

**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
SOCIALIST REPUBLIC OF VIETNAM
QUANG NINH PROVINCIAL PEOPLE'S COMMITTEE**

**The Project
for
Environmental Protection
in Halong Bay**

PROJECT COMPLETION REPORT

< Volume 2 >

February 2013

NIPPON KOEI CO., LTD.

VTO
JR
13-71

List of Volumes

<Volume 1>

Main text

Attachment 1: Minutes of CEM Meetings

<Volume 2>

Attachment 2: The Proposal of the Environmental Protection for Sustainable Tourism Strategy in Halong Bay

<Volume 3>

Attachment 3: Materials and Record of the 1st Workshop on 9th March, 2011

Attachment 4: Materials and Record of the 2nd Workshop on 27th February, 2012

Attachment 5: Materials and Record of the 3rd Workshop for Output-3 on 24th October, 2012

Attachment 6: Materials and Record of the 4th Workshop for Output-3 on 21st November, 2012

Attachment 7: Materials and Record of the 3rd Workshop for Output-4 on 7th November, 2012

Attachment 8: Materials and Record of the 4th Workshop for Output-2 on 7th December, 2012

Attachment 9: Materials and Record of the Final Seminar on 14th December, 2012

Attachment 10: List of Collected Information and Materials

Attachment 11: Photos of the Project Activities

<Technical Cooperation Products in DVD-ROM, attached with Volume 1>

(1) Materials and Records of the Discussion Meetings for all Working Groups

(2) Integrated Environment Monitoring Implementation Plan

(3) QN Pollution Source Database (PSD) and user's manual

(4) Pollution Source Map (PSM) Data and user's manual

(5) Implementation Plan of Inspection and Administrative Guidance

(6) Pollution Source Table (PST) and Pollution Source Map (PSM) in Halong Area

(7) Draft Action Plan for Proposed Measures in Coastal Environment Protection Corridor for Halong Bay

(8) Tourism resource database and user's manual

(9) Draft Proposal of Sustainable Tourism Development Strategy

(10) Draft Proposal of Comprehensive Strategies and Actions (CSA) for EE & PR in Quang Ninh

(11) Draft of Operations Guide for HLEEA

(12) Visions of HLEEA

(13) Environmental Education Materials

Attachment-2

The Proposal of the Environmental Protection for Sustainable Tourism Strategy in Halong Bay

**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
SOCIALIST REPUBLIC OF VIETNAM
QUANG NINH PROVINCIAL PEOPLE'S COMMITTEE**

***The Proposal
of
The Environmental Protection for
Sustainable Tourism Strategy in Halong Bay***

February 2013

**Project Management Board (PMB)
and
JICA Expert Team (JET)**

The Environmental Protection for Sustainable Tourism Development Strategy

Table of Contents

1. General Concept	1
1.1 Objectives	1
1.1.1 Background	1
1.1.2 Objectives of the Proposal	1
1.2 Scope and Subject	1
2. Organization and Target Area	2
2.1 Organization	2
2.2 Target Area	5
3. Contents of the Proposal	5
3.1 Overview	5
3.2 Integrated Water Environment Management	7
3.2.1 Purposes and Effects	7
3.2.2 Strategy and Plan Formation	9
3.2.3 Focal Points of Integrated Water Environment Management	9
3.2.4 Recommendations	10
3.3 Coastal Environment Protection Corridor (CEPC)	12
3.3.1 Purposes and Effects of CEPC	12
3.3.2 Strategy and Plan Formation	14
3.3.3 Focal Points of CEPC	21
3.3.4 Recommendations	22
3.4 Sustainable Tourism Development (STD)	23
3.4.1 Vision and Goal	23
3.4.2 Strategy and Plan Formation	23
3.4.3 Focal Points of STD	25
3.4.4 Recommendations	28
3.5 Halong Environmental Education Association (HLEEA)	29
3.5.1 Purposes and Effects	29
3.5.2 Strategy and Plan Formation	30
3.5.3 Focal Points of HLEEA	32
3.5.4 Recommendations	33
4. Implementation Schedule	33
4.1 Long-term and short-term Implementation Schedule of the Proposed Strategies and Measures	33
4.2 Actions Forward	33
Attachment-1: Integrated Environmental Monitoring Implementation Plan (IEMIP)	
Attachment-2: Coastal Environment Protection Corridor (CEPC)	
Attachment-3: Strategies and Measures for Sustainable Tourism Development (STD)	
Attachment-4: Halong Environmental Education Association (HLEEA)	

1. General Concept

1.1 Objectives

1.1.1 Background

(1) Halong Bay consists of 1,969 of small islands and rocks in Quang Ninh (QN) Province in the northern Vietnam. Because of its unique landscape, the Halong Bay has been registered as a world heritage site by UNESCO in 1994 and managed by the Cultural Heritage Law since 2001. The area is the most famous tourism spot in Vietnam, where more than 2 million of tourists visit every year. On the other hand, Halong area is one of the foremost coal mining area in Vietnam and play a key role of regional traffic system, where has been functioned as a main industrial development zone in northern Vietnam. Urbanization is progressed with rapid industrialization by development of coal mining area, cement and brick factories, and power plant around the Halong Bay. Under the situation, the following factors become pollution sources in Halong Bay: wastewater and solid waste from mining areas and factories, domestic wastewater by urbanization, increase of tourist facilities, deforestation of the mangrove, sediment deposition at ocean area, deregulated landfill, and wastewater and oil flow from ships and boats.

(2) Due to lack of cooperation and coordination, integrated measures for environmental conservation have not satisfactorily been implemented in QN Province. In addition, land use issues, that had not been target in the past, become prominence. It is important to prepare and implement land use policy with keeping balance of development and environment. Under this background, QN Province intends to conserve the Halong Bay as a world heritage site with making balance between environment and development and to lead sustainable tourism industry in this area.

1.1.2 Objectives of the Proposal

The ultimate goal of this proposal is to set forth conservation of the Halong area (Halong bay and its vicinity) achieving sustainable conditions compatible with environment protection and development. Thus, this proposal is prepared by the great efforts of the counterparts (C/Ps) and their organizations clarifying the following key items:

- 1) Strategies, measures, and actions required,
- 2) Institutional set up for actual implementation of the proposed measures and actions, and
- 3) Implementation schedule of the proposed strategies and measures.

1.2 Scope and Subject

The contents of this proposal consist of the actual outcomes produced by C/Ps covering the following aspects:

- 1) Water quality protection including pollution source control,
- 2) Land use management,
- 3) Tourism development strategy, and
- 4) Environmental education and public awareness.

It must be stressed that this proposal is a commitment on strong intention of C/Ps toward for achievement of sustainable conditions of the Halong Bay in accordance with the new development strategy, Green Economy and Green Growth, explicitly stated by the Vietnamese Government and QN PPC. In fact, the Government of Vietnam inaugurated the Approval of the National Green Growth Strategy (Decision No. 1393/2012/QĐ-TTg/25th Sept) which explicitly stated that the "Green Growth" is to be a key pillar of sustainable development, to contribute poverty reduction and improvement of well-being of the people, to increase investment on development, to reduce greenhouse gas emission, and to stimulate national economic growth, clarifying the following policies;

a) Objectives

- 1) To achieve the low carbon economy
- 2) To enrich national capital
 - Economic restructuring and institutional improvement
 - R/D and advanced technologies
 - Improving living standards and creating environmental friendly lifestyle

b) Task

- 1) Reduce green house gas emission and use clean & renewable energy
- 2) Greening production
- 3) Greening lifestyle and Promoting sustainable consumption

c) Solutions

- 1) Communication, awareness, and encouragement
- 2) Saving energy in all sectors
- 3) Changing fuel structure
- 4) New and renewable energy
- 5) Reduce green house gas emission
- 6) Review and revise M/P
- 7) Economically and efficient use of natural resources
- 8) Development of green economy sector
- 9) Sustainable infrastructure
- 10) Cleaner Production
- 11) Sustainable urbanization
- 12) New rural model with environmental friendly lifestyle
- 13) Sustainable consumption
- 14) Mobilizing resources
- 15) Human resource development
- 16) Science and technology development
- 17) International cooperation

The contents of this Proposal can be justified due to clearly meet with the Green Growth Strategy of the Vietnamese Government and QN PPC as shown in Figure 1-1-1.



Source: JET

Figure 1-1-1 Linkage with National Green Growth Strategy

2. Organization and Target Area

2.1 Organization

This proposal titled “the Environmental Protection Strategy for Sustainable Tourism Development in Halong Bay Area” is formulated based on the outcomes of Working Groups (WGs) so as to achieve the vision and goal effectively and efficiently. It means that collaborative activities of the concerned organizations are inevitable. Therefore, the owner implementation body should be wide-ranged which can cover various fields and solve difficulties in the course of actual implementation. In this context, an establishment of the Halong Bay Environment Protection Committee (HLEPC) is proposed as the core management and implementation body with enough power and responsibility under the QN PPC. Under full management of this HLEPC, concerned administrative organizations in charge should take an initiative for actual implementation of measures and actions proposed.

(1) Members of the Halong Bay Environment Protection Committee (HLEPC)

The Project provides opportunities to form networks with a wide range of stakeholders. In order to fulfill the Overall Goal, the inter-organizational network drives stakeholders’ proactive participation from a viewpoint of bottom-up approach to cross-over invisible barriers and existing frameworks. Thus, the following institutional structure is proposed as the actual implementation and management of the strategies and measures proposed by the Project.

1) Overall Management Organization:

a) Quang Ninh Environment Protection Committee (QNEPC)

2) Implementing Organization (QN PPC): 10 organizations

b) Dept. of Natural Resource and Environment (DONRE)

c) Dept. of Culture, Sport and Tourism (DCST)

d) Halong Bay Management Dept. (HBMD)

e) Dept. of Construction (DOC)

f) Dept. of Education and Training (DOET)

g) Dept. of Planning and Investment (DPI)

h) Dept. of Agriculture and Rural Development

i) Relevant Dept. of PC in Halong City, Cam Pha City, Quang Yen Town, Hoanh Bo District, and Van Don District

j) Youth Union (YU)

k) Women’s Union (WU)

3) Implementing Organization (outside of QN PPC): 2 organizations

l) Quang Ninh Tourism Association

m) Halong Tourist Boat Association

4) Advisory:

n) Vietnam Environment Administration (VEA)/ Ministry of Natural Resources and Environment (MONRE)

(2) Task oriented implementation and management group

Due considering a wide range activities of the proposed strategies and measures by the Project, and importance of follow-up and management activities of QNEPC, it is recommended to establish a task oriented sub-organization in QNEPC for effective and efficient implementation of the Proposal. In this context, the following 4 task force groups (TFG) in charge are proposed as shown in Figure 2-1-1.

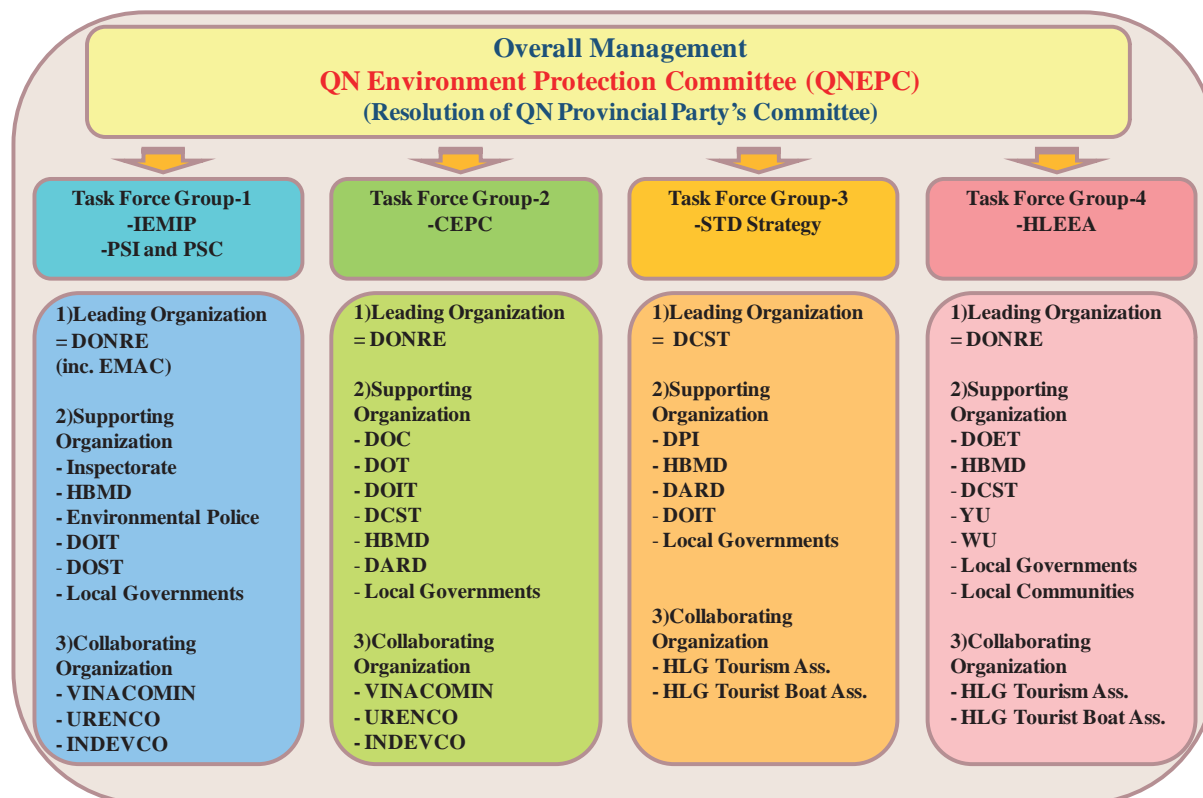
The general tasks common for all TFG are;

- a) Planning, implementation, monitoring, management, evaluation, and reporting,
- b) Budget preparation and its allocation,
- c) Achievement evaluation and feedback,
- d) Collaboration, sharing, and dissemination of activities and experiences, and
- e) Contribution for Green Growth and Green Economy Development Strategy of QN PPC.

Besides the general tasks, each TFG has its specific tasks in charge as shown in Table 2-1-1

Table 2-1-1 Proposed Task Force Group in HLEPC

TFG	Member Organization	Specific Task in Charge
Task Force Group-1 (IEMIP)	Head: DONRE (EMAC) -Inspectorate -HBMD -Env. Police -DOIT -DOST -Local Gov -Others	1)To set up criteria and environmental standard related to water environment conservation in Halong Bay 2)To conduct strict enforcement to pollution sources with sanction 3)To give technical guidance related to wastewater treatment of entities including production process improvement and introduction of Cleaner Production (CP) 4)To urge wastewater treatment facility construction and sewerage system improvement
Task Force Group-2 (CEPC)	Head: DONRE -DOC -DOT -DOIT -DCST -HBMD -DARD -Local Gov -Others	1)To control development activities in Bai Chay International Tourism area 2)To introduce traffic and car-parking control for safety of tourists and local residents 3)To promote protection and wise-use of mangrove area and tidal flat 4)To urge wastewater treatment facility construction and sewerage system improvement in CEPC area 5)To control fishery exploitation, aquaculture and land reclamation 6)Strengthening EIA/EPC and introduction of SEA
Task Force Group-3 (STD)	Head: DCST -DPI -HBMD -DARD -DOIT -Local Gov -Others	1)To reflect the proposed strategies and measures to the Tourism Development M/P to be prepared by QN PPC in terms of marketing, information system, branding products, and so on 2)To promote ecotourism in line with EE & PR 3)To develop a plan of road station concept in line with CEPC and rural development 4)To activate eco-label and Secchi disk movement for awareness raising collaborating with WG-4
Task Force Group-4 (HLEEA)	Head: DONRE -DOET -HBMD -DCST -YU -WU -Local Gov -Local Community - Others	1)To establish HLEEA officially including financial mechanism 2)To monitor, manage, and govern HLEEA in general 3)To check accountability and transparency of activities of HLEEA 4)To advise and suggest HLEEA related to sharing and disseminating activity results of other TFG 5)To inform and suggest HLEEA concerning to ideas and events proposed by other organizations and agencies 6)To hold general assembly at least one time per year inviting organizations and communities concerned



Source: JET

Figure 2-1-1 Organizational Structure for Implementation of the Proposal

2.2 Target Area

The Project area is the Halong Bay World Heritage area and its vicinities such as Halong city, Cam Pha city, Quang Yen town, Hoanh Bo district, and Van Don district, in principle.

3. Contents of the Proposal

3.1 Overview

(1) Conceptual structure

The conceptual structure of this Proposal is shown in Figure 3-1-1.



Source: JET

Figure 3-1-1 Conceptual Structure of the Environment Protection for Sustainable Tourism Development Strategy in Halong Bay

(2) Integrated Approach

The Proposal of “the Environment Protection for Sustainable Tourism Development Strategy in Halong Bay” should be formulated by integrating the Outputs of 4 WGs in a holistic manner. Conceivable key points for considering the holistic and integrated proposal are described hereunder,

1) Chairman to be the Vice Chairman of QN PPC

- The Strategy covers broad wide tasks
- Supporting and collaboration among concerned organizations are required
- Leadership and commitment of QN PPC
- Management and monitoring of planning and implementation
- Ensuring budget for implementation

2) Task Force Group in charge

- Task force in each component
- One leading organization with supporting and collaborating organizations
- Implementation planning with priority
- Management and monitoring of progress and result
- Report to the Chairman

3) Sharing, Monitoring, and Dissemination

- a) Effectiveness and impact
- b) Information disclosure and participation of local residents
- c) Dissemination of results to the outside organizations such as MONRE, UNESCO, JICA, etc.

3.2 Integrated Water Environment Management

3.2.1 Purposes and Effects

(1) Purposes

Currently, QN DONRE and other relevant organizations actively conduct actions for water environment management including environment monitoring and pollution control, such as water quality monitoring, environment check and inspection on pollution sources. However, the actions have been planned and carried out separately, and the following issues have been found that;

- 1) Distribution and characteristics of pollution sources in concerning area of Halong bay has not been grasped systematically, and it is not easy to share required information of pollution sources among relevant organization.
- 2) It is difficult to identify priority pollution sources to be controlled, and to set those sources as targets for environment check and inspection, and required administrative guidance may not be able to be provided. Thus, this is an obstacle to prepare environmental monitoring plan considering impacts of pollution sources to Halong Bay.
- 3) The environmental monitoring results has been used for evaluation of water quality comparing with environmental/effluent standards, but has not been used for evaluation of impacts of pollution sources to Halong Bay.
- 4) As a result of the condition mentioned above, water quality monitoring, environment check and inspection activities has not been used for decision-making for water environment management contributing to wise-use of natural resources in Halong Bay.

In order to improve the current difficulties, WG-1 has conducted the integrate activities between water environment monitoring and pollution control. This integration enables;

- 1) To grasp status and trends of water environment in Halong Bay for evaluating values of natural resources, and functions for various human activities such as tourism, fishery, and a field of environment education,
- 2) To grip impact of pollution sources on Halong Bay to evaluating effectiveness of implemented pollution control measures, and preparing strategy of environment management, and
- 3) To provide required information to support decision-making for wise-use of natural resources in Halong Bay.

