnaissance</p> <p><u>Sep-Oct:</u> 3.Preparation for workshop and field reconnaissance</p> <p><u>Nov-Dec:</u> 4.Implementation of workshop and field reconnaissance -Workshop on current condition of water environment in Cua Lap River. - Field reconnaissance to pollution sources in Vung Tau City and long Dien District. - Discussion on environmental awareness activity to be conducted by attendants -Questionnaire for attendants to evaluate effect of activity. 5.Reviewing of activity and improvement for 2<sup>nd</sup> year</p> <p><u>2012:</u> <u>Jan-Mar:</u> 6 Preparation of environmental awareness activity report (1<sup>st</sup> year)</p>	<p>1)Environmental awareness activity report for Cua Lap River (1<sup>st</sup> year)</p> <p>2)Presentation for district DONRE officers and residential group</p>		
2)Continuously conducting environmental awareness activity by utilizing outcome obtained from Output 2&3	<p><u>2012</u> <u>Apr-Jun:</u> 1.Fomulating environmental awareness activity plan for 2<sup>nd</sup> year -Setting target of awareness activity Raising awareness of residents and enterprises on water pollution in Cua Lap River by utilizing outcomes of Output 2&amp;3 - Selection of mean/tool for awareness activity [for enterprises] -Workshop for seafood processing factories on wastewater management and applicable countermeasures -Study tour to good practice for enterprises. [for residents] -Production and distribution of leaflet for residents on environmental condition in Cua Lap River -Environmental patrol and cleaning up the river</p> <p><u>Jul-Aug:</u> 2.Preparation of workshop, eco-patrol and leaflets -Exchanging information with Output2&amp;3</p> <p><u>Sep-Nov:</u> 3.Implementation of workshop, eco-patrol and distributing leaflets -Implementation of workshop for enterprises</p>	<p>3)Environmental awareness activity report for Cua Lap River (2<sup>nd</sup> year)</p> <p>4)Presentation for seafood processing factories and leaflets for residents</p>		1)Collaborated activity with Output 2-4 (inspection)



	-Conducting eco-patrol and distribution of leaflets for residents. -Questionnaire for enterprises and residential group to evaluate effect of activity. 4.Reviewing of activity and evaluation of achievement			
3)Exchanging experiences and lessons with other DONREs	<u>2012</u> <u>Dec:</u> 1.Holding seminar on environmental awareness  <u>2013:</u> <u>Jan-Mar:</u> 2.Preparation of environmental awareness activity report (2 <sup>nd</sup> year) 3.Preparation of procedural manual for environmental awareness activity by lessons obtained from activities	5)Presentation for environmental awareness seminar	1)Procedural manual for environmental awareness activity to be prepared by lessons obtained from activities in 5 DONREs will be used in BRVT DONRE	

The overall schedule of Output4 for BRVT DONRE is drafted in the Table below.

### Overall Schedule of Output4 for BRVT DONRE

		Joint implementation of JET and Vietnamese C/P												Continuous implementation by Vietnamese side									JICA Expert in Charge					
Output 4:Environmental Awareness		JFY 2010/2011												JFY 2012														
activity		VFY 2011												VFY 2012										VFY 2013				
		3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3		
1)-1	Identification of target area for environmental awareness activity																											Hosono Ibayashi
1)-2	Formulating environmental awareness activity plan for 1st year																											Hosono
1)-3	Preparation for workshop and field reconnaissance																											Ibayashi
1)-4	Implementation of workshop and field reconnaissance																											Ibayashi
1)-5	Reviewing of activity and improvement for 2nd year																											Ibayashi
1)-6	Preparation of environmental awareness activity report (1st year)																											Ibayashi
2)-1	Formulating environmental awareness activity plan for 2nd year																											Ibayashi
2)-2	Preparation of workshop, eco-patrol and leaflets																											Ibayashi
2)-3	Implementation of workshop, eco-patrol and distributing leaflets																											Ibayashi
2)-4	Reviewing of activity and evaluation of achievement																											Ibayashi
3)-1	Holding seminar on environmental awareness																											Hosono Ibayashi
3)-2	Preparation of environmental awareness activity report (2nd year)																											Ibayashi
3)-3	Preparation of procedural manual for environmental awareness activity by lessons obtained from activities																											Ibayashi
	Hosono																											
	Ibayashi																											

The list of Working Group member of Output4 for BRVT DONRE is drafted in the Table below.