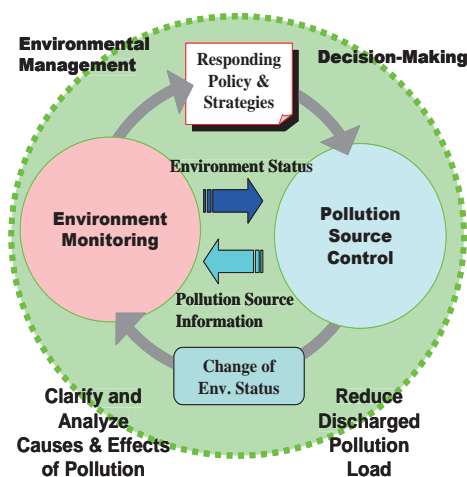


Figure 3-2-1 Inter-action between Environment Monitoring and Pollution Source Control

Source: JET

(2) Approach

WG-1 discussed and decided to prepare the following proposals:

- 1) Integrated Environment Monitoring Implementation Plan for planning water quality monitoring program considering pollution sources impacts and assisting other WGs' strategy and activities,
- 2) Implementation Plan of Inspection and Administrative Guidance for implementing inspection and environment check to confirm serious pollution sources impacting to Halong Bay and to provide reasonable and suitable administrative guidance contributing to water environment management in Halong Bay,
- 3) Pollution Source Database and Pollution Source Map for storing required information of pollutions sources, analyzing characteristics of pollution sources to use the information for planning of environment check and inspection, and share the information among the concerned

organizations to obtain common understanding on pollution sources impacting to Halong Bay, and

- 4) Measures against Environment Incidents for identifying risk of pollution sources on water environment incidents, and required actions to be taken to avoid serious impacts to Halong Bay by the incidents.

The proposals prepared by WG-1 are summarized in Table 3-2-1.

Table 3-2-1 List of Proposed Measures of WG-1

Item	Key Issues	Approach for Solution	Proposed Measures
1. Env Monitoring	1) Difficulties on preparing and implementing water quality monitoring considering impacts of pollution sources to Halong Bay	- Seek for better monitoring system based on water quality data analysis and relation with actual pollution sources	a) Propose 7 additional monitoring points considering b) Selecting priority water quality substances to be monitored c) Select priority pollution sources to be controlled carefully by summarized information of pollution sources and reflecting proposals by other WGs
	2) Difficulties to evaluate water quality monitoring results and identify pollution sources to be controlled carefully	- Prepare a tool for evaluating and sharing water quality monitoring data	a) Establish Water Environment Database for easy access to the monitoring data and to understand impacts on water quality of Halong Bay
2. Pollution Source Control	1) Difficulties on grasping distribution and characteristics of pollution sources impacting to Halong Bay	- Develop tools to store, analyze and share required information of pollution sources	a) Establish upgrading PSD and Pollution Source Inventory (PSI) b) Prepare Pollution Source Map
	2) Difficulties on identifying priority pollution sources and providing required administrative guidance for protection of Halong Bay	- Set criteria for implementing environment check and inspection to priority pollution sources and propose required measures for better environment check and inspection with effective administrative guidance to protect environment of Halong Bay	a) Prepare implementation of the Inspection and Administrative Guidance
	3) Difficulties to identify risk of water environment incidents that may affect to water environment in Halong Bay	- Collect and analyze past information of water environment incidents and propose required measures to reduce risk of the incidents that may affect environment of Halong Bay	a) Prepare measures against water environment incidents

Source: JET

(3) Effects

Conceivable effects by introducing the proposed approaches mentioned above are summarized in Table 3-2-2.

Table 3-2-2 Expected Effects by Implementation of Proposed Approaches and Measures

Item	Approach for Solution	Proposed Measures	Expected Effects
1. Env Monitoring	- Seek for better monitoring system based on water quality data analysis and relation with actual pollution sources	a) Proposed 7 additional monitoring points b) Select priority water quality substances to be monitored c) Select priority pollution sources to be controlled carefully by summarized information of pollution sources and reflecting proposals by other WGs	Water quality monitoring results can be used for evaluating impacts from pollution sources, and used for decision-making for water environment contributing to wise-use of natural resources in Halong Bay.
	- Prepare a tool for evaluating and sharing water quality monitoring data	a) Establish Water Environment Database for easy access to the monitoring data and to understand impacts on water quality of Halong Bay	Water quality monitoring results can be disseminated and shared easily to the relevant stakeholders for implementing strategy for sustainable tourism development.
2. Pollution Source Control	- Develop tools to store, analyze and share required information of pollution sources	a) Establish upgrading PSD and Pollution Source Inventory (PSI) b) Prepare Pollution Source Map	Required information of pollution sources can be used easily for planning water quality monitoring program and annual environment check and inspection plan.
	- Set criteria for implementing environment check and inspection to priority pollution sources and propose required measures for better environment check and inspection with effective administrative guidance to protect environment of Halong Bay	a) Prepare implementation of the Inspection and Administrative Guidance	Officers in charge of pollution source control can find issues of pollution sources causing environmental impacts to Halong Bay through environment check and inspection, and provide required instruction to improve their wastewater management by giving suitable administrative sanction with follow-up activities to confirm observed condition of the given guidance.
	- Collect and analyze past information of water environment incidents and propose required measures to reduce	a) Prepare measures against water environment incidents	By preparing measures on water environment incidents, risk of the incident that may affect water environment of Halong Bay will be

Item	Approach for Solution	Proposed Measures	Expected Effects
	risk of the incidents that may affect environment of Halong Bay		decreased.

Source: JET

3.2.2 Strategy and Plan Formulation

(1) Integrated Environment Monitoring Implementation Plan (IEMIP)

The Integrated Environmental Monitoring Implementation Plan (IEMIP) is expected to contribute to enhancing interaction between water environment monitoring and pollution source control. To enhance interaction, water environmental monitoring plan should be prepared considering distribution and characteristics of pollution sources impacting to Halong Bay. In the Project, the activities for proposing required monitoring points was trailed under IEMIP as an interaction of monitoring and pollution source control. In the post-project phase, the activities should be continued periodically to review the monitoring network by DONRE.

(2) Development of Pollution Source Database

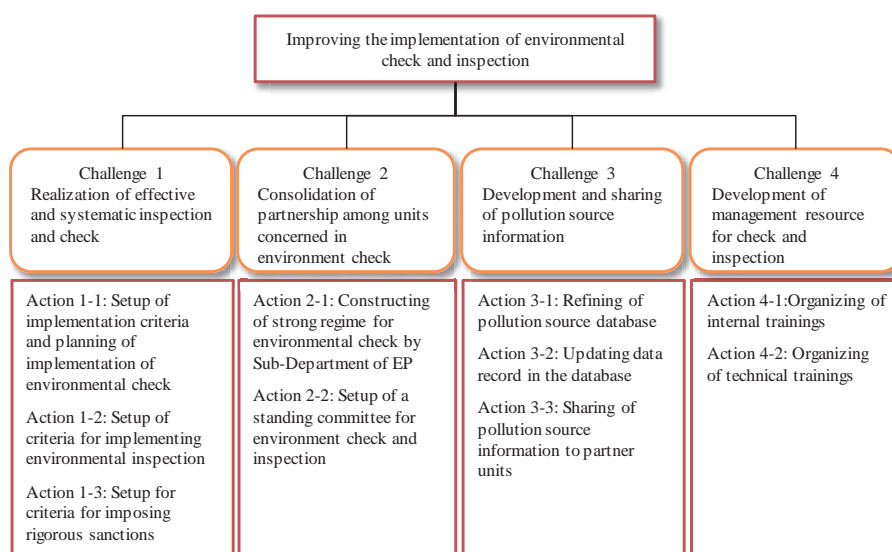
Pollution source control in the water environment requires a reliable information system on pollution sources discharging wastewater. Especially environmental check and inspection (led by Sub-Department of EP, Inspection Division and other units) which are a core management task of DONRE need to various data/ information for pollution sources. In view of such importance of the pollution source information, a Pollution Source Database (PSD) was developed. The PSD should be developed by step-by-step approach. In the Project, WG-1 prepared the PSD developed in the project focuses on the water pollution source controlled by EIA, mainly in the Halong Area (Halong city, Cam Pha City and Hoanh Bo district). Additionally, the Pollution Source Map to show the pollution sources stored in PSD on a map was prepared. In the post-project phase, the prepared PSD is recommended to be updated continuously and be upgraded as net-work connecting type of database.

(3) Strengthening of Environment Check and Inspection

WG-1 has formulated the framework of initial improvement plan of environment check and inspection with 4 challenges with the concerned actions to achieve the challenges indentified:

- 1) Realization of effective and systematic inspection and environment check
- 2) Consolidation of partnership among units concerned in environment check
- 3) Development and sharing of pollution source information
- 4) Development of management resource for check and inspection

The required actions are proposed by the Implementation Plan of Inspection and Administrative Guidance. In the post-project phase, DONRE is recommended to carry out required measures proposed in the Plan.

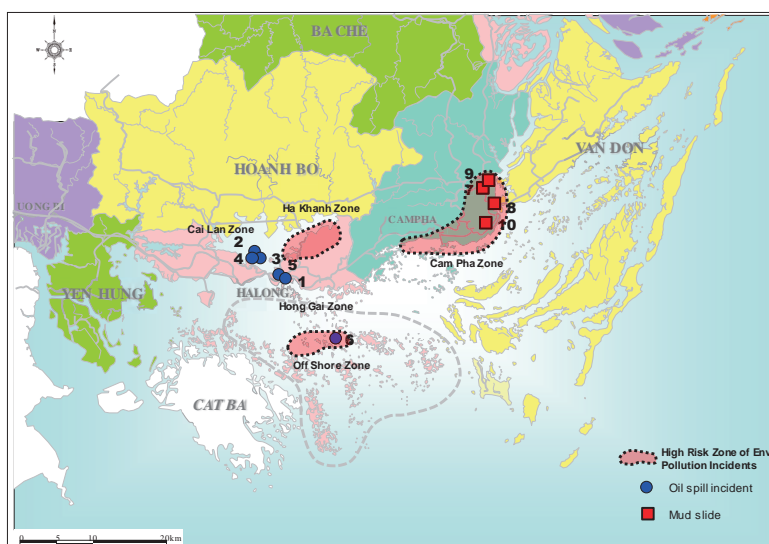


Source: JET

Figure 3-2-3 Framework of Initial Improvement Plan of Check and Inspection

(4) Measures against Environment Incidents

In the Halong Area, the environment incidents happening unexpectedly is one of causes for water pollution, possibly exerting damages of assets and human lives. The project focuses on the environment incidents caused by coal mudslides and hazardous substance leaks. Based on the collected data/information, zones of Ha Khanh and Cam Pha are in the risk with coal mudslides. Off shore zones of Halong Bay is in the risk with both coal refuse disperse. In the post-project phase, the measures to reduce risk of water environment incidents are recommended to be developed by DONRE.



Source: JET

Figure 3-2-4 Risk Zones of Environment Incidents

3.2.3 Focal Point of Integrated Water Environment Management

(1) Approval of New Water Quality Monitoring Points as a Part of Monitoring Network in QN Province

The Project has proposed new water quality monitoring points in coastal and offshore area related to the buffer zone and world heritage site of Halong Bay. The points were proposed to evaluate impacts of pollution sources from inland area, so water quality monitoring results obtained at those points will be useful for decision-making for better water environment management in Halong Bay. It is expected for PPC to approve those water quality monitoring points as a part of monitoring network in QN province soon.

(2) Periodical Review of IEMIP Considering Condition of Pollution Sources and Other Relevant Strategies for Environmental Protection in Halong Bay

The water quality monitoring program on pollution sources affecting to Halong Bay and buffer zone and world heritage site of Halong Bay should be reviewed and revised periodically depending on trend of pollution sources characteristics and distributions, and other relevant strategies for environmental protection in Halong Bay. At this moment, water quality monitoring plan is mainly reviewed and revised every five years. In the next opportunity to review and revise the water quality monitoring plan in 2015, the followings are recommended that:

- 1) Latest pollution source information obtained by the developed PSD will be reviewed, and key parameters to be monitored and location of monitoring points will be revised as necessary,
- 2) Condition of compliance on requirement of environmental protection by the pollution sources in Coastal Environment Protection Corridor (CEPC) will be reviewed, and the list of priority pollution sources to be monitored will be revised as necessary,

- 3) Trend of tourism activities will be reviewed, and key parameters to be monitored and location of monitoring points will be revised depending on change of the main tourism area and type of activities, and
- 4) Utilization and effectiveness of information on water quality monitoring results for proceeding the Strategy of Sustainable Tourism Development will be reviewed, and new measures to enhance usage of water quality monitoring information for promoting wise-use of natural resources in Halong Bay will be proposed as necessary.

(3) Setting up Clear Criteria for Implementation of Environment Check and Inspection

It is advised that Sub-Department of EP goes for to increase its enforcement capacity, to give more environmental check. At the moment, criteria for implementation of environmental check is proposed as shown in Table 3-2-3.

Table 3-2-3 Criteria for Implementation of Environmental Check

Risk Level of Pollution Source	Frequency of Env't Check	Subject Pollution Source
Level A	Every seven (6) months	"High possibility of serious environment damages", based on characteristics, quantity of pollution loads, status of environment protection measures, surrounding conditions, etc.
Level B	Every 12 months	"Medium possibility of serious environment damages", based on characteristics, quantity of pollution loads, status of environment protection measures, surrounding conditions, etc.
Level C	Every 18 months	"Few Possibility of serious environment damages", based on characteristics, quantity of pollution loads, status of environment protection measures, surrounding conditions, etc.
Level D	Every 24 months	"Possibility of only minor environment damages", based on characteristics, quantity of pollution loads, status of environment protection measures, surrounding conditions, etc.

Source: JET

(4) Needs for Sustainable Operation and Upgrading PSD

The development of the PSD program and initial data entry has been completed but these mainly focus on major pollution sources (mainly subject to EIA approval) located in Halong Area, in compliance with the definition of PDM. Given that DONRE has the responsibility for pollution source control over the whole province, DONRE needs to ensure a sustainable operation of PSD in Halong Area, and to expand its coverage to the whole province and all pollution sources in the future. Considering the management responsibility of DONRE, the following agenda are enumerated as prime challenges which DONRE should tackle in the future.

- 1) To start and ensure a sustainable operation of PSD for Halong Area.
- 2) To update the database, supplementing additional data on sources located outside Halong Area.
- 3) To upgrade the function of the PSD so as to cover all sources including projects subject to EPC.
- 4) To find out unauthorized pollution sources and input their data to PSD.

(5) Measures against Coal Mudslides and Hazardous Substance Leaks

Concerning coal mudslides and hazardous substance leaks, different problems and constraints have been emerged based on the analysis of current situation and practices, as follows:

- 1) Data and information on environment incidents (coal mudslides and hazardous substance leaks) which happened in the Halong Area have not been recorded appropriately.
- 2) Possible sources with a risk of environment incident have not been clarified.
- 3) Environmental checks which aim the prevention of environment incident have not been enforced enough.
- 4) Regulation to promote the emergency response against environment incident is not in place.
- 5) Manual for emergency responses against environment incident has not been established.

3.2.4 Recommendations

(1) Actions to be taken by PPC and DONRE after the Project

By each proposal prepared by WG-1, the following actions are recommended to be carried out to enhance effectiveness of the proposals in the future.

1) Implementation of IEMIP with Periodical Reviewing

- a) Implement water quality monitoring by the new proposed monitoring network

Main actors of IEMIP, DONRE and HBMD is recommended to implement periodical water quality monitoring by the new proposed monitoring network after approval of the proposed monitoring points.

b) Review of Monitoring Network

At least every five years, DONRE should review the provincial monitoring network considering the factors mentioned in Chapter 3.2.3 (2), and revise monitoring network as necessary.

c) Prepare and implement training on water quality monitoring

Depending on change of characteristics of local pollution sources, key parameters to be monitored may be added. In such case, DONRE is expected to prepare and implement training of water quality monitoring on new parameters to be monitored.

2) Strengthening of Environmental Check and Inspection

a) Setting up clear criteria for the implementation of check and inspection

Sub-Department of EP discusses and sets up the criteria for check implementation, and calculate necessary frequencies of the check, thereby establishing required annual implementation plan of check. On the basis of such required plan, Sub-Department of EP should consult necessary human resources expansion with DONRE.

b) Setting up Clear Criteria for Imposition of Administrative Guidance and Sanction Contributing to Environmental Protection in Halong Bay

The Decree No. 117/2009/ND-CP (December 31, 2009) defines the regulation on the application of administrative sanctions. It is emphasized that Inspection Division and officers concerned in PPC examines criteria for imposing sanctions to prevent repeated violations, and imposes them with rigorous decision-making for wise-use of natural resources of Halong Bay.

c) Conducting Periodical Training to Expand Specialized Knowledge and Skills of Persons Concerned

The survey of training needs in the Project shows that very basic and common items of check and inspection are located in the higher needs. In view of clarified magnitudes of training needs and appropriateness of training items, the Project prepared “Wastewater Management Handbook” for OJT of environment check and inspection. This is aiming to be used for technical trainings for building up specialized knowledge and skills necessary for the environmental check and inspection, as a technical information resource even after the post-project phase.

3) Sustainable Usage of Pollution Source Database

a) Starting Sustainable Operation of PSD for Halong Area

Because the current PSD is depending on a type of “Stand-alone” (meaning “Not-internet connected”), the master database file will be updated by synchronization periodically (e.g. every 6 months). Hence, close cooperation among engaged officers is essential for smooth operation of the PSD. To ensure the operation of the PSD, DONRE forms a task group to operate PSD, designating officers from units in charge. This task force should be organized by a supervisor, a master (or prime user) and clients (general users).

b) Updating Stored Information in PSD

The database should be stored by large numbers of data/ information on different pollution sources. According to the survey result, a total 310 sources with wastewater discharging have been identified in QN Province, at present. It is required that DONRE makes a survey plan to collect necessary data and carry out it, so that all pollution sources in the whole province, are managed and supervised by using PSD.

c) Upgrading of PSD

The PSD developed in the project focuses on major pollution sources approved by EIA and EPP which Provincial DONRE manages. As the coverage of the PSD expands to the whole province, relatively small-scale projects with EPC which District DONREs manage should be registered into PSD. At the same time, to satisfy needs on modification of the system of PSD, a type of the network environment-connected should be introduced to update and share required information of pollution sources smoothly and timely.

d) Finding out Unauthorized Pollution Sources and Input Their Data to PSD

According to the survey in the Project we found that some 10 to 15 % of projects checked and

inspected have not been authorized with any system. This is one of major problems in the pollution source control in Vietnam. To find out such unauthorized entities, the cooperation system between provincial DONRE and district DONREs should be established. This cooperation system should become effective by the deep involvement of district DONREs which are familiar with pollution sources located in their territories. To ensure this cooperation, certain procedural manual should be prepared and shared among units concerned. Data/ information obtained from such cooperation will be stored in PSD.

4) Measures against Water Environment Incidents

Measures against environment incident are divided to two (2) approaches; preventative measures to control the outbreak of incidents, and emergency response in the event of incident outbreak to contain to the minimum damage.

For preventative measures:

- a) Recording System for Environment Incident
- b) Identification of Possible Risk pollution Sources
- c) Review and Improvement of Environmental Check Items

For emergency response:

- a) Regulations Associated with Environment Pollution Incidents
- b) Development and Implementation of Emergency Responses Plan against Environment Pollution Incidents

(2) Recommendations

For better integrated water environment management in the post-project phase, the followings are recommended additionally.

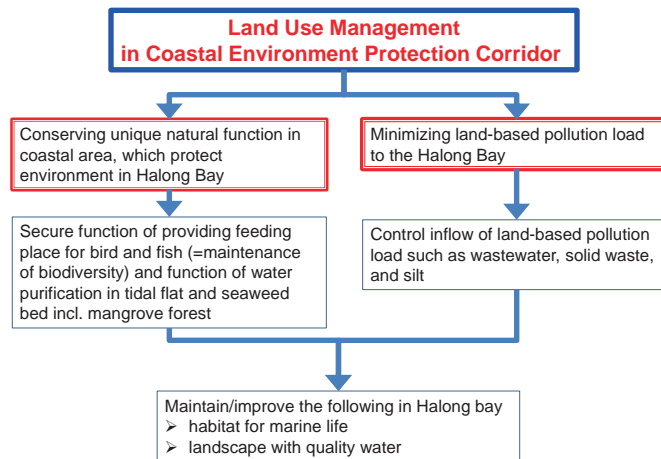
- a) DONRE should lead the activities for actualizing integrated water environment management. It is recommended to assign a parson from Sub-department of Environmental Protection to monitor progress of actions proposed in this section with authority to make required report to the head of DONRE for timely implementation of the proposed actions.
- b) Relevant organizations for water environment management such as HBMD, Environmental Police Department and the concerned city/town/district DONRE are expected to have regular meeting, at least twice a year, to share implementation condition of the proposed actions and outcomes obtained by the actions, like working group meeting held in the Project phase.
- c) Vietnam government promotes automatic environment monitoring system. In the future, IEMIP is recommended to include this measure. Automatic environment monitoring system has some restriction, such as limitation of parameters that can be monitored, necessity of continuous maintenance with certain budget. On the other hand, the system can grasp trend of water quality and check possibility of illegal discharge continuously. Considering characteristic of automatic water quality monitoring system, it is recommended to develop criteria for setting and operating automatic water quality monitoring system.
- d) For pollution source control, adoption of cleaner production technique is strongly recommended to be proposed as effective pollution abatement measures. Quang Ninh province holds up proceeding of “Green Economy Approach”, of which objective is to internalize environmental protection measures into socio-economic development. To adopt green economy approach, measures for introduction of cleaner production technique are recommended to be promoted actively.

3.3 Coastal Environment Protection Corridor (CEPC)

3.3.1 Purposes and Effects of CEPC

(1) Purposes

It is considered that minimization of environmental pressure from coastal area to the Halong Bay with economic development in the coastal area contribute to realize sustainable tourism development in Halong area as well as conservation of the Halong Bay from the land use management as shown in the following figure. From the viewpoint, land use management in “Coastal Environmental Protection Corridor for Halong Bay (CEPC)” was examined as environmental buffer.



Source: JET

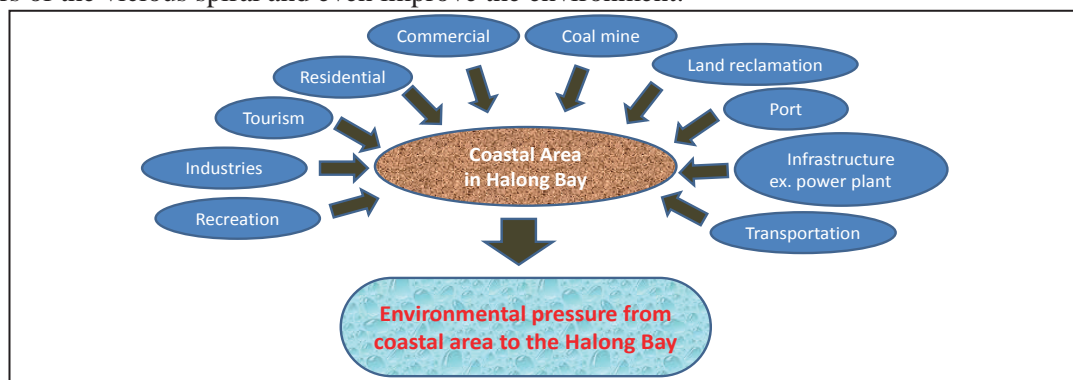
Figure 3-3-1 Functions of CEPC

Concept of the “Coastal Environmental Protection Corridor for Halong Bay” would tentatively be defined as “Spatial corridor along the coastal inland area of the Halong Bay subject to active management of land use and development for environmental protection for Halong Bay, functioning as environmental buffer between terrestrial development area and the Halong Bay, as conservation of biodiversity and eco-system, and as securement of sustainable tourism”.

(2) Effects

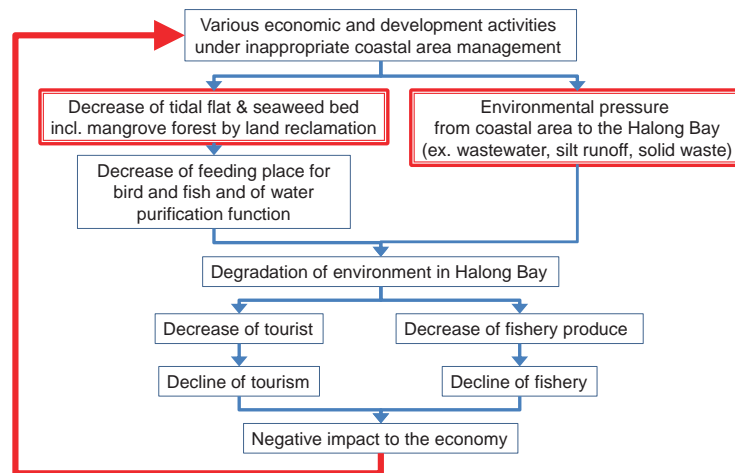
As shown in the following figure, various land uses in the coastal area of Halong Bay, where the area is limited and important for the economic activity and residence, have brought about environmental pressure to the Halong Bay, mainly by wastewater discharge and sediment/silt runoff.

In the coastal area, there was no clear responsibility to manage the coastal area from the point of view of environmental protection for Halong Bay so far. As result, the various economic and development activities under inappropriate coastal area management have caused vicious spiral in two factors; 1) decrease of tidal flat and seaweed bed including mangrove forest due to land reclamation, and 2) environmental pressure from coastal area to the Halong Bay such as wastewater, silt runoff, and solid waste discharge. The proposed measures to be implemented in the CEPC will prevent such factors of the vicious spiral and even improve the environment.



Source: JET

Figure 3-3-2 Land Use and Environmental Pressure from Coastal Area to Halong Bay



Source: JET

Figure 3-3-3 Vicious Spiral under Inappropriate Coastal Area Management in Halong Bay

3.3.2 Strategy and Plan Formulation

(1) Strategy

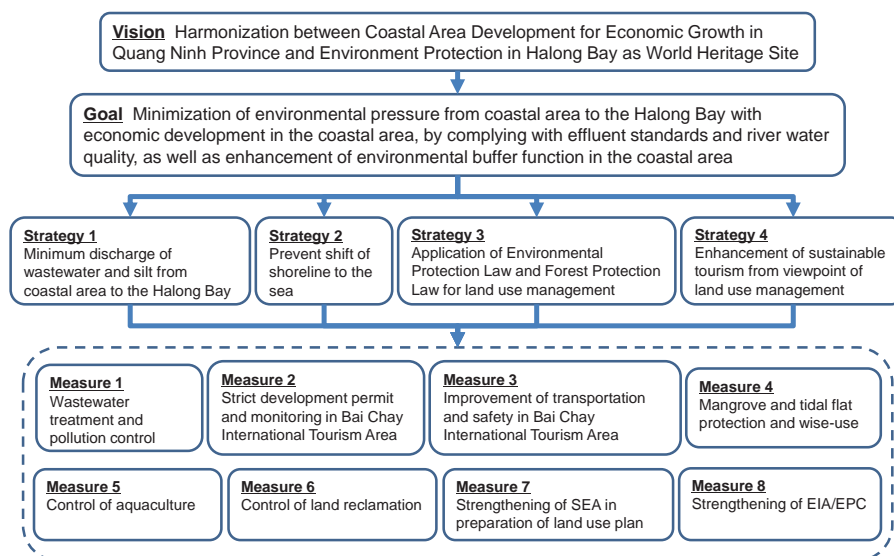
In order to clarify concrete measures/activities to be conducted in CEPC, vision, goal, strategies and measures are examined from viewpoint of the land use management for conservation of the Halong Bay as shown in the following figure. Clarification of functions of CEPC was required to determine its boundary and necessary measures to be implemented. The following major two functions of CEPC were clarified from both positive and negative factors of the coastal inland area to the Halong Bay.

1) Minimizing land-based pollution load to the Halong Bay

The CEPC controls inflow of land-based pollution load such as wastewater, solid waste, and silt into the Halong Bay.

2) Conserving unique natural function in coastal area, which protect environment in Halong Bay

The CEPC conserves tidal flat including mangrove forest and seaweed bed along the coastal area to secure feeding place and habitat for bird and fish, where contribute to maintain biodiversity in Halong Bay and its surrounding area, and also to secure function of water purification.



Source: JET

Figure 3-3-4 Framework of CEPC

Based on the proposed measures, roles of the CEPC were examined by setting numerical targets under the goal as follows. Under the targets, detailed activities should be examined further based on the proposed measures.

- a) 100% of domestic wastewater is treated to comply with effluent standard.
- b) 100% of industrial wastewater is treated to comply with effluent standard.
- c) Silt runoff and sedimentation are prevented directly from the coastal area due to coastal development, especially land reclamation site.
- d) The following major rivers of the corridor comply with river water quality standard such as Troi River and Lo Phong Stream.
- e) Remaining mangrove and tidal flat areas are protected and reforested in Binh Huong Estuary and Cua Luc Estuary, with legal background.

In order to examine the boundary of the CEPC, there are some factors to be examined such as administrative boundary, existing and planned roads, rivers, elevation and water depth, shoreline, existing land use zoning boundary, current land use / development plan such as sewerage, area to be environmentally protected such as mangrove, and tidal current. Considering those factors, the boundary of the CEPC was discussed among the relevant organizations in the various meetings such as workshop during the Project. As results, the following direction for determination of CEPC Area was determined and applied to finalize the CEPC boundary.

- 1) Easier understanding for the general public and easier management for responsible organizations such as road and shoreline with legal basis
- 2) More focusing on coastal area with narrowing down corridor width
- 3) Include only area where CEPC have effect and meaningful from the viewpoint of its concept
- 4) Exclusion of less potential area for development

Based on the above directions, the CEPC area were determined as shown in the following figure.

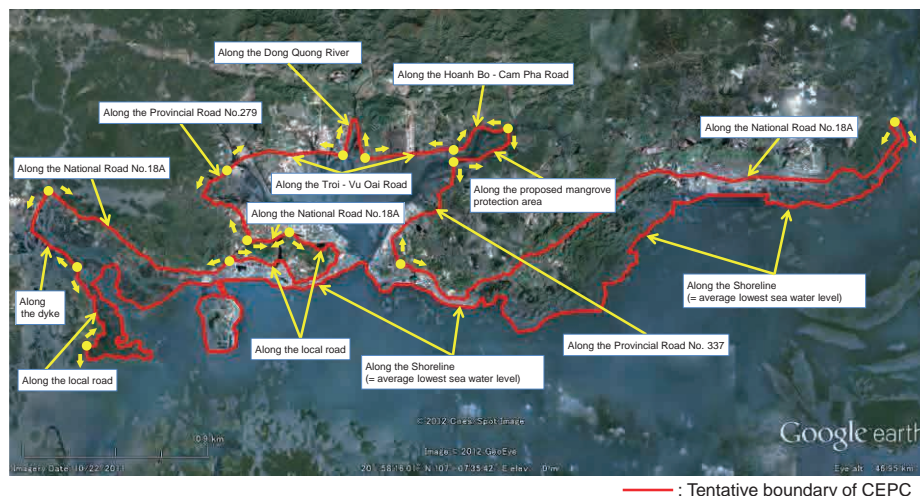


Figure 3-3-5 Boundary of CEPC

The above CEPC area was divided into 8 active management zones, considering topographic and socio-economic conditions, as shown in the following figure. By connecting the active management zones, it makes an image of the corridor. Proposed measures in CEPC were examined for each active management zone.

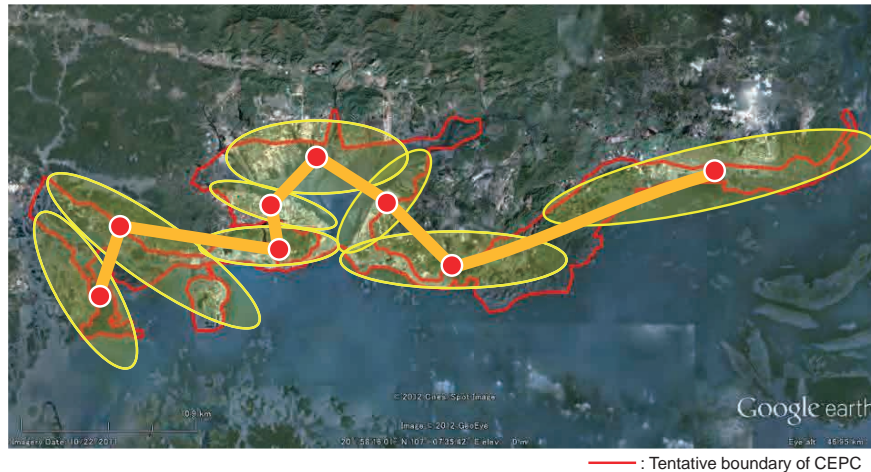


Figure 3-3-6 Image of the CEPC by Connecting Active Management Zones

(2) Plan Formulation

The following eight measures were proposed to be implemented in CEPC.

1) Wastewater treatment and pollution control

Measures in urban residential area and mining facilities of Cam Pha City were proposed as shown in the following figure; a) Installation of domestic wastewater treatment system, b) Pollution source control, especially wastewater from coal mining and relevant facilities, and c) Control of land reclamation. Regarding the measure on pollution source control, especially wastewater from coal mining and relevant facilities, VINACOMIN should continue to implement the measures as planned by them. Regarding the proposed measure in Halong City, this measure support the proposed Halong City Environmental Protection Project, which has a component of installation of the wastewater treatment system in uncovered area, where contains 5 wards: Ha Trung, Ha Tu, Hong Ha, Ha Phong, and Ha Lam in eastern Halong City, together with proposed measure in western Halong City, which covers Gieng Day and Ha Khau Wards where there is no wastewater treatment system at present.

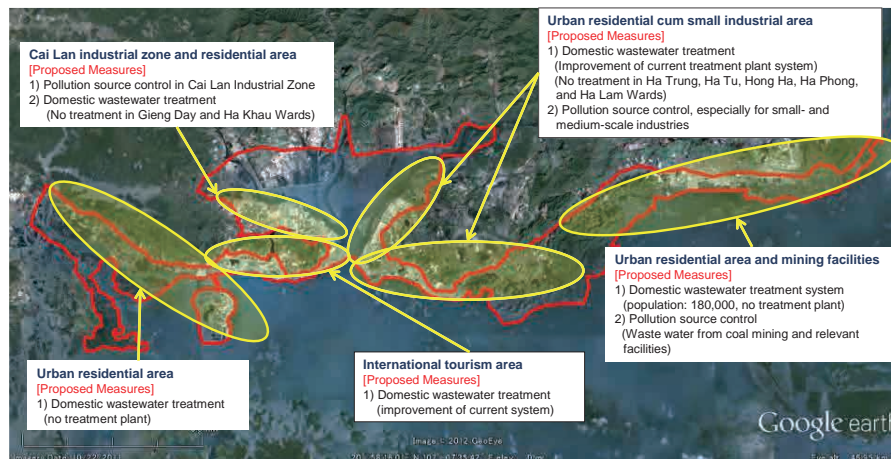


Figure 3-3-7 Location of Measures on Wastewater Treatment and Pollution Control

2) Strict development permit and monitoring in Bai Chay International Tourism Area

Regarding the proposed measures “Strict land use control as international tourism area such as strict development permit and monitoring”, this was proposed because abandoned/unfinished buildings and unutilized vacant land are widely seen in the Bai Chay international tourism area, however, this causes unfavorable landscape from viewpoint of the international tourism area with UNESCO natural heritage site as well as effective land use from economic viewpoint, and in the long term, reputation and dignity of the area will be damaged and sustainability of the tourism in the area would not be secured. Therefore, unlikely other area, it is considered that strict development permit and monitoring should be enforced in different periods of the development as follows;

- a) In development permit process:
Strict examination such as duty of submission of document, which prove financial reliability to guarantee completion of the construction
- b) During construction:
Duty of report in case of delay and its examination
- c) In operation:
Duty of report in case of stop operation/closure, duty of restoration of the land in such case by terminating the land lease



Figure 3-3-8 Proposed Measures in Bai Chay International Tourism Area

3) Parking space development in Bai Chay International Tourism Area

This measure was proposed because some issues on transportation and safety are seen in the tourism area, especially Bai Chay Road. From viewpoint of the land use management, designation and development of parking space development zones are considered with the following actions;

- a) Removal of roadside parking space along the Bai Chay Road, especially in the weekend and tourist peak period,
- b) Strict control of roadside parking in main road, especially in Bai Chay Road,
- c) Development of parking space in strategic location and utilization of the parking space such as road station development as shown in the following figure,
- d) Guiding vehicles to the parking space with parking guidance and information system such as strategic installation of signboard for parking spaces and provision of information on real time condition of the parking space (as optional),
- e) Introducing environmentally-friendly free public transportation along the Bai Chay Road with park-and-ride system, and
- f) Application of the barrier free design for the above



Figure 3-3-9 Traffic Control Measure along the Bai Chay Road (tentative proposal)

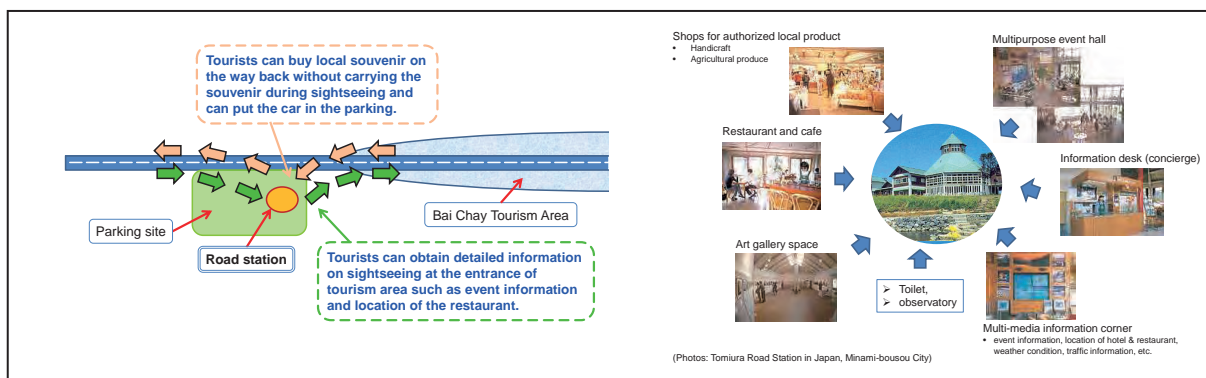


Figure 3-3-10 Roles of Road Station in the Parking Site and Multi-purpose Use of the Road Station

4) Mangrove and tidal flat protection and wise-use

Mangrove protected areas in Binh Huong Estuary and Cua Luc Estuary were proposed as shown in the following figure, together with two measures “Restriction of land reclamation” and “Control of aquaculture”. The two measures will be indispensable to support the measure on mangrove and tidal flat protection.

Regarding the proposed mangrove protected area in Cua Luc Estuary Area of Hoang Bo district and Halong city, tentative boundary of the mangrove protection area was determined among Hoanh Bo district PC, Halong city PC, and the Project, considering various aspects such as current aquaculture dyke, cadastral situation (land owner), proposed development plan, and on-going reclamation work. In the proposed mangrove protected area in Binh Huong Estuary of Quang Yen town and Halong city, most of the proposed area are located in the current aquaculture ponds with practicing extensive aquaculture method. Therefore, continuation and improvement of the extensive aquaculture method is a key factor in the area. Those measures support the proposed plan for Urban Eco-cultural Development Project in the area.

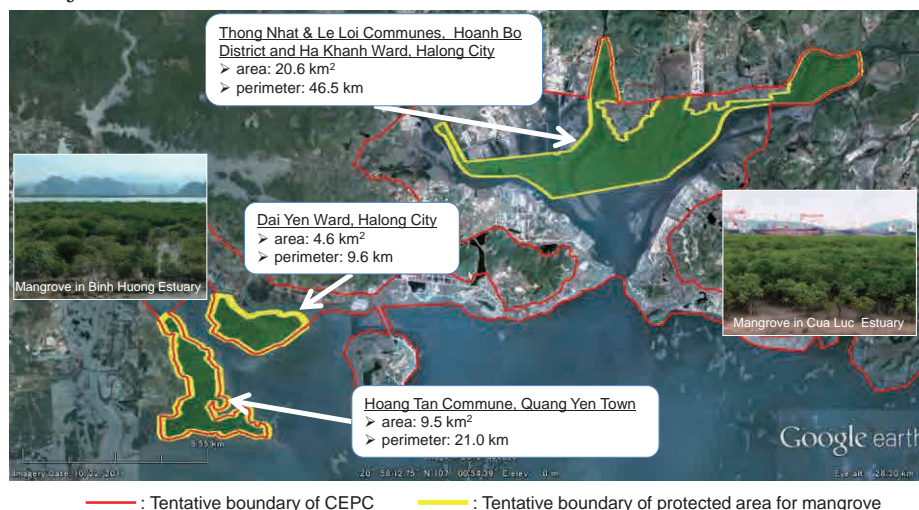


Figure 3-3-11 Proposed Mangrove Protected Areas in Binh Huong Estuary and Cua Luc Estuary

In addition to the importance of the protection of mangrove and tidal flat from viewpoint of maintenance of biodiversity and provision of seafood production, there is high potential of utilization of the mangrove and tidal flat area in ecotourism and environmental education in the area of mangrove and tidal flat, where there was almost no utilization for the purpose so far. The following figure shows some images of the activities on ecotourism and environmental education in mangrove and tidal flat area.