### Working Group Member of Output4 for BRVT DONRE

Name	Organization	Position	Mobile	Email
Mr. Le Tan Cuong	EPA	Director	0972794141	
Mr. Tran Anh Duc	Pollution Control Div., EPA	Vice Head	0983727900	
Mr. Luong Hung Phi	Pollution Control Div., EPA	Expert	0974280167	luonghungphi@gmail.com
To be named	Vung Tau City DONRE			
To be named	Long Dien District DONRE			
To be named	Womens' Union			
To be named	Youth Union			
To be named	Farmers' Association			

Note: Additional C/P is requested by JET to BRVT DONRE

### **3. Others**

#### **3.1 Provincial Specific Topics to be considered**

(1) In TT-Hue, DARD is implementing Integrated Management of Lagoon Activities (IMOLA) project in Tam Giang - Cau Hai Lagoon with assistance from FAO. Therefore, WG4 will continuously exchanging information with DARD and IMOLA project and will conduct environmental awareness activity by learning from their lessons.

(2) In HCMC DONRE, Environmental Information and Training Division of EPA is in charge of environmental awareness activity for public. However, to implement environmental awareness activity for industries, Environmental Management Division of DONRE shall also be involved.

#### **3.2 Problems to be solved**

(1) Target DONREs except for HCMC DONRE do not have specific division in charge of environmental awareness and members of WG4 will not be able to dedicate their working time just for environmental awareness activity. Therefore, clarification of staff in charge of environmental awareness and/or necessity of specific division in charge of environmental awareness will be discussed and examined among WG4 in the course of the project. WG4 will propose necessary countermeasures to DONRE when necessary.

(2) As it is necessary to utilize outcomes obtained from Output2 (Monitoring/Inventory/Inspection) and Output3 (Water Pollution Control Measures), progress of Output2 and Output3 activities will be confirmed in WG4 meetings continuously.

ベトナム側主要面談者リスト

Organization	Name	Division / Agency	Division under Agency	Position
VEA	Nguyen The Dong	ISD		Deputy General Director (Project Director)
VEA	D.Hoang Danh Son	ISD		Director (Project Manager)
VEA	Chu Ngoc Kien	ISD		Officer
VEA	Nguyen Quoc Khanh	CEID		Director
VEA	Nguyen Hoang Anh	PCD	Division of water and soil pollution control	Head of division
VEA	Nguyen Trung Thuan		Division of pollution control	Officer
MONRE	Nguyen Thanh Thao	DWRM		
VEA	Vu The Hung	EIA		Officer
VEA	Tran Thi Le Anh	DWMEP	Division for River basin environment control	Deputy head of division
VEA	Nguyen Minh Phuong			Officer
VEA	Nguyen Thien Phuong	ISD		Deputy Director of ISD
VEA	Nguyen Pham Ha	ISD		Officer
VEA	Tran Thi Thu Huong	ID	Administration officer	Officer
VEA	Hoang Van Vy			senior inspector
VEA	Nguyen Thi Nguyet Anh	CEM	Division of Environmental Monitoring	Head of division
VEA	Nguyen Huu Thang		Division of Environmental Monitoring	Deputy head of division
VEA	Do Nam Thang	ISEM		Deputy Director
Ba Ria Vung Tau DONRE	Nguyen Huu Loi			Deputy Director
	Le Tan Cuong	Environmental Protection Agency		Head
	Le Tuan Kiet	Center for Monitoring and Analysis		Deputy Director
	Ngo Thai Sinh	Division of Inspection		Chief
	Luong Hung Phi	Environmental Protection Agency		Officer
	Pham Thi Thanh Giao	Division of Water resource management		Head
	Tran Ngoc Thanh	Environmental Protection Agency	Division of Environmental management	Vice head
	Tang Thi Diem Mi	EPA		Officer
	Nguyen Thanh Tam	Division of Water resource management		Officer
Ho Chi Minh city DONRE	Nguyen Van Phuoc			Deputy Director
	Tran Nguyen Hien	Division of Environmental Management		Head
	Cao Tung Son	Division of Environmental Management		Deputy Head
	Le Thi Thanh Dung	Division of Environmental Management		Officer
	Nguyen Thi Thu Hang	Division of Water resource and mineral management		Specialist
	Nguyen Thi Du	Division of Inspection		Chief
	Dang Le Hien	Division of Inspection		Specialist
	Le Thi Kim Oanh	Division of Inspection		Inspector
Thua Thien-Hue	Huỳnh Thanh Nhã	Environmental Protection Agency		Vice Head
	Nguyen Huu Quyet			Deputy Director