Figure 3-3-12 Image of Ecotourism and Environmental Education in Mangrove and Tidal Flat Area

5) Control of fishery exploitation and aquaculture

Extensive aquaculture method, which is currently practiced in the proposed mangrove protected areas in Hoang Tan Commune of Quang Yen town and Dai Yen Ward of Halong city, is based on traditional aquaculture type which has been applied since the '60s in the tidal flat along the river or sea with mangrove forest. Main characteristics of traditional aquaculture type are: (i) several species living together including shrimp, crab, fish, mollusks and seaweed, mostly are greasy-back shrimp, (ii) water, seeds and food for cultured species are collected from nature and, (iii) no use of medicine and chemicals, therefore, less polluted environment. However, recently, traditional type has not been applied many because of low output and revenue.

In order to increase revenue for aquaculture farmers and protect the mangrove, the Project introduces the method for extensive aquaculture combined with mangrove eco-tour in the aquaculture pond with mangrove. This method is not recommended to apply for the ponds that will newly be developed but only for existing aquaculture ponds located in the Project area with low profit and always in risks of species disease by applying other farming methods. Outstanding advantages of the method are low production cost, stable profit and friendly with environment.

(1) Control of land reclamation

Strict implementation of construction method is required to prevent from discharging sediment to the water area. In addition, checklist with explanatory document shall be prepared. The proposed measures of “Control of land reclamation” and “Control of aquaculture” will be indispensable to support the measure “Mangrove and tidal flat protection”.

7) Strengthening of SEA in preparation of land use plan

Environmental considerations should be examined in preparation of the land use plan in CEPC area through the Strategic Environmental Assessment (SEA). Supplemental legal document to be applied in the CEPC shall be prepared.

8) Strengthening of EIA/EPC

Environmental impact(s) to the Halong Bay and necessary measure shall be examined in the case where development project is located in the CEPC area or nearby through the Environmental Impact Assessment (EIA) / Environmental Protection Commitment (EPC). Supplemental legal document to be applied in the CEPC shall be prepared.

(2) Proposed Institutional Set-up

The following organizations are considered to be responsible for each action/activity for the proposed measures.

Table 3-3-1 Proposed Institutional Set-up

Proposed measures	Necessary Action/Activity	Responsible Organization
(1) Wastewater treatment and pollution control	1) Plan of improvement and new installation of WWTP	DPI, Halong City, Cam Pha City
	2) Construction of WWTP	DOC
	3) Operation of the WWTP	URENCO or private company contracted with QN PPC
	4) Pollution source control for industry	DONRE
	5) Pollution source control in coal-related activities	VINACOMIN DONRE (administrative guidance)
(2) Strict development permit and monitoring in Bai Chay International Tourism Area	1) Preparation of a by-law	DOC, DPI, DONRE, DCST
	2) Enforcement of the strict development permit and monitoring	DOC, DPI, DONRE, DCST
(3) Improvement of transportation and safety in Bai Chay International Tourism Area	1) Removal of roadside parking space along the Bai Chay Road, especially in weekend and peak period	DOT (legal procedure) Police Dept. (enforcement)
	2) Strict control of roadside parking in main road, especially in Bai Chay Road	DOT
	3) Selection of site(s) for parking space	DOT and DCST
	4) Development of parking space	DOT
	5) Development of road side station in the parking space	DOT, DCST, and Halong City
	6) Installation of signboard for parking spaces	DOT
	7) Installation of parking guidance and information system	DOT and DCST
	8) Introducing environmental-friendly public transportation along the Bai Chay Road	DOT and DCST
(4) Mangrove and tidal flat protection and wise-use	1) Application of national protected area system	DARD
	2) Management of the protected area	Ward/commune PCs
	3) Ecotourism in the protected area	DCST, DARD, Ward/commune PCs
	4) Environmental education activity in the protected area	DCST, DARD, Ward/commune PCs, HLEEA
(5) Control of fishery exploitation and aquaculture	1) Promotion and technical instruction of the extensive aquaculture	Sub-dept. of Fishery Exploitation and Protection of Aquatic Resources (DARD), Ward/commune PCs
	2) License the fishery exploitation, monitor the fishery exploitation activity	
	3) Monitoring of the aquaculture activity	
(6) Control of land reclamation	1) Preparation of guidelines on construction method for land reclamation	DOC
	2) Monitoring of land reclamation activity	DONRE and DOC
(7) Strengthening of SEA in preparation of land use plan	1) Preparation of a by-law	DPI and DONRE
	2) Implementation of the SEA	DONRE
(8) Strengthening of EIA/EPC	1) Preparation of a by-law	DONRE
	2) Implementation of the EIA/EPC	DONRE

Source: JET

3.3.3 Focal Points of CEPC

(1) Introduction of the CEPC Concept

Coastal land use management from viewpoints of environmental protection and sustainable tourism in Halong Bay was focused on, which has not clearly been managed so far, but important from both economic development and environmental protection.

(2) Enhancement of linkage between land use management and environmental considerations for Halong Bay

Legal measures on support of Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA), in line with land use plan preparation and impact assessment related to the Halong Bay which have not been well implemented so far, were proposed.

(3) Proposal of mangrove protection areas

CEPC focuses on not only minimization of pollution from the land, but also conservation of biodiversity and eco-system from viewpoint of land use management for environmental protection in Halong Bay.

(4) Measures for sustainable tourism in Bai Chay

Some measures were proposed considering that maintenance of land use and landscape at certain high level in the Bai Chay coastal area is an critical factor as international tourism area with UNESCO

natural heritage site.

(5) Support of potential measures by making a comprehensive measure

Intensions and demands in the localities were reflected and integrated into the proposed measures at larger-scale and comprehensive manner such as proposed mangrove protected areas.

(6) Some trials on the proposed measures

Before actual full-scale implementation of the proposed measures, trial activities even with partial implementation are sometimes required and useful to examine implementing issues and effects of the proposed measure in addition to the preparation of detailed plan. During the Project, the following two trial activities have been conducted as shown in the following photos.



Figure 3-3-13 Trial Eco-tour in the Proposed Mangrove Protected Area in Quang Yen Town on 13rd Oct. 2012



Figure 3-3-14 Social Experiment for Improvement of Traffic Safety and Landscape in Bai Chay Road on 1st Dec. 2012

3.2.4 Recommendations

(1) Actions to be taken by QN PPC/ CEM after the Project

Actions to be taken by QN PPC/ CEM after the Project are shown as follows;

- 1) Recommendation on the proposed CEPC is the legalization of CEPC as priority area to implement the environmental measures
- 2) Recommendations on each proposed measure are as follows;
 - a) Wastewater treatment and pollution control
 - Further study on domestic wastewater treatment system for non-coverage areas
 - b) Strict development permit and monitoring in Bai Chay International Tourism Area Land Recovery
 - Preparation and promulgation of by-law or any legal document on strict development permit and monitoring in Bai Chay International Tourism Area
 - c) Parking space development in Bai Chay International Tourism Area
 - Selection of location parking site in the Bai Chay tourism area
 - Examination of public transportation system in the tourism area
 - d) Mangrove and tidal flat protection and wise-use
 - Application of the proposed mangrove protected areas to the national forest protected area system
 - Ban of land use change in existing mangrove area within CEPC
 - Preparation of guidelines on ecotourism and environmental education in the mangrove protected areas

- Establishment of registration system on implementation of eco-tour in aquaculture pond within the mangrove protected areas
- Establishment of training and registration system on eco-tour guide, who conduct eco-tour in the mangrove protected areas
- e) Control of aquaculture
 - Preparation of a guideline on extensive aquaculture method for existing aquaculture pond in the mangrove protected areas, and promulgation of by-law (Resolution) for its promotion
 - Establishment of monitoring system on the extensive aquaculture
- f) Control of land reclamation
 - Preparation of a guidelines on construction method of the land reclamation, and promulgation of by-law (Resolution) for its promotion to be applied in the CEPC area
- g) Strengthening of SEA in preparation of land use plan
 - Preparation and promulgation of by-law or legal document on implementation of SEA in the preparatory/review process of the land use plan, especially for the CEPC area
- h) Strengthening of EIA/EPC
 - Preparation and promulgation of by-law or any legal document on examination of environmental impact to the Halong Bay in the preparatory process of EIA/EPC in the case where the subject development project/activity is located in the CEPC area

3.4 Sustainable Tourism Development (STD) Strategy

3.4.1 Vision and Goal

(1) Vision

Since Halong Bay was recognized as UNESCO World Natural Heritage, Halong Bay became a main tourist destination in northern part of Vietnam with increasing the number of tourist visiting Halong Bay in every year and rapid tourism development by private sectors in coastal area along Halong Bay. Increasing the number of visitor and rapid tourism development in Halong Bay are affecting impact to tourism resources and natural environment in Halong Bay and its surrounding coastal areas. To reduce impact to tourism resources and natural environment in Halong Bay and its surrounding coastal areas, continuous efforts on environmental protection activities as well as enhance awareness on importance of environmental protection for tourists, tourism related stakeholders and local communities are indispensable. Halong area covering Halong Bay and its surrounding coastal and inland areas connecting to Van Don area should be created and promoted as sustainable tourism destination in northern part of Vietnam as well as international tourism destination in Vietnam. In terms of creating Halong area as sustainable tourism destination, both tourism development and environmental protection should be balanced. Therefore, following vision is set for tourism sector in Halong area.

Creating sustainable tourism destination:

'Reconciliation' of tourism development and environmental protection in Halong area

(2) Goal

Halong Bay has been known and promoted as one of major tourist destinations in northern part of Vietnam as well as UNESCO World Natural Heritage site in Vietnam. The main tourism attraction in Halong Bay is boat cruising on the bay with visiting islands and caves. Due to limited diversified tourism attractions and undeveloped tourism products in Halong Bay, length of stay for tourist is very short in Halong Bay. By improvement of road network from major cities, Hanoi and Mong Cai, tourist can easy access to Halong Bay and encourage to increase the number of tourist to Halong Bay. Under these circumstances, Halong Bay has already become mass tourism destination. Mass tourism will impact to natural environment and be limited expectation of economic effect by tourist. By taking into consideration of vision and current tourism development policy for Quang Ninh province as well as promoting development policy of "Green economy" by Quang Ninh province, the goal for tourism development in Halong area should set as following. Sustainable tourism is regarded as low impact tourism such as promoting ecotourism and quality tourism market, which is less impact to tourism resources and natural environments.

Shift from Mass Tourism to Sustainable Tourism

3.4.2 Strategy and Plan Formulation

In order to achieve the goal, six strategies for sustainable tourism development in Halong area are set as follows.

Strategy 1: Enhancement of management capacity for sustainable tourism development

Strategy 2: Development of legal and institutional framework, and policy for supporting ecotourism

Strategy 3: Protection of tourism resources

Strategy 4: Development of sustainable tourism products

Strategy 5: Upgrading service and quality of tourism facilities and business

Strategy 6: Propaganda and promotion of sustainable tourism

Strategy 1: Enhancement of management capacity for sustainable tourism development

In coastal area of Halong Bay, these areas have been rapidly developed as core tourism area in Halong City due to potential demand for tourism and tourism related commercial development. In Hung Thang area, hotel, tourism service and commercial facilities are also being developed by private sector. In fact, tourism and commercial areas, and tourism development areas in these areas are not properly controlled and managed in terms of sustainable tourism development. Due to increasing the number of tourist and boat cruising tour visiting major islands in Halong Bay, natural environments in islands are affected and degraded. For the sustainable tourism development in Halong area, it is necessary to enhance management capacity of tourist sites and areas by development of zoning plan and management guideline in Bai Chay and Hung Thang, tourism site management guideline for major islands in Halong Bay and identification of solution for unfinished tourism development and pending tourism facilities in Bai Chay area.

Strategy 2: Development of legal and institutional framework, and policy for supporting ecotourism

Ecotourism is a low impact tourism which involves visiting natural areas with the objectives of learning, studying or participating in activities. In the Quang Ninh Tourism Development Plan, Quang Ninh PPC gives priority to develop and promote ecotourism in Halong Bay and other areas including Van Don area. In order to encourage promoting ecotourism in regional and local level, provincial government should establish official regulation such as decision on promotion of ecotourism and develop basic policy on ecotourism. For support on development and implementation of ecotourism activities in cooperation with tourism business operators and local community, it is necessary to establish ecotourism association, provide financial support and training of ecotourism narrator

Strategy 3: Protection of tourism resources

Halong Bay is recognized as UNESCO World Natural Heritage having distinctive natural tourism resources with unique island landscape, ecosystem, values of geology and geomorphology. Due to increasing demand of urban, commercial and tourism development along the coastal area, reclaiming land, construction activities in the coastal area and inflow of waste water from residential and tourism area in Bai Chay area into the bay are causing degradation of water quality and water transparency in Halong Bay. Mangrove area in the coastal area was reduced. In terms of tourist and tourism business activities, following factors, garbage from tourist boat, tourist sites congested with tourists, and oil spill from tourist boats are cause of impact on sea water, natural environment and tourism resources in Halong Bay. To reduce impact and protect natural environment and tourism resources in Halong Bay and its surrounding area is one of important strategies for sustainable tourism development in Halong area as well as enhancement of value of the UNESCO World Heritage for Halong Bay.

Strategy 4: Development of sustainable tourism products

Tourism product development is an integral part of tourism development and sustainable tourism. Currently, main tourism attractions in Halong area is boat cruising tour in Halong Bay with visiting

islands, caves and floating villages. Besides these tourism attractions in Halong area, beach and night market in Bai Chay, Yen Tu mountain and pagoda in Uong Bi city and Cua Ong pagoda in Cam Pha city are major tourism attractions. Local souvenir product and activity are very limited and not developed in Halong area. Due to limited tourism product in Halong area, tourist's length of stay and expenditure is limited. In order to increase the length of stay for the visitors and their expenditure, creation of new tourism products and provision of diversified tourism product are necessary. Recommended ideas on tourism product development are as follows.

- Development of eco-tour program on islands and nature forests
- Development of community based tour program
- Boat tour in mangrove area
- Study and educational experience-based tour program for students and foreign tourists
- Development of tour program connecting tourism potential sites (Excursion tour)
- Design and development of new souvenir product with utilizing local resources
- Establishing nature and ecotourism narrator and training
- Development and promotion of local event and traditional/cultural performance

Strategy 5: Upgrading service and quality of tourism facilities and business

Halong Bay area has been promoted as international tourism destination. High grade accommodations were developed and operated in Halong Bay area. Tourist boat companies have been providing overnight stay boat tour for targeting foreign tourists. These tourism business operators are providing quality services to meet international standard. Besides these tourism business operators, facilities and services provided by local tourism business such as non-star hotel, guesthouse, restaurants, day excursion boat operator are not sufficient and do not meet international standard. In addition, tourism service facilities such as toilet and tourist information center operated by public sector are not sufficient and required for upgrading and improvement. Upgrading service quality by local tourism business and improvement of tourism facilities in Halong area are one of important strategies for sustainable tourism development in Halong area, which will also encourage to enhance awareness on environment and environmental protection by local tourism business operators. Recommended ideas on upgrading service and quality of tourism facilities and business are as follows.

- Training on customer services and hospitality for tourism business
- Promotion of eco-grading system for accommodation (Green Lotus)
- Development of Eco-label for tourist boat in Halong Bay
- Upgrading visitor facilities

Strategy 6: Propaganda and promotion of sustainable tourism

Halong Bay is well known in Vietnam and overseas as one of the World Heritage Sites and major tourist destination in Vietnam. Halong Bay was selected New Seven Winder of Nature in 2011. Although many potential tourist sites and resources in Halong Bay and other areas in Halong area were identified during the project, detailed information on sites and resources, and tour programs are not prepared as tourist information and data for travel agents and tourist. Halong area should be further promoted within Vietnam and to overseas as sustainable tourism destination, not only preparation of tourist information materials and improvement of capacity tourist information center, but also creation of brand image and name for Halong area and carrying out tourism marketing and promotional activities by DCST in cooperation with Vietnam National Administration of Tourism, relevant sections in local governments and private sectors are indispensable. Recommended ideas on propaganda and promotion are as follows.

- Development of brand name and image creation for sustainable tourism development
- Development of tourism information materials and data of tourist information on website
- Holding promotion seminar and events

3.4.3 Focal Points of the Proposed STD

(1) Enhancement of management capacity for sustainable tourism development

a) Zoning plan will guide and control function and development of tourism facilities in zoned area in Bai Chay area. Prepared guidelines for zoned areas can control and manage development of tourism facilities and sites, signage, and amenity space, access road and pedestrian walkway, etc which helps

for sustainable tourism development of Halong area with following the requirement of Coastal Environmental Protection Corridor (CEPC)

b) Unfinished planned tourism facilities can be removed or resumed to be developed by applying identified solution. Prepared approval and monitoring system of land leasing for tourism facility and tourism development can prevent for standstill of development of tourism facilities and helps for effective utilization of tourism assets and sustainable tourism development in Halong area. HBMD can effectively control and manage tourist sites, facilities and tourism resources with sustainable manner according to tourism site management guideline. Negative impacts on tourism resources, sea water and nature environment caused by congestion of tourist boats and tourists landing islands will be reduced during the tourist peak time and season

(2) Development of legal and institutional framework, and policy for supporting ecotourism

a) Enacted regulation (Decision) on promotion of ecotourism is an effective measure to support and promote followings, protection of natural environment through ecotourism, tourism promotion, regional development, promotion of environmental education. DCST and relevant sections in local governments are able to develop and promote ecotourism activities with involvement of tourism business operators and local communities based on the regulation.

b) Established basic policy and strategy on ecotourism promotion for Halong area or QN province will encourage for promotion of ecotourism activities. Ecotourism association in QN province or local areas is responsible not only to promote ecotourism activities but also to coordinate various stakeholders related to ecotourism activities, regional development and environmental education with support of Halong Environmental Education Association (HLEEA). In addition, local communities and tourism business operators can receive financial and technical support on eco-tour development and training of eco-tour narrator.