DONRE	Nguyen Viet Hung	EPA		Head
	Duong Van Thanh	Division of Inspection		Deputy Chief
	Le Thi Hanh	EPA	Division of General administration	Vice head
	Chau Manh Quynh	EPA		Officer
	Nguyen Thanh Thuy	EPA		Officer
	Tran Nguyen The Anh	Division of Inspection		Officer
	Tran Thi Ngoc Diep	Division of Inspection		Officer
Hai Phong DONRE	Phùng Văn Thanh			Deputy Director
	Lê Sơn	Environmental Protection Agency		Vice Head
	Phuong	EPA		Officer
	Do Van Tuyen	EPA		Officer
	Do Thi Minh Huong	EPA		Officer
	Nguyen Thi Vinh	Division of Inspection		Chief
	Mai Duc Long	Division of Inspection		Inspector
	Nguyen Thi Tuyen Lan	Environmental Monitoring and Analysis		Director
	Vu Thi Thanh Mai	Agency for Sea and Islands		Officer
Doi Xuan Hieu	Center for Informatics Technology		Officer	
Hanoi DONRE	Dao Thi Anh Diep	EPA		Vice head
	Nguyen Tien Hung	Division of Inspection		Deputy Chief
	Ta Ngoc Son	EPA		Officer
	Nguyen Trong Truong	EPA		Officer
	Nguyen Phuong Lien	Hanoi CENMA		Officer

## ANNEX I: PROJECT DESIGN MATRIX (PDM)

Project Name : The Project for Strengthening Capacity of Water Environmental Management in Viet Nam  
 Duration of Project : 2010 – 2013 (3 years)  
 Project Target Area : Hanoi, Hal Phong, Thua Thien-Hue, Ho Chi Minh, Ba Ria-Vung Tau  
 Target Group : Ministry of Natural Resources and Environment (MONRE) and target Departments of Natural Resources and Environment (DONREs)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p><b>Overall Goal</b>                      Enforcement capacity of MONRE and DONREs on water environmental management is strengthened.</p>	<ol style="list-style-type: none"> <li>1. The rate of levying environmental protection charge for waste water increases.</li> <li>2. The rate for industries to follow orders / administrative guidance increases.</li> <li>3. The rate for industries to comply with the effluent standards increases.</li> </ol>	Data at MONRE and DONREs	Drafted amendments that would be developed in the Project are officially issued.
<p><b>Project Purpose</b>                      Capacity of MONRE and target DONREs regarding water environmental management* is strengthened.</p> <p>* Capacity of water environmental management covers the followings:                      MONRE - capacities of making policy and management system, and information management &amp; utilization,                      DONRE – capacities of enforcing basic water pollution control, making pollution control measures, promoting awareness, and information management &amp; utilization.</p>	Evaluation results show improvement, compared with the initial stage of the project as follows:  1) MONRE conducts self-evaluation on their own capacity of policy and system making regarding water environmental management; and 2) target DONREs conduct self-evaluation on their own enforcement capacity of water environmental management.	Questionnaire survey for MONRE and target DONREs at the initial, mid-term, and final stage of the project	The results of activities and lessons are properly extended and applied to other DONREs nationwide.
<p><b>Outputs</b></p> <ol style="list-style-type: none"> <li>1) MONRE's capacity of making policy and management tools that are more effective and enforceable is strengthened.</li> <li>2) Enforcement capacity of target DONREs on basic water pollution control (environmental monitoring, pollution sources inventory, pollution sources inspection) is strengthened.</li> <li>3) Target DONRE's capacity of making effective water pollution control measures is strengthened.</li> <li>4) Target DONRE's capacity of promoting awareness of public and</li> </ol>	<ol style="list-style-type: none"> <li>1-1 More than XX draft amendments to improve water environmental management policy and systems are developed among XX issues extracted as necessary issues to improve.</li> <li>1-2 The amendments are received and authorized by MONRE.</li> </ol>	<ol style="list-style-type: none"> <li>1-1 Hearing from MONRE</li> <li>1-2 Hearing from MONRE</li> <li>1-3 Working products from Activity 1-3 and follow-up survey</li> </ol>	PPCs at target provinces make commitments to cooperate the project.  Related organizations such as environmental police.



<p>Industrial sectors on water environment is strengthened. Capacity of MONRE and DONREs on information management and utilization is strengthened.</p> <p>5)</p>	<p>1-3 The process and methods for making more effective policies and system development are improved, compared with the initial stage of the project.</p> <p>(Monitoring) 2-1-1 The extent of fulfillment in required items is increased, which are the number of parameters, monitoring points, and frequencies etc., in accordance with monitoring guidelines.</p> <p>2-1-2 Accuracy of monitoring is improved.</p> <p>(Inventory) 2-2-1 Primary water pollution sources are duly filled in the revised inventory formats.</p> <p>2-2-2 Information on the inventory is adequately added and/or updated.</p> <p>(Inspection) 2-3-1 The results of the capacity assessment (individual and organization) show improvement, compared with the initial stage of the project.</p> <p>2-3-2 Among the targets of inspections, the ratio to capture the primary/crucial pollution sources is increased.</p> <p>2-3-3 The implementation rate of inspection on the basis of annual working plan is increased.</p> <p>2-3-4 The number of companies/organizations that follows improvement orders and/or administrative guidance is increased.</p> <p>3-1 Group(s) that work specifically on studying and making water pollution control measures are established and continued its activities in the target DONRE(s).</p> <p>3-2 The target DONRE(s) makes reports more than XX times a year to PPC regarding the progress and</p>	<p>2-1-1 Monitoring reports 2-1-2 Reports of monitoring analysis and evaluation results on Activity 2-3-5</p> <p>2-2-1 Inventory 2-2-2 Inventory</p> <p>2-3-1 Results of capacity assessment 2-3-2 Inspection reports 2-3-3 Inspection plans and inspection reports 2-3-4 Reports on improvement orders and administrative guidance</p> <p>3-1 Hearing from target DONREs 3-2 Reports to PPC and/or Project activity report 3-3 Outline of draft countermeasure and hearing</p>	<p>DOIT and etc., cooperate the project.</p>
---	--	---	--

	<p>contents of the draft outline for effective water pollution control measures.</p> <p>3-3 The draft outline for effective water pollution control measures is submitted to PPC.</p> <p>4-1</p> <ul style="list-style-type: none"> <li>• The results of questionnaire survey to public and inquiries on environmental awareness shows improvement, compared with the initial stage of the project (consider the environmental awareness events as opportunities to conduct surveys).</li> <li>• No. of coverage by media on water environment.</li> </ul> <p>4-2 No. of tools developed and utilized to promote environmental awareness targeting public and industries.</p> <p>4-3 Environmental awareness events are conducted, making use of newly developed tools.</p> <p>4-4 The implementation rate of events on the basis of annual working plan is increased.</p> <p>5-1 MONRE and the target DONREs realize more smooth communication between the both than before in terms of frequency and contents (Questionnaire survey at the initial stage and final stage of the project period is required).</p> <p>5-2 A working group to study the feasibility to apply the ways and means is established in MONRE.</p>	<p>4-1</p> <ul style="list-style-type: none"> <li>• Questionnaire survey (report showing the results)</li> <li>• Record of media coverage</li> </ul> <p>4-2 Tools to promote environmental awareness</p> <p>4-3 Record of event implementation</p> <p>4-4 Implementation plans and record</p> <p>5-1 Questionnaire survey</p> <p>5-2 Hearing from MONRE</p>
	<p>MONRE's capacity of making policy and management tools that are more effective and enforceable is strengthened.</p> <p>1-1 Collect basic information on water environmental management policy and tools at national level, and analyze as well as organize the necessary issues to improve.</p> <p>1-2 Study issues that target DONREs are faced, regarding implementation of water environmental management policy and tools.</p> <p>1-3 Based on the results of 1-1 and 1-2, review water environmental</p>	<p>Inputs</p> <p>Japanese side</p> <p>1) Long term experts</p> <ul style="list-style-type: none"> <li>- Project Leader/Water Environmental Policy</li> <li>- Water Environment Management / Project Coordinator</li> </ul> <p>2) Short term experts</p> <ul style="list-style-type: none"> <li>- Water Environmental Policy at provincial level</li> <li>- Environmental Awareness</li> </ul>