(3) Protection of tourism resources

a) Control of tourist boat access and boat stay areas at major islands at peak time will reduce direct impact to sea water and nature environment around and in the major islands. It also contributes sustainable management of tourism resources. Reduce impact to sea water and fishes by discharging washed water and also volume of water for washing, which can also reduce expenditure for water.

b) Knowledge and awareness on environmental protection for villagers in floating villages are enhanced. Activities on environmental protection by villagers are promoted. Also, monitoring data contributes for analysis of water quality (water transparency and turbidity) and aware of importance of water quality in Halong Bay for villagers.

c) Traditional culture and lifestyle of floating villages in Halong Bay is preserved as tourism resources by implementation of supporting measures for resettled people. Tourism facilities at Vong Vieng and Cua Van are maintained by resettled people. Negative impact to the sea environment is reduced by collecting waste on the sea, from floating houses and tourism facilities. Utilization of bio diesel fuel for boat reduces emissions of CO and CO₂, which contributes for Green Growth Strategy of QN

d) Wastewater will be collected and handled more thoroughly that reduce pollution, especially in Bai Chay tourist area. HBMD and DONRE can conduct efficient inspection and monitoring of water quality and reduce impact to water by tourist boats and other factors. Establishing system to avoid further damage of tourist facilities and sites and maintain tourist facilities and sites, monitoring and evaluation data contribute for improvement of tourist facilities and sites, and identification of potentials for development of tourism product. Improvement of technique and knowledge for inspection and monitoring for staff in charge of inspection and monitoring, and reporting analyzed results of monitoring and inspection helps to identify negative impacts on water environment and sustainable management of Halong Bay

(4) Development of sustainable tourism products

a) Trang Luoi Liem and Hon Quyen Rong, Ba Ham Lake become ecotourism site for domestic and

foreign tourists will enjoy sandy beaches, small trekking and exploring beautiful nature scenery by kayaking. Cong Dam area (floating fishing village) becomes attractive eco-tour destination for tourists visiting floating village, caves and mangrove planting areas and experience life of traditional fishing village. Other floating villages (Cua Van, Vong Vieng) are also attracted community based eco-tour areas for foreign and domestic tourists. Income of Cong Dam and other floating villages will increase through eco-tour. Moreover, Yen Lap Lake and Loi Am Mountain area becomes a popular community based eco-tour site in Halong city with enjoying beautiful scenery of lake and mountains, trekking in forest, and reaching to Loi Am Pagoda, guided by local guide. It will be possible to provide activity of pineapple tree in the forest.

b) Mangrove boat tour becomes one of eco-tour programs in Halong area. Tourists can learn importance of mangrove and its ecosystem. Local community has opportunity to engage operation of mangrove tour and expects to increase income through mangrove tour. Students and foreign tourists can learn and understand nature, historical and culture of Halong area through study tours. Nature, historical and cultural values of Halong area will be enhanced by study tour. Eco-tour by boat becomes one of eco-tour programs in Halong area. Tourists can learn importance of ecosystems and other natural values of local tourism attractions in the bay. Local community has opportunity to engage operation of eco boat tour and expects to increase income through the tours.

c) Tour program with combining tourist sites increases length of stay for local and foreign tourist in Halong area (for example: Foreign tourist will be from 2 days to 3-4 days) The tour program increases the number of tourist visiting tourist areas outside of Halong city and economic benefit through tourism. In addition, cooperation among local governments and local tourism business sectors are strengthening in terms of promotion of local tourist sites and receiving tourists.

d) Ecotourism tour is secured in term of service quality and guiding skill by establishment of nature and ecotourism narrator. Quality and contents of nature and ecotourism tours are improved. Interpretation, operation and management for nature and ecotourism tour will be secured. Increase employment and income of local communities by training of nature and ecotourism narrator. The guideline helps to develop, operate and marketing of ecotourism products for local tourism business operators, travel agents and boat companies. Seminar and workshop will contribute to encourage for development, operation and marketing of ecotourism product by local tourism business operators. The number of ecotourism products will be increased and the ecotourism products will be diversified in Halong area.

e) Design and quality guideline for local tourism product helps to improve existing local tourism products and develop quality local brand tourism products by utilizing local resources for local producers and companies. The guideline can control the quality of local tourism products to meet the standard for tourist. Also, design, quality, packaging and utilization of local resources for tourism products by local craftsmen and product producers are improved. Marketing and sales promotion for tourism products by local producers and souvenir shops owners are improved. Attractive and quality local tourism products are developed and promoted in Halong area.

(5) Upgrading service and quality of tourism facilities and business

a) By conducting training on customer services and hospitality for manager and staff of small hotel and restaurants in Halong city, level of customer service, hospitality and communication skill in English for those who had training and improve level of satisfaction for customer service by tourist visiting Halong area as a whole.

b) After introducing the Green Lotus Eco-label for accommodation in Halong area, holding guidance on applying Green Lotus Eco-label for hotels in Halong area will encourage understand objectives of the Eco-label and many classified star hotels for applying the Eco-label. It is expected negative impacts to the nature environment for Halong Bay form accommodation will be reduced and enhance awareness of environmental protection and sustainable tourism management and development through the Green Lotus Eco-label for hotel industry. Certification system of Eco label for tourist

boats in Halong Bay is officially complete and approved by QN PPC. Monitoring activities for certified "Blue Sail" tourist boat is able to check the sustainability of eco-label activities by "Blue Sail" tourist boat. Commendation of "Blue Sail" tourist boat will be incentive for active participation of eco label and propaganda for "Blue Sail" Tourist boats. Propaganda on Eco label will increase the number of "Blue Sail" tourist boat. "Blue Sail" eco label will be apply to other areas in Vietnam

c) Tourist can receive information on tourist boat cruising and unique feature of Halong Bay from the tourist information center (TIC) at Bai Chay Tourist Wharf before tourist participating cruising tour. Awareness on environmental protection in Halong Bay for tourist is enhanced by presenting information and activities of environmental protection in Halong Bay at TIC. The function of TIC will be improved by improvement of TIC. Tourist visiting TIC will receive not only tourist information of Halong Bay, but also various information on history, culture and nature, and tour programs in and around Halong area. TIC can extract and rearrange necessary information and data on tourism resources and facility through the Tourism Resource Database (TRD). TRD can use for tourist information searching for visitors, preparation of tourist map and brochure and tour programs for TIC.

d) Roadside station becomes a main tourist service facility in Bai Chay area to provide parking space, event space, restaurant, café and exhibition, shops for local products and tourism information in Halong area. The roadside station is benefit for local business and community groups to participate in community development and selling local products at the roadside station, as well as increasing employment opportunity and revenue from selling products.

e) Small exhibition space becomes core of tourist facility at Vong Vieng floating village. Tourist visiting Vong Vieng village understand culture, traditional fishing, lifestyle and unique feature of nature environment in Vong Vieng. Additionally, tourist enhances awareness on environmental protection and sustainable tourism development by visiting the exhibition space. Sanitary condition on the Bai Chay beach area and level of satisfaction using toilet facility by tourists will be increased. Clean and maintained toilet facility gives good image on tourist site.

(6) Propaganda and promotion of sustainable tourism

a) Image and attractiveness of Halong area as sustainable tourism destination is enhanced by creating brand name, logo design and slogan for sustainable tourism destination of Halong area. Created brand name, logo design and slogan will be utilized for authorized local tourism product and tour programs, which is beneficiary for tourism product producers, shop owners and tourism business operators.

b) Halong area will be recognized the tourist destination with sustainable tourism products for travel medias, tourism industries and tourists. Tourist and users will receive update information and data on tourism resources, facilities, tour programs and events through the website. Attractiveness of Halong Bay as UNESCO World Natural Heritage Site will be enhanced by updating website. By created various tourist information and promotion material, DCST and tour companies can promote Halong area as sustainable tourism destination for various markets and countries. Tourist can have diversified tourism information and tourism attraction including eco-tours from tourist information materials. Length of stay for tourists and number of repeater to Halong area will be increased.

c) Halong area will be recognized not only the World Natural Heritage site with enjoying tourist boat tour in Halong Bay but also sustainable tourism destination through PR on mass media. Length of stay for tourist in Halong area will increase. Also, Halong area will be recognized as sustainable tourism destination with diversified tourism products. Awareness of environmental protection for Halong area will be enhanced. Investment for sustainable tourism development with partnership of local tourism business will be promoted and increased.

3.4.4 Recommendations

(1) Actions to be taken by QN PPC after the Project

Proposed 41 measures were evaluated and rated based on evaluation criteria by WG-3. Selected

priority measures (projects, activities) shall be carefully reviewed and revised for preparation of applying budget to QN PPC by proposed Task Force Group-3 in charge of Sustainable Tourism Development in Halong Bay Environment Protection Committee (HLEPC). In case HLEPC is not established by the time to review proposed priority measures, QN PPC shall be responsible for take necessary actions with support of relevant departments and local governments.

After budget for measures (projects, activities) are secured from QN PPC or outer funding source, Task Force Group-3 or designated members from DCST, HBMD, and/or relevant departments shall prepare implementation plan for measure. Method and approach for implementation of projects or activities are different from type of project and activity. Supervision, monitoring, reporting and evaluation system for the project and activity should be included in the responsibility of Task Force Group-3. In case project or activity is related to IEMIP and CEPC, Task Force Group-3 has to have cooperation and collaboration with Task Force Group 1 and Task Force 2.

(2) Reflect proposed strategies and measures for Sustainable Tourism Development in Halong Area to Quang Ninh Tourism Development Master Plan

The Quang Ninh Tourism Development Master Plan (period 2011-2020, orientation of 2030) was prepared by the local consultant in 2011. However, DCST was decided to revise the Master Plan due to insufficient contents of the Master Plan. Currently DCST has revised the Master Plan. Proposed strategies and measures for Sustainable Tourism Development (STD) are prepared with reference of the previous Master Plan, policy of tourism development for QN Province, and tourism development strategies by Halong City and other local government in Halong area. Thus, it is suggested that the proposed strategies and measures should be provided to the organizations in charge of preparation of Quang Ninh Tourism Development Master Plan through DCST and be reflected to the Master Plan to be prepared. Especially it is recommended that proposed priority measures for STD are included in the list of projects in the Master Plan for effective approach to implement proposed measures with allocation of sufficient project budget.

(3) Updating and utilization of tourism resource database (TRD) for multi-purpose use

The Tourism resource database (TRD) system was developed applying ArcGIS program under the activities of WG-3 for the Project for Environmental Protection in Halong Bay. Developed TRD system is transfer to DCST (Tourism information center) and is utilizing for database of tourism resource and tourism facilities at tourism information center. TRD system includes data of tourism resources, accommodation, restaurants and major tourism facilities in Halong area with their locations on GIS map. TRD system can utilize for storage of tourism resource data, tourism information on website, development of tourism maps, preparation of tour program, evaluation of tourism resources, protection of tourism resources and improvement of tourism sites. However, collected and input data and information in the TRD system is limited and need to collect more data and information on tourism resources and sites in Halong area for updating the TRD system. It is suggested DCST is responsible for operate and manage the TRD system, and updating data and information for the TRD system on regular basis with following prepared user's manual for TRD. DCST has to establish TRD operation and development team at Tourism Information Center with assign database experts for sustainable operation and management of TRD system.

3.5 Halong Environmental Education Association (HLEEA)

3.5.1 Purposes and Effects of HLEEA

(1) Purpose

Promotion of environmental awareness is indispensable for protecting the Halong Bay World Heritage site and for ensuring sustainable tourism development in the Halong area. The actual Environment Education (EE) and Public Relation (PR) activities should be conducted targeting wide range stakeholders such as local residents including school pupils and students, factories, business entities as well as tourists in the Halong area, with receiving powerful and continuous supports from QN PPC and concerned organizations such as YU and WU. Therefore, it is essential to let citizens and other stakeholders be aware of their local environment conditions and issues, and let them be proud of their environmental protection efforts and activities. In this context, it is crucial to set clear vision and goal

of EE & PR so that the local residents can say “We pursue not only economic development but also conservation of the local environment and resources in the Halong Bay area for the next generation” with their strong awareness.

In order to achieve the vision and goal mentioned above, WG-4 proposes to establish the Halong Environmental Education Association (HLEEA) having the following purposes;

- a) To implement EE and PR effectively and efficiently in Halong Area and other areas in QN province, and
- b) To arrange and set up conditions for sustainable implementation of EE & PR activities.

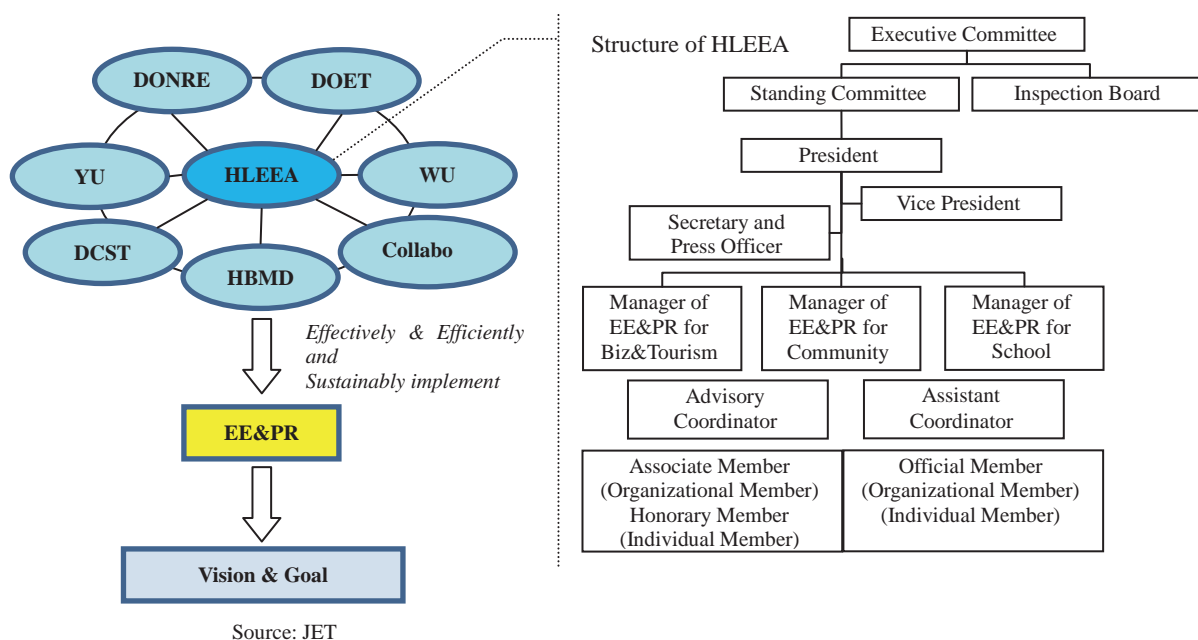


Figure 3-5-1 Concept and Organization Structure of HLEEA

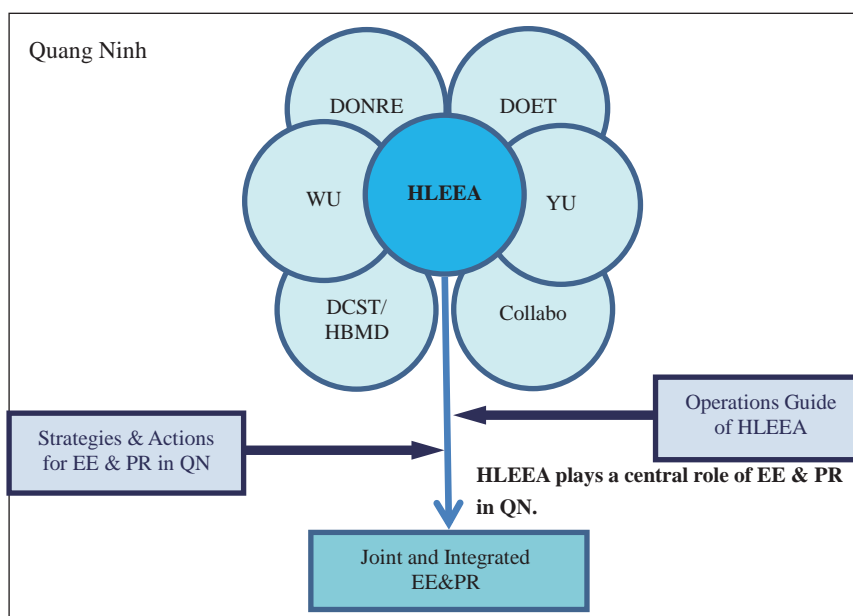
(2)Effect

QN PPC has enhanced environmental protection of Halong Bay as one of countermeasures in line with “The Green Growth Strategy of QN Province”. Until now, a lot of environmental protection activities and EE & PR have been implemented individually or jointly by concerned bodies, such as local government departments or social unions in QN province. Thus, it is expected that concerned departments and social unions jointly implement joint and integrated EE & PR for the environmental protection in QN province, and that active and positive collaboration among stakeholders is crucial with sharing their experiences and lessons through joint activities.

Therefore, HLEEA should be established and functioned. HLEEA is composed of main bodies, such as DONRE, DOET, YU, and WU that have played main roles of EE & PR. Volunteers (the Collaborators: Collabo) also join the association. It is expected that HLEEA will play a central role of EE & PR in QN province to fulfill mandate and to realize building awareness of QN people with comprehensive strategies and actions for EE & PR required.

3.5.2 Strategy and Plan Formulation

For successful operation and effective central function of EE & PR in QN province, HLEEA should have a comprehensive strategies and actions on EE & PR covering activities of other concerned bodies including communities and dealing with wide range of topics such as human resources, financial resources, institutional arrangements, and so on. In addition, an operations guide of HLEEA should be designed and applied so that members of HLEEA can understand how to operate the organization with sustainable manner.



Source: JET

Figure 3-5-2 Strategy and Plan Formation for HLEEA

(1) Comprehensive strategies and actions for EE & PR

The HLEEA takes strategies and actions as shown Table 3-5-1. Details of these strategies are described hereunder.

Table 3-5-1 Strategies and Actions of HLEEA

Strategy	Actions
1. Developing the Joint and Integrated Activities	1.1 Organizing Environmental Education Conference (EEC) 1.2 Introducing budgetary compilation of comprehensive EE
2. Developing Information Transfer and Sharing Capacity	2.1 Designating EE-Spots 2.2 Holding ECO-Network Meeting
3. Introducing Priority Resource Allocation	3.1 Arranging information on current status of EE activities by areas and targets 3.2 Setting intensive areas and targets for EE
4. Developing Citizen's Participation Program	4.1 Introducing supportive measures to voluntary activities of EE 4.2 Introducing EE-community award in intensive areas
5. Seeking for Cost-efficiency of Activities	5.1 Introducing benchmarks 5.2 Monitoring benchmarks
6. Designing of Institutional Arrangements	6.1 Making Quang Ninh EE decisions

Source: JET

Strategy 1 : Developing the Joint and Integrated Activities

One of reasons to establish HLEEA is to continue and further develop joint and integrated activities of EE & PR, such as Mobile-EE and ECO-fair, to be conducted by multiple concerned bodies that have different experiences and ideas, such as DONRE, DOET, YU, and WU. It has advantages to create better EE & PR with different experiences and ideas, to eliminate overlapping activities, and to consequently lead effective activities with same purposes. To develop the joint and integrated activities, a budget and fund compilation should be established.

Strategy 2 : Developing Information Transfer and Sharing Capacity

Experiences and results should be transferred and shared with other areas in QN province and other provinces in Vietnam. The experiences of QN province targeting the World Heritage site of Halong Bay are useful for other provinces. The ECO-Network is an opportunity to exchange and share in which a variety of concerned bodies exchange experiences, ideas, and opinions with other concerned organizations for the better EE & PR activity development.

Strategy 3 : Introducing Priority Resource Allocation

Prioritization of EE & PR targets, activities, and areas are required for efficient use of limited budget and human resources.

Strategy 4 : Developing Citizen's Participation Program

In order to further expand EE & PR activities, volunteers of citizens are very important from the view point of human resources and manpower with a sense of ordinary people. Willingness and cooperation of local communities are crucial for successful implementation of EE & PR activities. Therefore, assistance programs to promote positive participation of local citizens are to be prepared covering technical and financial matters in the future.

Strategy 5 : Seeking for Cost Performance of Activities

Raising cost performance of EE & PR activities is required for effective and maximum use of limited budget by using appropriate cost performance indicators.

Strategy 6 : Designing Institutional Arrangements

Considering objectives and functions of HLEEA, more detail institutional arrangement should be designed and planned in the provincial level in order to expand target areas to whole Quang Ninh province.

(2) Operational guide of HLEEA

For effective and efficient operation of HLEEA, an operational guide describing the following items is prepared (see Attachment-4 in this proposal). This guide should be revised based on experiences of actual operation.

- How to make plans,
- How to implement the joint and integrated activities,
- How to develop human resource,
- How to evaluate activities, and
- How to sustain the organization.

3.5.3 Focal Points of the Proposal of HLEEA**(1) Formation of HLEEA**

It is necessary to give responsibility to the organizations of WG-4 members responsibility for actual operation of HLEEA. That is because the members have implemented a lot of activities of EE&PR and developed their capacity through the Project. In fact, the idea of HLEEA was proposed by the WG-4 with strong commitment for continuation of activities on EE & PR. Thus, HLEEA consists of the organizations of WG-4. For example, the leader of WG-4 should be the president and the other members should take manager positions in HLEEA. Besides, the executive committee that is composed of several CEM members from the concerned bodies should advise or instruct them on planning and financial matters for proper management of HLEEA.

(2) Fair personnel and financial management of HLEEA

It will be a key for successful operation of HLEEA if fair personnel and financial management are arranged for concerned bodies. About the personnel, the president should be newly selected every two or three years from the core organizations, such as DONRE, DOET, YU, WU, DCST, and HBMD in order for them to jointly operate refresh HLEEA for its sustainability. It will lead to the fair personnel management. Regarding financial management, when HLEEA jointly works with the concerned bodies, task-basis budget should be allocated to them

(3) Financial arrangement

A subsidy from QNPPC is the main financial source for the operation of HLEEA even though it tries to call sponsors for activities. In addition, concerned bodies of which jointly work on EE & PR with HLEEA need budgets. To implement the joint and integrated EE & PR, a fund such as Environmental

Education Fund should be established.

3.5.4 Recommendations

(1) Establish HLEEA

It is recommended to establish HLEEA officially as early as possible and to be inaugurated by the organization of the congress in accordance with the Decree No. 45/ND-CP/2010 and arrangement of works including budget (HLEEA and DONRE).

(2) Formulation of the comprehensive strategies and actions for EE & PR in QN Province

It is recommended that further discussion of the proposed comprehensive strategies and actions for EE & PR in QN Province among concerned bodies (DONRE, DOET, YU, WU, DCST and HBMD) and that the final strategies and actions should be endorsed by QN PPC for actual implementation. It is also proposed that a study on significant components of the strategies and actions such as benchmarks and indicators of achievement evaluation, for finalization.

4. Implementation Schedule

4.1 Long-term and Short-term Implementation Schedule of the Proposed Strategies and Measures

The long and short-term implementation schedule of the proposed strategies and measures are summarized in Table 4-1-1 to Table 4-1-4.

4.2 Actions Forward

For ensuring sustainability of actual implementation of the proposed strategies and measures by the Project, quick and timely transition actions will be required for the time being (around one year) just after the termination of the Project. Conceivable necessary actions are summarized in Table 4-2-1 with indicative cost, around US\$ 46,000.

Table 4-2-1 Recommended Actions to be conducted after the Project

Output	Items	Detailed Works (in charge)	Period (App. Budget)	Relevance w/ Phase-2
Output-1	(1)Set up QN Env. Protection Committee (QNEPC)	a)Official appointment of QNEPC members (CEM and PMB)	a)Jan/2013-July/2013 (\$ 0)	a)to respond Request Survey by JICA in Aug/2013
	(2)The Phase-2	a)Considering contents and components and contents of the proposed Phase-2 (DONRE, DCST)	a)up to Aug/2013 (\$ 0)	ditto
		Sub-total	(\$ 0)	
Output-2 (WG-1) IEMIP/P SC	(1)IEMIP	a)Setting a new monitoring network adding the proposed new monitoring points (DONRE EMAC)	a)Jan/2013-Feb/2013 (\$ 0)	a)to show continuation to JICA for smooth review in Phase-2
		b)Updating the WED cooperating with relevant organizations (DONRE EMAC)	b)Jan/2013-Dec/2013 (\$2,000)	ditto
		c)Implementing IEMIP (DONRE EMAC)	c)Jan/2013-Dec/2013 (\$5,000)	ditto
	(2)Implementation Plan of Inspection and Administrative Guidance	a)Setting up criteria of check and inspection, and imposition of sanctions in the shape of official documents (DONRE, Inspectorate)	a)Jan/2013-Dec/2013 (\$3,000)	ditto
	(3)Pollution Source Database (PSD)	a)Updating PSD on sources located outside Halong Area(DONRE)	a)Jan/2013-Dec/2013 (\$1,000)	a)to include its implementation in Phase-2
		b)Upgrading the PSD function, and developing a plan of LAN system connecting PSD and operating it so as to cover all sources including projects subject to EPC (DONRE)	b)Jan/2013-Dec/2013 (\$2,000)	
		Sub-total	(\$13,000)	
Output-3 (WG-2) CEPC	(1)Strict development permit and monitoring in tourism site	a)Preparation and promulgation of bylaw or any legal document on strict development permit and monitoring in Bai Chay International Tourism Area (DPI/DOC)	a)Jan/2013-Dec/2013 (\$0)	a)to review of the operation and provision of technical advice in Phase-2
	(2)Parking space development in Bai Chay International Tourism Area	a)Selection of location parking site in the Bai Chay tourism area (DCST/DOT)	a)Jan/2013-Aug/2013 (\$0)	a)to include actual actions in Phase-2
	(3)Mangrove and tidal flat protection and wise-use	a)Application of the proposed mangrove protected areas to the national forest protected area system	a)Jan/2013-Aug/2013 (\$ 0)	a)to include actual actions in Phase-2 in line with eco-tourism development

Output	Items	Detailed Works (in charge)	Period (App. Budget)	Relevance w/ Phase-2
	(4)Control of aquaculture	a)Preparation of a guideline on extensive aquaculture method, and promulgation of bylaw (Resolution) for its promotion (DARD)	a)Jan/2013-Dec/2013 (\$2,000)	a)to promote of eco-tourism in the aquaculture pond
	(5)Control of fishery exploitation	a) License the fishery exploitation, change the exterminating fishing such as dredge fishing net, electric shock etc. to the environment-friendly fishing	a)Jan/2013-Dec/2013 (\$3,000)	a)to implement actions in Phase-2
	(6)Control of land reclamation	a)Preparation of a guidelines on construction method of the land reclamation, and promulgation of bylaw (Resolution) for its promotion to be applied in the CEPC area (DOC)	a)Jan/2013-Dec/2013 (\$2,000)	a)to implement actions in Phase-2
	(7)Strengthening of SEA, and EIA/EPC in preparation of land use plan	a)Preparation and promulgation of bylaw or legal document on implementation of SEA in the preparatory/review process of the land use plan, especially for the CEPC area (DONRE)	a)Jan/2013-Dec/2013 (\$2,000)	a)to monitor and advice in Phase-2.
	(8)Strengthening of EIA/EPC in preparation of land use plan	a)Preparation and promulgation of bylaw or any legal document on examination of environmental impact to the Halong Bay in the preparatory process of EIA/EPC in the case where the subject development project/activity is located in the CEPC area (DONRE)	a)Jan/2013-Dec/2013 (\$2,000)	ditto
		Sub-total	(\$11,000)	
Output-4 (WG-3)	(1)STD Proposal	a)Following up and reflecting to the Tourism Development M/P in QN Province (DONRE, DCST)	a)Jan/2013-Dec/2013 (\$0)	a)to implement actions in Phase-2
STD	(2)Tourism Resource Database (TRD)	a)Up-dating TRD (DCST, DONRE)	a)Jan/2013-Dec/2013 (\$3,000)	ditto
	(3)Eco-label Pilot Project	a)Following up the activities of the Eco-label Pilot Project, and contacting JET, if any	a)Jan/2013-Dec/2013 (\$3,000)	ditto
	(4)Eco-tourism	a)Consideration of a draft Eco-tourism development plan, and contacting JET, if any (DCST, DONRE)	a)Jan/2013-Dec/2013 (\$4,000)	ditto -Collaboration with WG-2
		Sub-total	(\$10,000)	
Output-5 (WG-4)	(1)Establish HLEEA	a)Organization of the congress in accordance with Degree No. 45/ND-CP/2010 and arrangement of works including budget (HLEEA, DONRE)	a)Jan/2013/-Aug/2013 (\$10,000)	a)to smooth implementation of activities in Phase-2
HLEEA	(2)Formulation of the comprehensive strategies and actions (CSA) for EE&PR in QN	a)Discussion of the proposals of a draft comprehensive strategies and actions for EE&PR in QN among concerned bodies (DONRE, DOET, YU, WU, DCST, and HBMD)	a)Jan/2013/-Feb/2013 (\$0)	ditto
		b)Study on significant components of the draft comprehensive strategies and actions such as benchmarks, and finalization (QN PPC, DONRE)	b)Feb/2013/-July/2013 (\$5,000)	ditto
		c)Endorsement and implementation of the comprehensive strategies and actions for EE&PR in QN (QN PPC, DONRE)	d)Aug/2013-Dec/2013 (\$0)	ditto
		Sub-total	(\$15,000)	
		Grand Total	(\$49,000)	

Source: JET

**Table 4-1-1 Implementation Schedule for Proposed Measures for Integrated Water Environment Management of Halong Area
(Output-2: WG-1)**

Category	Proposal	Measures	Implementing agency/ organization	Source of funding	Implementation period									
					Short		Mid			Long				
					2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
1. Environmental Monitoring	Implementing Integrated Environmental Monitoring Implementation Plan (IEMIP)	1. Developing coordination mechanism for implementation of IEMIP	DONRE, HBMD, concerned city/town/district DONRE	QN PPC										
		2. Implementation of IEMIP	DONRE, HBMD, concerned city/town/district DONRE	QN PPC										
		3. Reviewing monitoring network considering change of pollution sources characteristics	DONRE,	QN PPC										
		4. Implementation of required technical training	DONRE, HBMD, concerned city/town/district DONRE	QN PPC										
		5. Upgrading of Water Environment Database	DONRE, HBMD, concerned city/town/district DONRE	QN PPC										
		6. Setting automatic water quality monitoring system	DONRE											
2. Pollution Source Control	Implementation Plan of Inspection and Administrative Guidance	1. Setting up clear criteria for implementation of environment check and inspection	DONRE	QN PPC										
		2. Setting up clear criteria for imposition of administrative guidance and sanction	DONRE	QN PPC										
		3. Conducting personal training to expand specialized knowledge and skills of persons concerned	DONRE, concerned city/town/district DONRE, Environment Police Department	QN PPC										
	Pollution Source Database	1. Starting sustainable operation of PSD for Halong area	DONRE	QN PPC										
		2. Updating stored information in PSD	DONRE	QN PPC										
		3. Upgrading stored information in PSD	DONRE, concerned city/town/district DONRE, Environment Police Dept.	QN PPC										
		4. Finding out unauthorized pollution sources and inputting their data to PSD	DONRE	QN PPC										
	Measures against Water Environment Incidents	1. Recording system for environment pollution incident	DONRE	QN PPC										
		2. Identification of possible high-risk pollution sources	DONRE	QN PPC										
		3. Review and improvement of environmental check items	DONRE	QN PPC										
		4. Regulations associated with environment pollution incidents	DONRE	QN PPC										
		5. Development and implementation of emergency responses plan against environment pollution incidents	DONRE	QN PPC										
	Other Measures	1. Promoting of cleaner production technique	DONRE	QN PPC										

Table 4-1-2 Implementation Schedule for Proposed Measures for Coastal Environment Protection Corridor for Halong Bay (Output-3: WG-2)

Strategy	Approach/Measure	Implementing agency/ organization	Source of funding	Implementation period										
				Short		Mid			Long					
				2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Strategy 1 Minimum discharge of wastewater and silt from coastal area to the Halong Bay Strategy 2 Prevent shift of shoreline to the sea Strategy 3 Application of Environmental Protection Law and Forest Protection Law for land use management Strategy 4 Enhancement of sustainable tourism from viewpoint of land use management	(1) Wastewater treatment and pollution control													
	1-1) Plan of improvement and new installation of WWTP	DPI, Halong City, Cam Pha City	QNPPC, donor											
	1-2) Construction of WWTP	DOC	QNPPC, donor											
	1-3) Operation, maintenance, and replacement of the WWTP	URENCO or private company contracted with QN PPC	QNPPC (water charge)											
	1-4) Pollution source control for industry	DONRE	QNPPC											
	1-5) Pollution source control in coal-related activities	VINACOMIN, DONRE (administrative guidance)	VINACOMIN											
	(2) Strict development permit and monitoring in Bai Chay International Tourism Area													
	2-1) Preparation and promulgation of by-law or any legal document on strict development permit and monitoring in Bai Chay International Tourism Area	DPI, DOC	QNPPC											
	2-2) Enforcement of the strict development permit and monitoring	DOC, DPI, DONRE, DCST	QNPPC											
	(3) Parking space development in Bai Chay International Tourism Area													
	3-1) Selection of location of parking site in the Bai Chay tourism area and land recovery procedure (if necessary)	DCST, DOT, DONRE	QN PPC											
	3-2) Development of parking site with road station	DCST, DOT	QN PPC Private company											
	3-3) Removal of roadside parking space along the Bai Chay Road, especially in weekend and peak period, and strict control of roadside parking in main road, especially in Bai Chay Road	DOT (legal procedure) Police Dept. (enforcement)	QN PPC											
	3-4) Installation of signboard for parking spaces	DOT	QN PPC											
	3-5) Installation of parking guidance and information system	DOT, DCST	QN PPC											
	3-6) Introducing environmental-friendly public transportation along the Bai Chay Road	DOT, DCST	QN PPC Private company											
	(4) Mangrove and tidal flat protection and wise-use													
	4-1) Application of the proposed mangrove protected areas to the national forest protected area system	DARD	QNPPC											
	4-2) Management, maintenance, and restoration of the protected area	DARD, Ward/commune PCs	QNPPC											
	4-3) Preparation of guidelines on ecotourism and environmental education in	DARD, DCST	QNPPC											

Strategy	Approach/Measure	Implementing agency/ organization	Source of funding	Implementation period									
				Short		Mid			Long				
				2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	the mangrove protected areas												
	4-4) Establishment of registration system on implementation of eco-tour in aquaculture pond within the mangrove protected areas	DARD	QNPPC										
	4-5) Establishment of training and registration system on eco-tour guide, who conduct eco-tour in the mangrove protected areas	DARD, DCST	QNPPC										
	4-6) Operation of the eco-tour and environmental education in the mangrove area		Tourism company, QNPPC (EE),										
	(5) Control of aquaculture												
	5-1) Preparation of a guideline on extensive aquaculture method, and promulgation of by-law (Resolution) for its promotion	DARD	QNPPC										
	5-2) Promotion and technical instruction of the extensive aquaculture	DARD, Ward/commune PCs	QNPPC										
	5-3) Establishment of monitoring system on the extensive aquaculture and its implementation	DARD, Ward/commune PCs	QNPPC										
	(6) Control of land reclamation												
	6-1) Preparation of a guidelines on construction method of the land reclamation, and promulgation of by-law (Resolution) for its promotion to be applied in the CEPC area	DOC	QNPPC										
	6-2) Monitoring of land reclamation activity	DOC, DONRE	QNPPC										
	(7) Strengthening of SEA in preparation of land use plan												
	7-1) Preparation and promulgation of by-law or legal document on implementation of SEA in the preparatory/review process of the land use plan, especially for the CEPC area	DONRE	QNPPC										
	7-2) Implementation of the SEA	DONRE	QNPPC										
	(8) Strengthening of EIA/EPC												
	8-1) Preparation and promulgation of by-law or any legal document on examination of environmental impact to the Halong Bay in the preparatory process of EIA/EPC in the case where the subject development project/activity is located in the CEPC area	DONRE	QNPPC										
	8-2) Implementation of the EIA/EPC	DONRE	QNPPC										

Source: JET

Table 4-1-3 Implementation Schedule for Proposed Measures for Sustainable Tourism Development of Halong Area (Output-4: WG-3)

Strategy	Approach/Measure	Implementing agency/ organization	Source of funding	Implementation period										
				Short		Mid			Long					
				2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Strategy 1 Enhancement of management capacity for sustainable tourism development	Approach 1-1: Development of tourism area management plan for Halong area													
	Measure 1-1-1: Preparation of the zoning plan and management guideline for tourism development in Bai Chay and Hung Thang areas	Halong City, DOC, DCST, DPI	QNPPC											
	Measure 1-1-2: Identification of solution for unfinished tourism development and pending tourism facilities, and preparation of strict and effective approval and monitoring system of land leasing for tourism facilities and development of planned tourism facilities in Bai Chay and Tuan Chau	Halong City, DOC, DCST, DPI	QN PPC											
	Measure 1-1-3: Preparation of tourism site management guideline for major islands in Halong Bay	HBMD	QNPPC											
Strategy 2 Development of legal and institutional framework, policy supporting ecotourism	Approach 2-1: Institutional framework and policy for ecotourism development													
	Measure 2-1-1: Formulation of regulation on promotion of Ecotourism in Quang Ninh	DCST, HBMD	QNPPC											
	Measure 2-1-2:: Formulation of policies, institutional framework and incentives for promoting ecotourism activities	DCST, HBMD	QNPPC											
Strategy 3 Protection of tourism resources	Approach3-1: Optimum operation and management of tourist boat													
	Measure 3-1-1: Control of tourist boat access and boat stay areas at major islands at peak time	HBMD	QNPPC											
	Approach 3-2: Strengthen of environmental protection for people in floating villages													
	Measure 3-2-1: Training on use of wool knitted scourer, sorting waste and composting waste for people in floating villages and people working in Halong Bay	Women’s Union, HBMD, residents of floating villagers and people working in Halong Bay	QNPPC											
	Measure 3-2-2: Lecture on environmental protection and activities for floating villages	HBMD, HLEEA, NGO, University	QNPPC											
	Measure 3-2-3: Monitoring of sea water quality by using Secchi disk	HBMD, residents of floating villagers	QNPPC											
	Measure 3-2-4: Support for preservation of traditional culture of fishing village	HBMD.	QNPPC, Halong City											
	Approach 3-3: Improvement of local wastewater treatment facilities with proper management													
	Measure 3-3-1: Upgrading operational capacity of local wastewater treatment facility and sewerage collection system	DOC, Halong City	DOC, Halong City, ODA Loan											
	Approach 3-4: Strengthen inspection and monitoring of pollution level at sea port and anchoring sites in Halong													

[illegible]

[illegible]

Strategy	Approach/Measure	Implementing agency/ organization	Source of funding	Implementation period									
				Short		Mid			Long				
				2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	Measure 5-4-6: Improvement, maintenance and management of toilet facilities for tourist at tourist sites and floating villages in Halong Bay, and Bai Chay area	Halong City, facility operators	DCST, HBMD, Halong City										
Strategy 6 Propaganda and promotion of sustainable tourism	Approach 6-1: Development of brand name and image creation for sustainable tourism destination in Halong area (Halong Bay)												
	Measure 6-1-1: Development of brand name and slogan of sustainable tourism destination for Halong area	DCST in cooperation with HBMD and relevant dept. and Halong city and relevant local governments	HBMD, DCST										
	Measure 6-1-2: Propaganda on media, press conference for brand name, logo and slogan of sustainable tourism destination for Halong area	ditto	HBMD, DCST										
	Approach 6-2: Development of information and data of tourist information on websites for tourist and market needs												
	Measure 6-2-1: Updating information and data on floating villages, other major tourist sites in Halong Bay on existing website of HBMD	HBMD	HBMD, DCST										
	Approach 6-3: Promotion and marketing for Halong area as sustainable tourism destination												
	Measure 6-3-1: Development of tourism information and promotion materials for tourist and tour company	DCST, HBMD, relevant local gov. authorities	HBMD, DCST, Private										
	Measure 6-3-2: Promotion on sustainable tourism destination of Halong area through mass media	Ditto	HBMD, DCST										
	Measure 6-3-3: Holding promotion seminars and events for sustainable tourism destination of Halong area in Halong, Hanoi, Ho Chi Minh and other areas	Ditto	HBMD, DCST										

Source: JET

Table 4-1-4 Implementation Schedule for Proposed Measures for HLEEA (Output-5: WG-4)