<p>management policy and tools and conduct evaluation regarding effectiveness and enforceability of these water environmental policy and tools with focus on pollutions from industries.</p> <p>1-4 Train staff of MONRE and DONREs on studying, developing, reviewing, and revising policy and management tools.</p> <p>1-5 Prepare the draft amendment on water environmental management policy and tools for their improvement.</p> <p>1-6 Organize workshops for sharing and collecting comments and opinions based on implementing activities in Output 2 and Output 3.</p> <p>1-7 Review the draft amendment prepared in 1-5.</p> <p>1-8 Propose the amendment on water environmental management policy and tools.</p> <p>2) Enforcement capacity of target DONREs on basic water pollution control (environmental monitoring, pollution sources inventory, pollution sources inspection) is strengthened.</p> <p>2-1 Conduct capacity assessment of target DONREs regarding enforcement of basic water pollution control.</p> <p>2-2 Select main component(s) from the list below and also select activities under the selected component(s) for each DONRE, and prepare activities plans for each DONRE.</p> <p>2-3 Conduct activities selected in 2-2 in each DONRE.</p> <p>[Component 1 Monitoring]</p> <p>C1-1 Review water quality monitoring guidelines/manuals<sup>(1)</sup>.</p> <p>C1-2 Based on above guidelines/manuals (revised if necessary), prepare/improve a monitoring plan, taking into consideration of regional characters at target DONREs.</p> <p>C1-3 Implement regular monitoring in accordance with the plan above.</p> <p>C1-4 Conduct training on water quality monitoring including quality control for improving reliability of monitoring.</p> <p>(note: change training contents based on situations of target DONREs)</p> <p>C1-5 Interpret and evaluate results of monitoring and feedback to the monitoring plan.</p> <p><sup>(1)</sup>Guidelines/manuals prepared by the Study for Water Environment Management on River Basins and the Project for Enhancing Capacity of Vietnamese Academy of Science and Technology in Water Environment Protection Phase II are also included.</p> <p>[Component 2 Inventory]</p> <p>C2-1 Conduct capacity assessment of target DONREs regarding pollution sources inventory.</p>	<p>3) - Information Management</p> <p>- Short term expert team(s)</p> <p>- Leader</p> <p>- Water Environmental Management /Sub-Leader</p> <p>- Environmental Monitoring (1, 2)</p> <p>- Water Quality Analysis/QAQC (1, 2)</p> <p>- Pollution Sources Inventory (1, 2)</p> <p>- Pollution Sources Inspection (1, 2)</p> <p>- Environmental Education (1, 2) 3</p> <p>4) Workshop (overall : X time/year in Hanoi, regional: XXtime x 3 places (north, middle, south)</p> <p>5) Training in Japan : X time/ year (for DONRE &amp; MONRE)</p> <p>6) Equipment : minimum equipment necessary for project activities</p> <p>7) Local Consultants</p> <p>Vietnamese side</p> <p>1) Counterpart MONRE : Output 1, 3 &amp; 6 DONRE : Output 2, 3, 4 &amp; 5</p> <p>2) Project Office Space at MONRE and each DONRE</p> <p>3) Necessary operation costs</p>	<p><u>Pre-conditions</u></p> <p>Vietnamese government keeps the significance of water environmental protection within the governmental policies and strategies.</p> <p>MONRE and target DONREs assign counterpart personnel.</p>
---	---	--



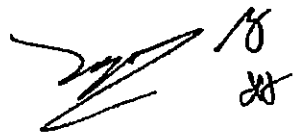
C2-2 Review and modify existing inventory formats based on the current conditions of target DONREs.<sup>(2)</sup>  
 C2-3 Conduct inventory survey with the revised inventory formats.  
 C2-4 Organize collected information on main pollution sources.  
 C2-5 Regularly conduct inventory survey and add/update information on main pollution sources.  
 (2) Inventory format prepared by the Study for Water Environment Management on River Basins is also included.