Step	Approach/Measure	Implementing agency/ organization	Source of funding	Implementation period									
				Short		Mid			Long				
				2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Step1 Establishment and Operation of HLEEA	Measure1-1: Holding the congress for establishment of HLEEA	HLEEA, DONRE	-	■									
	Measure1-2: Launching operations of HLEEA	HLEEA	-	■									
	Measure 1-3 : Holding ECO-fair as an annual event *Other activities will be also conducted by HLEEA and concerned bodies.	HLEEA, DONRE, DOET, YU, WU, DCST and HBMD	QNPPC Sponsors		■	■	■	■	■	■	■	■	■
Step2 Formulation of the comprehensive strategies and actions (CSA) for EE&PR in QN	Measure2-1: Discussion of the proposals of a draft CSA for EE&PR in QN among concerned bodies	DONRE, DOET, YU, WU, DCST and HBMD	QNPPC	■									
	Measure2-2: Study on significant components of the draft CSA such as benchmarks, and finalization of the draft CSA	QNPPC, DONRE	QNPPC	■									
	Measure2-3: Endorsement and implementation of CSA for EE&PR in QN	QNPPC, DONRE	QNPPC		■								
Step3 Nationwide and international information transmission for Green Growth	Measure3-1: Planning and holding a nationwide Green Growth-ECO-quiz competition traveling across famous nature and tourist spots in Vietnam	HLEEA	Sponsors		■	■							
	Measure3-2: Planning and holding a nationwide ECO-Network Meeting on EE&PR for “Green Growth”	HLEEA	QNPPC				■	■					
	Mesure3-3: Planning and holding an international ECO-Network Meeting on EE&PR for “Green Growth”	HLEEA	QNPPC					■	■				
Step4 Review on implemented EE&PR and establishment of new formation of EE&PR	Measure4-1: Reviewing implemented EE&PR and the strategies, including the organizational form of HLEEA (e.g. Joint stock company)	HLEEA, DONRE, DOET, YU, WU, DCST and HBMD	QNPPC						■	■			
	Measure4-2: Arranging new formation of EE&PR based on the review	HLEEA, DONRE, DOET, YU, WU, DCST and HBMD	QNPPC							■	■		
	Measure4-3: Introducing new formation of EE&PR	HLEEA, DONRE, DOET, YU, WU, DCST and HBMD	QNPPC									■	■

Source: JET

Attachment-1

The Proposal of the Integrated Water Environment Management

Part A
Implementation Plan of Integrated Environment Monitoring

IMPLEMENTATION PLAN
OF
INTEGRATED ENVIRONMENT MONITORING

February 2013

Working Group-1 (Environment Management)
Under the Project for Environmental Protection in Halong Bay

Table of Contents

Implementation Plan of Integrated Environmental Monitoring Plan

1	Background.....	1
	(1) Existing Water Environmental Monitoring System in Halong Bay.....	1
	(2) Current Condition of Water Environment in Halong Bay	2
2	Implementation Plan of the Integrated Environmental Monitoring Plan (IEMP)	8
	(1) An Overall Concept of the IEMP.....	8
	(2) Objectives of the IEMP.....	9
	(3) Organizations Expected to Participate IEMP.....	9
	(4) Reviewing Current Water Environment Monitoring Network	9
	(5) Reviewing Current Water Environment Monitoring Network	10
	(6) Monitoring Activities in 2013.....	12
	(7) Recommendation on Additional Monitoring Points in Halong Bay	13
	(8) Initial Discussion on Development of Water Environment Management Database	14
	(9) Proposal on Wastewater Management in the Coastal Environmental Protection Corridor	16
Attachment-1	Reviewing Current Water Environment Monitoring Network and Recommendation for Adding Monitoring Points	
Attachment-2	List of Pollution Sources in CEPC	
Attachment-3	Water Quality Monitoring Activity with Secchi Disk	

1. Background

(1) Existing Water Environmental Monitoring System in Halong Bay

- 1) Environmental Monitoring and Analysis Center (EMAC) of Quang Ninh Department of Natural Resources and Environment (DONRE).

Currently, main actor of environmental monitoring in Halong Bay is Environmental Monitoring and Analysis Center (EMAC) of Quang Ninh Department of Natural Resources and Environment (DONRE). EMAC is an institute to analyze water and wastewater samples for environmental monitoring, inspection, check, control of environmental pollution depending on the request from various concerned authorities. Responsibilities based on Decision 305/QĐ-UB are as follows;

- To carry out environmental monitoring and analysis, to prepare report on environmental status and to monitor the happenings of the environmental quality in the province.
- To consult, to provide services for environment protection.
- To conduct activities for prevention and mitigation of environment polluters in the area of the province at the order of DONRE and at the requests made by various State authorities.
- To archive and provide environmental information.
- To participate in studies on natural resources and environment when being requested.

The number of sampling points and their locations are shown in Network Points for Environment quality Monitoring are as follows:

Table 1-1 Number of Sampling Points

Type of Water	Total	District		
		Hoanh Bo	Halong	Cam Pha
Maine water	14	-	11	3
Inland Surface Water	7	2	2	3
Under ground water	1	-	1	
Domestic wastewater	3	-	2	1
Industrial waste water	5	-	4	1
Total	30	2	20	8

Source: JET

Monitored parameters are temperature, pH, odor, color, BOD5, COD, TSS, As, Hg, Pb, Cd, CU, Zn, Ni, Mn, Fe, grease, residual Cl, NH₄⁺ -N, T-N, T-P, SO₄²⁻, Coliform, PO₄³⁻, NO₃⁻, NO₂⁻, and salinity. Planed monitoring frequency is four times in a year. The monitoring points are shown in Figure 1-1.

2) Halong Bay Management Department (HBMD)

In 2010, Halong Bay Management Department (HBMD) has started water environment monitoring in Halong Bay. The monitoring points are shown in Figure 1-1. Monitored parameters are temperature, pH, color, DO, turbidity and transparency. Planed monitoring frequency is four times in a year.

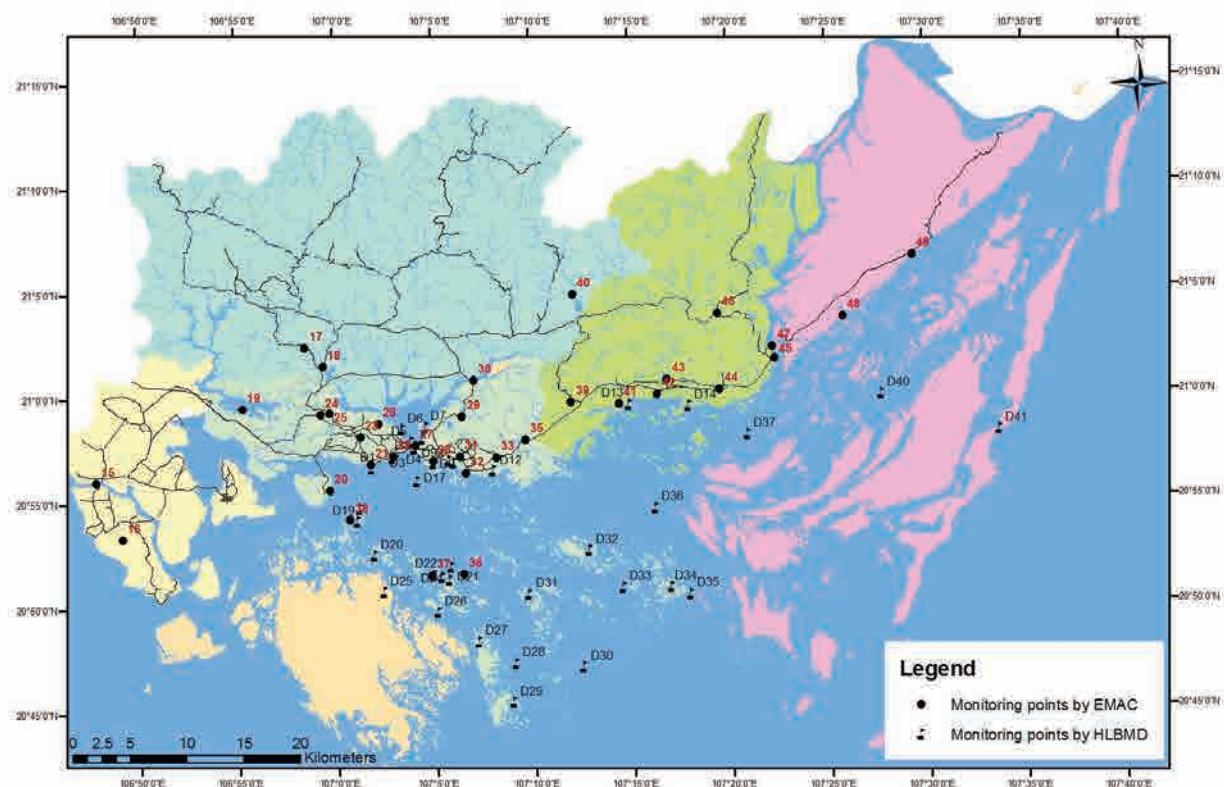


Figure 1-1 Monitoring Points in Halong Bay Area

(2) Current Condition of Water Environment in Halong Bay

1) Latest Water Quality Monitoring Results in Halong Bay Monitored by EMAC

Currently, the main actor of environmental monitoring in Halong Bay is Environmental Monitoring and Analysis Center (EMAC). Latest water quality monitoring data in May 2009 are shown in Table 2-2-6. Impacts of human activities can be observed by high BOD values especially at Bai Chai tourism boat station and Halong Market.

Table 1-2 Water Quality Monitoring Data in Halong Bay in May 2009

Parameter	Unit	Bai Chay Tourism Boat Station	Bai Chay Swimming Beach	Bai Chay Bridge	Halong Market	Nam Cau Trang Coal Port	Cua Van Fishing Village	Coastal Water Quality Standard (QCVN 10:2008/BTNMT)
pH	-	7.9	7.9	8.1	8.1	7.4	7.9	6.5 – 8.5
BOD	mg/l	21.3	7.2	8.1	27.5	12.4	12.4	-
TSS	mg/l	35	25	12	46	39	8	50
oil	mg/l	0.145	0.073	0.189	0.269	0.283	0.081	0.1
coliform	MPN/100ml	45	140	30	1,800	1,200	110	1,000

Source: Quality Water Quality Analytical Report (EMAC) May 2010

2) Environmental Baseline Survey Results

The environmental baseline survey was implemented in November 2010 to confirm current environmental status in Halong Bay. A water and sediment sampling was implemented on 17th and 18th November 2010 at the sampling points shown in Figure 1-3.



Sampling Points	Description	
St-1	Cua Luc bay	Affected by urban activities of Cao Xanh, Ha Khanh, Cai Lan Industrial Zone, Coal mining and processing activities and cement production etc.
St-2	Hoang Tan	Affected by aqua-culture activities
St-3	Tuan Chau Island	Affected by tourism activities
St-4	Bai Chay swimming beach	Affected by tourism and domestic activities
St-5	Halong Market	Affected by the market activities, harbour terminal and domestic activities
St-6	Floating Houses Km5	Affected by floating houses and domestic activities
St-7	Thien Cung cave	Affected by tourism activities
St-8	Lach Mieu	Affected by sea transportation activities
St-9	Cua Van Floating Village	Affected by domestic activities
St-10 A	Far from Cong Dam Floating Village 1.5 km	Affected by domestic activities
St-10 B	Cong Dam Floating Village	Affected by domestic activities
St-11	Urban development of Cam Pha	Affected by domestic activities
St-12	The Vang Island	Affected by aqua-culture and tourism activities

Source: JET

Figure 1-2 Sampling Points of Baseline Survey

The survey results are shown in Table 1-3. As a result of the survey, it was confirmed that organic and oil related substances impacts in Halong area. Serious heavy metal pollution was not observed in this survey.

Table 1-3 Water Quality Monitoring Data in Halong Bay in November 2010

No.	Station	Name	BOD ₅ (mg/l)	COD (mg/l)	Oil and grease (mg/l)	NH ₄ ⁺ -N (□g/l)
1	St-1	Cua Luc bay	1.68	3.09	0.33	12.00
2	St-2	Hoang Tan	1.72	3.13	0.14	16.20
3	St-3	Tuan Chau island	1.86	3.38	0.25	15.60
4	St-4	Bai Chay swimming beach	1.94	2.8	0.29	20.70
5	St-5	Halong market	3.14	4.21	1.07	18.70
6	St-6	Floating houses near Km5 area	0.96	2.42	0.08	11.00
7	St-7	Thien Cung cave	2.31	3.46	0.58	40.00
8	St-8	Lach Mieu	0.75	1.86	0.11	18.20
9	St-9	Cua Van floating village	2.1	3.66	0.36	10.80
10	St-10B	Cong Dam floating village	2.42	3.88	0.34	10.20
11	St-11	Offing area of Cam Pha	2.2	4.58	0.57	20.40
12	St-12	The Vang island	0.87	2.35	0.06	9.00
QCVN 10:2008/BTNMT for						
Aquaculture			-	3	None	50
Bathing			-	4	0.1	50
Others			-	-	0.2	-

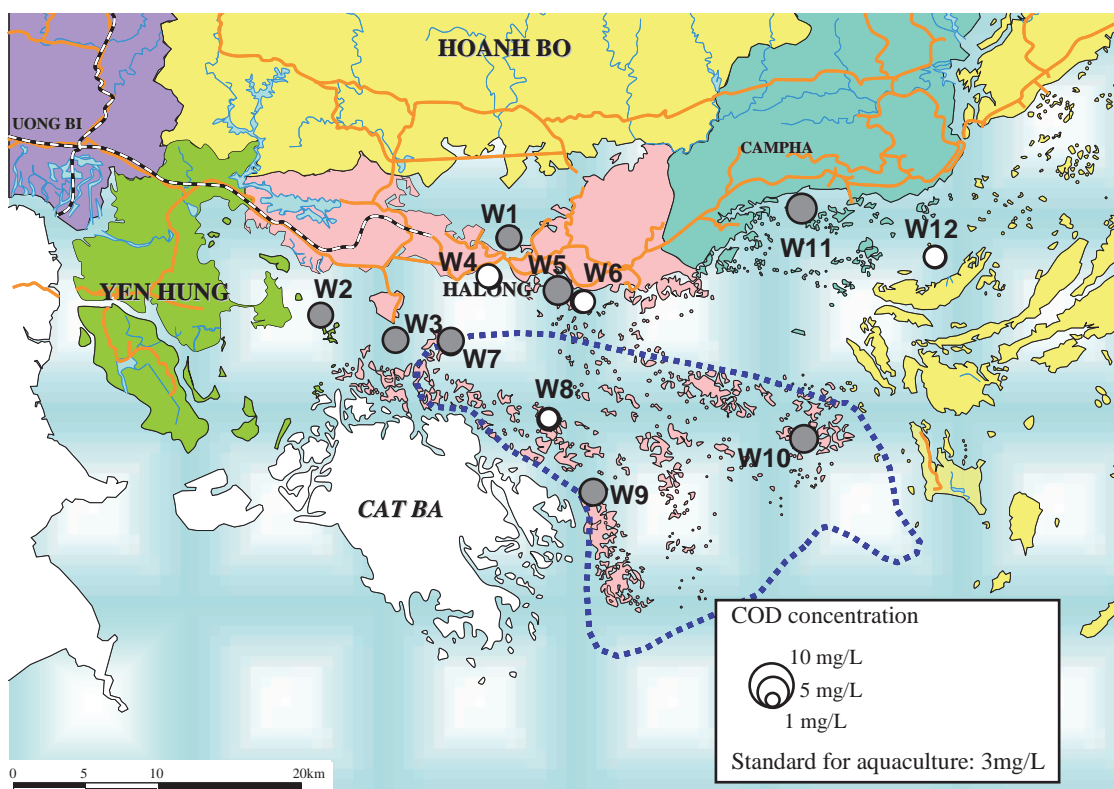
Source: JET

Based on the results, the followings are found.

- (1) It is considered that Halong Bay marine water is affected by organic substances and oil and grease.
- (2) Transparency is small, especially at Thien Cung cave.
- (3) Almost all of oil and grease analytical results were not satisfied with the standard value for bathing.
- (4) The eight (8) of COD analytical results among 12 samples were not satisfied with the standard value for bathing and aquaculture.
- (5) Comparing other sites, impacts on water quality were observed strongly at the Halong Market and Thien Cung cave.

Based on the above funding, the followings are considered.

- (1) Oil and grease impacts were found in overall Halong Bay area, at not only coastal area but also offing area. It is considered that boat operation in the Bay is affected to water quality in Halong Bay.
- (2) Unsatisfied COD concentration with the standards were found at not only coastal area but also offing area related to tourism activities. The impacts of tourism should be cared.
- (3) It is considered that Halong market is serious pollution sources to be controlled.
- (4) At Thien Cung cave, water quality is different from other areas. It is considered that impacts on tourism should be cared.



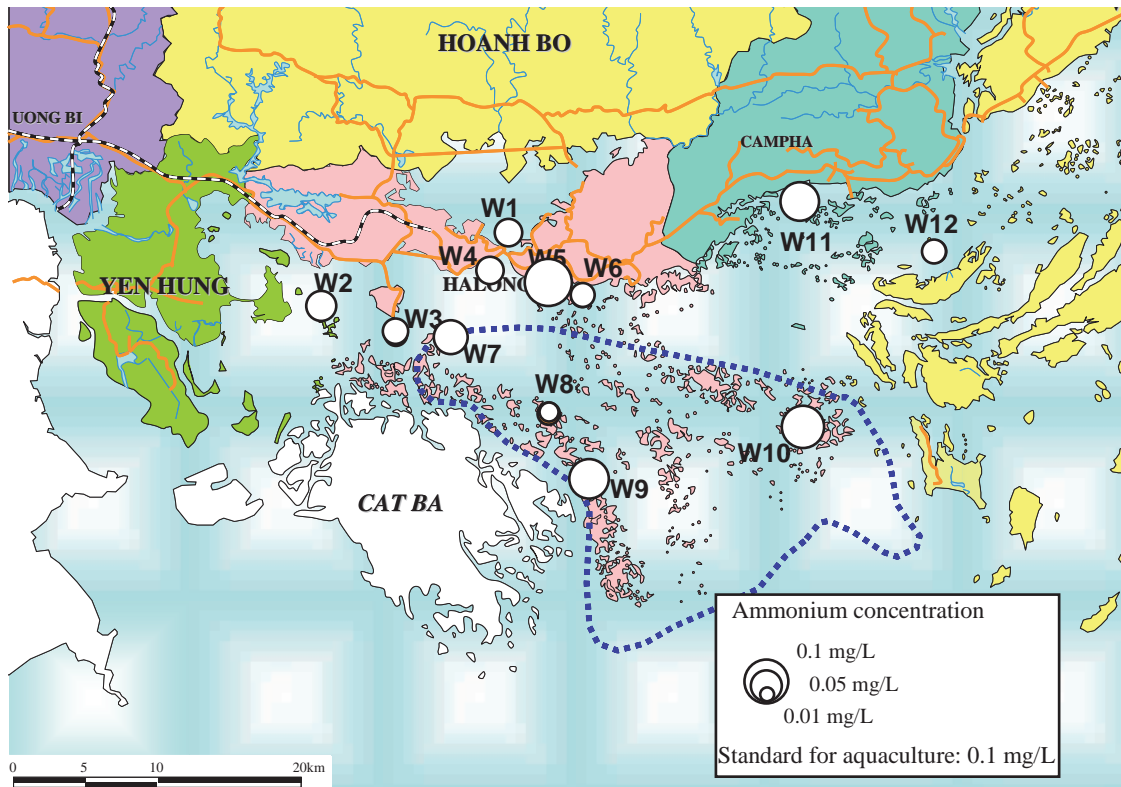
Note: Grey circle means that the COD concentration does not satisfied with the standard.
Source: JET