**[Component 3 Inspection]**  
 C3-1 Conduct capacity assessment of target DONREs regarding inspection for water pollution control.  
 C3-2 Review existing guidelines on inspection.  
 C3-3 Prepare the inspection plan, based on the above guidelines (revised if necessary) and results of inventory survey.  
 C3-4 Conduct training on more effective inspection.  
 C3-5 Clarify criteria for taking administrative guidance and orders in accordance with the inspection results.  
 C3-6 Conduct inspection based on activities C3-1 to C3-5  
 C3-7 Issue improvement order or administrative guidance based on activity C3-6 by target DONREs.

3) Target DONRE's capacity of making effective water pollution control measures is strengthened.  
 3-1 Evaluate the enforcement performances of target DONREs on water pollution control, including the various systems implemented in the past, and organize issues for improvement.  
 3-2 Select target province(s) where the activities 3-3 and 3-4 would be conducted, after reviewing the feasibility of application of the draft amendment prepared in 1-5.  
 3-3 Specify target regions and/or industries for application of the effective water pollution control measures.  
 3-4 Draft an outline for effective water pollution control measures.

4) Target DONRE's capacity of promoting awareness of public and industrial sectors on water environment is strengthened.  
 4-1 Review the current system and situation of environmental awareness activities at target provinces.  
 4-2 Make awareness raising plans for water environment to be conducted by target DONREs\*.  
 4-3 Conduct awareness raising activities in accordance with the plan set at 4-2.

<p>4-4 Review and improve awareness raising activities based on the result of 4-3.</p> <p>5) Capacity of MONRE and DONREs on Information management and utilization is strengthened.</p> <p>5-1 Review the current situation of information collection and management regarding water environment, and organize issues for improvement.</p> <p>5-2 Prioritize information necessary for MONRE and DONREs to come up with administrative measures and their implementation.</p> <p>5-3 Develop more effective ways and means (formats, reporting modes, frequencies, etc.) to collect information from all the DONREs.</p> <p>5-4 Conduct trials to collect information from target DONREs by use of the ways and means developed in 5-3, and utilize information at MONRE.</p> <p>5-5 Conduct workshops to share the results of 5-4.</p> <p>5-6 Prepare a proposal of actual application of the ways and means at MONRE.</p>	
--	--



## 1. 専門家派遣

No.	分野	従事期間 (M/M)
<b>長期専門家</b>		
1	プロジェクト・リーダー/水環境政策	17.4
2	業務調整/環境管理	15.3
<b>短期専門家</b>		
1	総括	2.7
2	副総括/水環境管理	6.8
3	水環境モニタリング	8.6
4	水質分析/QAQC	4.7
5	汚濁源インベントリー	8.2
6	汚濁源インスペクション	5.5
7	水汚濁対策	4.5
8	環境啓発	6.3
9	業務調整	0.5
	合計	80.5

## 2. 機材供与

No.	機材	個数	金額(USD)
1	デスクトップコンピューター	7	13,340
2	ラップトップコンピューター	6	10,247
3	電話/FAX	1	360
4	コピー機	2	7,629
5	プリンター	2	2,123
6	ポータブルスキャナー	1	300
7	UPS	7	710
8	GISソフトウェア	7	14,500
9	ハンディGPS	5	2,230
	合計		51,439

## 3. ローカルコスト

No.	項目	金額(USD)
1	ローカルコンサルタントへの業務委託	52,775
2	ローカルコンサルタント、プロジェクトスタッフ雇用	98,481
3	国内旅費・交通費	37,156
4	その他業務費	78,573
	合計	266,985