Figure 1-3 COD Concentration



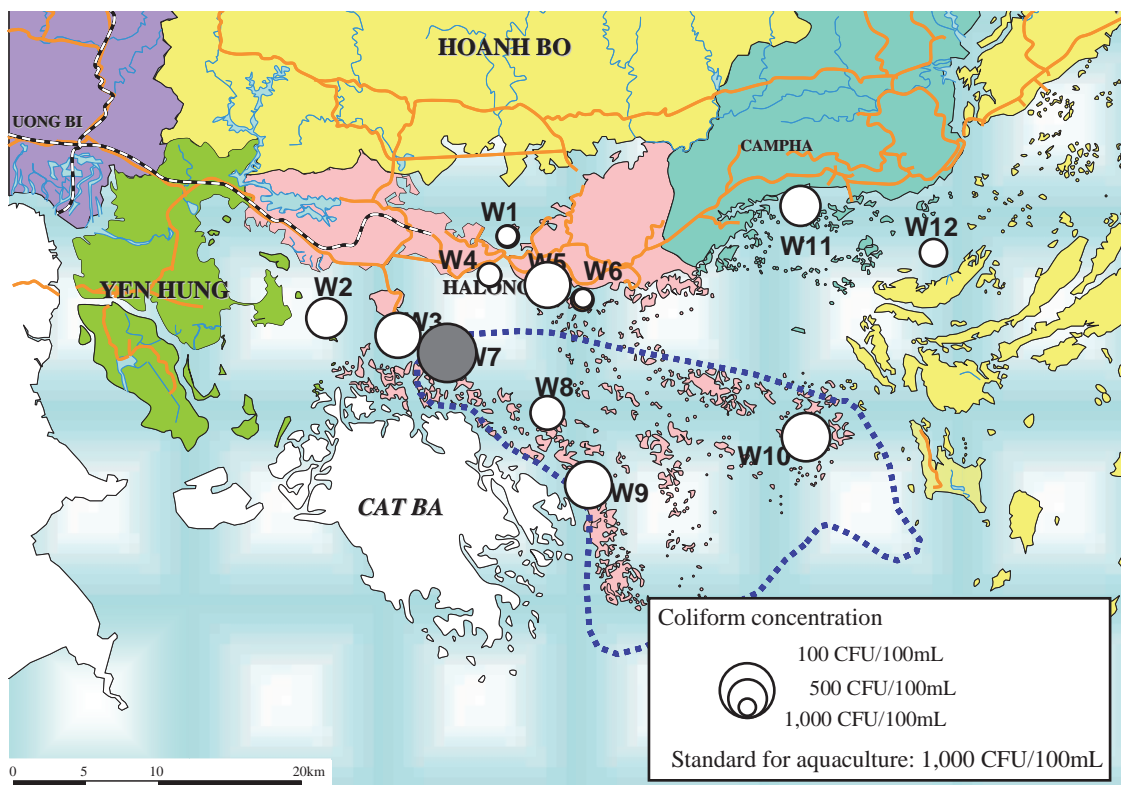
Source: JET

Figure 1-4 Suspended Solid Concentration



Source: JET

Figure 1-5 Ammonium Concentration



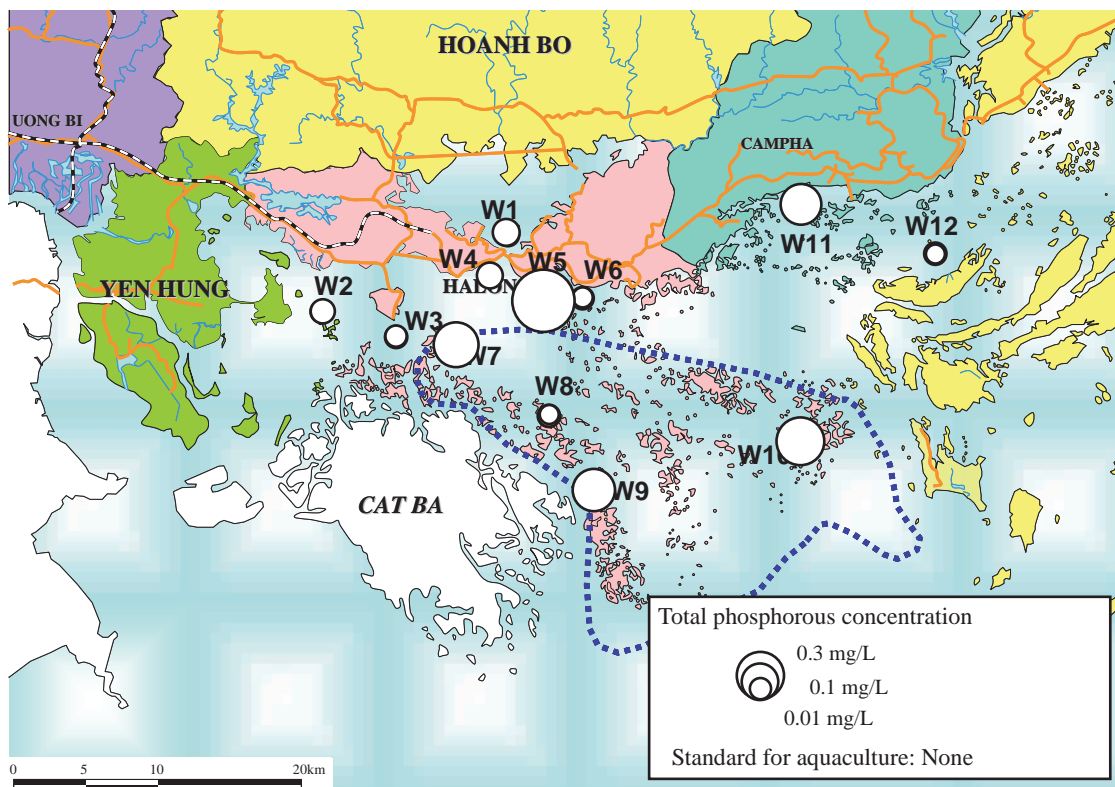
Note: Grey circle means that the coliform concentration does not satisfied with the standard.
Source: JET

Figure 1-6 Coliform Concentration



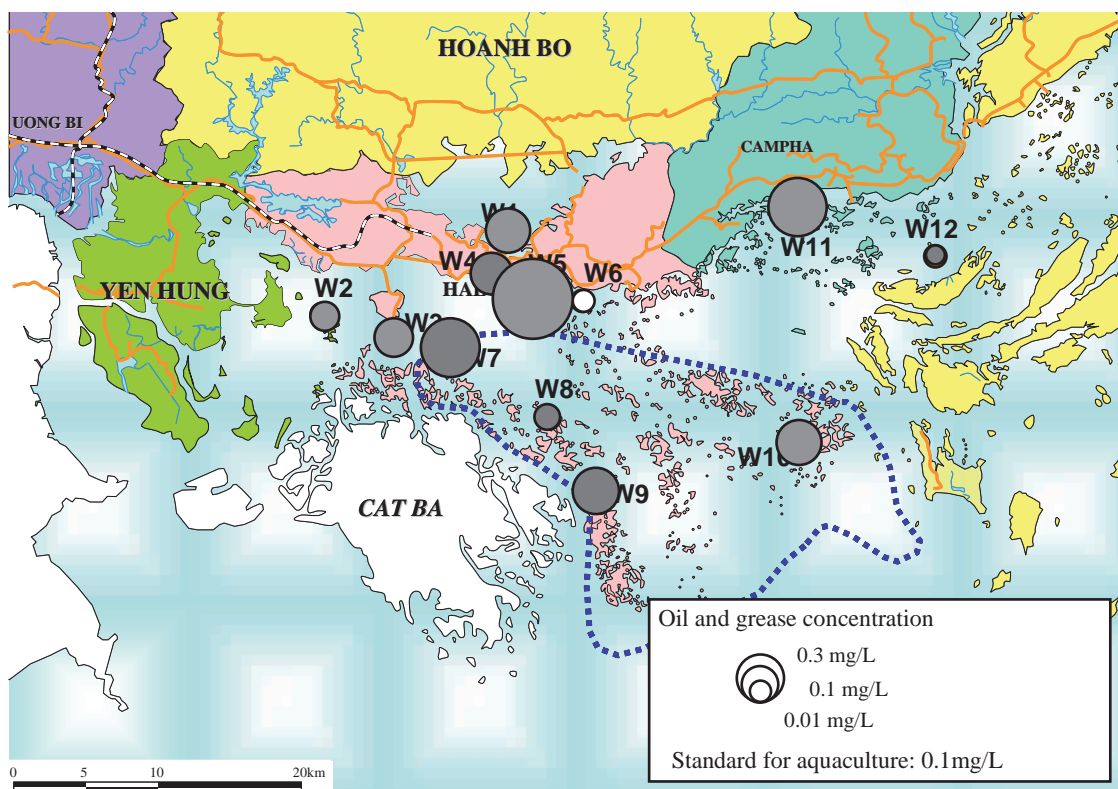
Source: JET

Figure 1-7 Total Nitrogen Concentration



Source: JET

Figure 1-8 Total Phosphorous Concentration



Note: Grey circle means that the oil and grease concentration does not satisfied with the standard.

Source: JET

Figure 1-9 Oil and Grease Concentration in Sea water

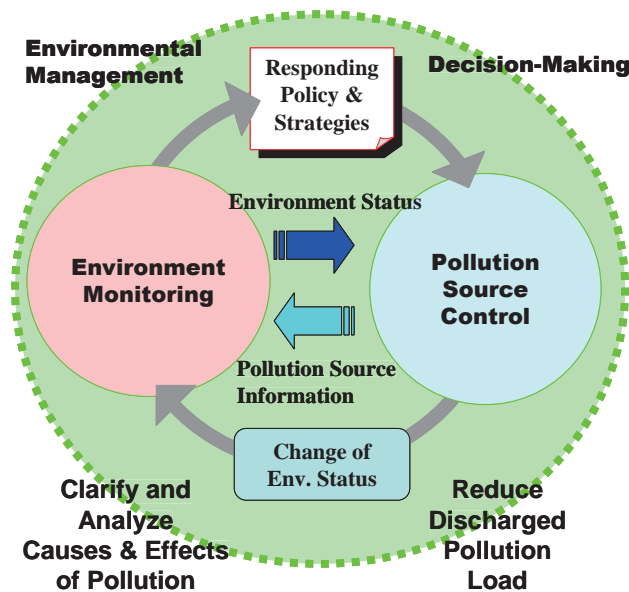
2. Implementation Plan of the Integrated Environmental Monitoring Plan (IEMIP)

The Integrated Environmental Monitoring Plan is examined from October 2010 to February 2011. At the time, EMAC and HBMD, that are actors of water environment monitoring in Halong area has already decided basic framework of water environmental monitoring, and monitoring network in 2011, so WG-1 decided to implement the following work in 2011 as implementation of the Integrated Environmental Monitoring Plan.

- (a) Set objectives, expected participants, and approached of the IEMP,
- (b) Start examination for recommendation on monitoring framework and network in 2012, and
- (c) Share monitored information among Quang Ninh DONRE and HBMD

(1) An Overall Concept of the IEMIP

Based on the discussion in WG-1, the IEMP is expected to develop inter-action between environmental monitoring section and pollution control section as shown in Figure 2-1. After preparation of Quang Ninh Pollution Source database by WG-1, the information of pollution sources will be used for designing water environment monitoring plan. At the same time, monitored information is expected to be used for planning of environmental check and inspection.



Source: JET

Figure 2-1 Inter-action between Environmental Monitoring and Pollution Source Control

(2) Objectives of the IEMP

Based on the discussion with WG-1, the objectives of the Integrated Environmental Monitoring Plan are;

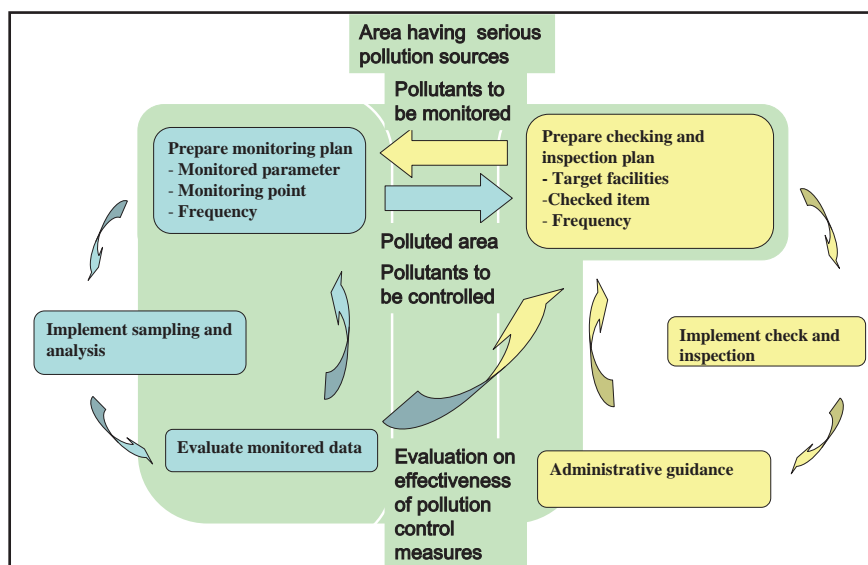
- To grasp status and trends of water environment in Halong Bay for evaluating values of natural resources, and functions for various human activities such as tourism, fishery, and a field of environmental education,
- To grip impact of pollution sources on Halong Bay to evaluating effectiveness of implemented pollution control measures, and preparing strategy of environmental management, and
- To provide required information to support decision-making for wise-use of natural resources in Halong Bay.

(3) Organizations Expected to Participate IEMP

Expected main actors are: a) QN DONRE, b) Environmental Police Department, c) Halong City, Hoanh Bo District, Yen Hung District, and Cam Pha Town, and d) Halong Bay Management Department.

(4) Approaches of IEMP

As mentioned in the 2 (1), the IEMP is expected to contribute to enhancing interaction between water environment monitoring and pollution source control. To enhance interaction, sharing of monitored information is very important among relevant sections. Currently, EMAC prepares water environment monitoring report regularly, so the report is expected to be used for reviewing pollution status of Halong Bay by pollution control section in DONRE, such as the Sub-department of Environmental Protection.



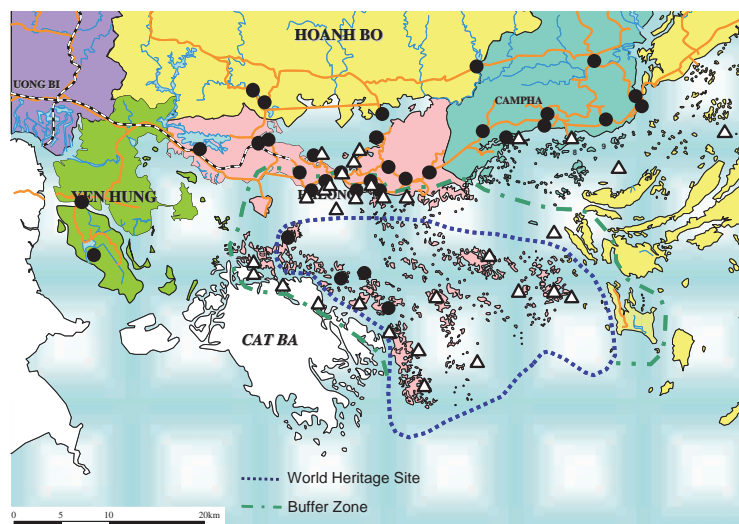
Source: JET

Figure 2-2 Interaction between Environmental Monitoring and Pollution Control

(5) Reviewing Current Water Environment Monitoring Network

1) Current Monitoring Network

Current water environment monitoring network is shown in Figure 2-3. Quang Ninh DONRE monitors (i) Inland pollution sources, (ii) coastal sea water, and (iii) main tourism area in world heritage site. HBMD monitors (i) world heritage site, (ii) buffer zone of heritage site, (iii) main tourism spots, (iv) floating villages, and (v) sea in Bai Tu Long area. Both organizations' monitoring network cover inland area and sea area including world heritage site and its buffer zone, so basically existing monitoring network can be applied for the IEMIP in 2012.



Note: ● Monitoring points by Quang Ninh DONRE ▲ Monitoring points by HBMD

Source: JET

Figure 2-3 Current Water Environment Monitoring Network

2) Facilities and Areas to be Cared for Water Environment Management Selected by WG-1

WG-1 is preparing Quang Ninh Pollution Source Database, and is confirming distribution of pollution

sources. This work is on-going, so preliminary, WG-1 members selected facilities and areas to be cared for water environment management in Halong Bay. The selected pollution sources are shown in Table 2-1. These pollution sources can be categorized as shown below:

- Coal mining related facilities,
- Factories in Cai Lan Industrial park,
- Cement plants,
- Food and beverage industry,
- Shipyard & port,
- Specific facilities, and
- Residential area

Table 2-1 Facilities and Areas to be Cared for Water Environment Management Selected by WG-1

No	Category	Sources of Pollution	Remark
1	Coal mining related facilities	Cua Ong Coal Screening Plant	Screening of coal generates TSS, heavy metals, pH
2		South of Trang Bridge Coal screening Plant	Screening of coal generates TSS, heavy metals
3		Ha Lam Coal Company	TSS, COD, pH, heavy metals.
4		Ha Tu Coal Company	TSS, COD, pH, heavy metals.
5		Trang Bridge Coal screening Plant	Sea water is polluted due to operations of vessels for coal transportation from the Coal screening Plant and from the Wharf of the 170 Military Brigade.
6		Coal mining area affecting to Lo Phong stream towards the Sea	Environment is polluted due to discharging of wastewater from coal mining sites to the Sea
7		Quang Ninh Mine Chemical Company	
8		Area of Dien Vong River (belonging to Ha Khanh Ward)	Water in this area is impacted due to coal mining and transportation, operation of the Quang Ninh Thermal Power Plant, Thang Long Cement Factory.
9	Industrial park	Cai Lan Industrial park	COD, BOD, T-N, T-P, coliform, heavy metals, CxHy, oil
10	Cement plant	Thang Long Cement Plant	TSS
11		Cam Pha Cement Plant	TSS
12		Halong Cement Plant	TSS
13		10/10 Port, Cam Pha Cement Plant	TSS
14	Food & beverage industry	Halong Beer Company	BOD, T-N, coliform, NO3.
15		Restaurant, hotels in Bai Chay area (the wastewater treatment plant is inadequate in capacity)	Domestic wastewater and wastewater from hotels, BOD, coliform, NO3-, PO4, Oil and grease, T-N etc.
16		Halong 1 Market	Waste from Market operation TSS, BOD, COD
17		Sea food Export Company No. 1	Sea food wastewater with coliform, COD, BOD, S2, T-N, T-P
18		Halong Development Joint stock Company for Industrial Prawn Farming – Dong Linh Village, Minh Thanh Commune, Yen Hung District	Sea food wastewater with coliform, COD, BOD, S2, T-N, T-P
19		Tan An Aquaculture Joint stock Company for Industrial Prawn Farming – Tan An Commune, Yen Hung District	-
20		Fish Pond Area (at outlet of the Bai Chay Wastewater Treatment Plant)	Supervision of effluent quality after treatment discharging to the environment
21	Shipyard & port	Halong Shipyard Company	-
22		Shipyard Company belong to VINACOMIN	-
23		Petrol Port No. B12	-
24	Specific facilities	Provincial General Hospital	Pathogenic micro-organisms, BOD, CxHy, T-N, T-P, hazardous chemicals
25		Tuberculosis Hospital K67	-
26		Ha Khanh Thermal Power Plant	-
27		Thermal Power Plant of Cam Pha	-
28		Ha Khau Landfill site, Deo Sen Landfill site	Domestic solid waste, oil, grease, hazardous waste.
29	Residential area	Outlet to the Sea from the Vuon Dao Area, passing the Halong Road (In-front of the Halong Dream Hotel)	Damaging to the Landscape and causing pollution at the Bai Chay Beach
30		Coastal area of Km 5 (Floating restaurant area)	Sea water is at risk of pollution due to business operations of the floating restaurants and domestic wastewater
31		Floating village of Cua Van, Vong Vieng, Cong Dam, Ba Hang; some tourist destinations such as: Dau Go cave, Sung Sot cave	-

No	Category	Sources of Pollution	Remark
32		Reclaimed urban area from Cam Binh to Cam Phu Ward, Domestic wastewater drainage directly to the Sea	-

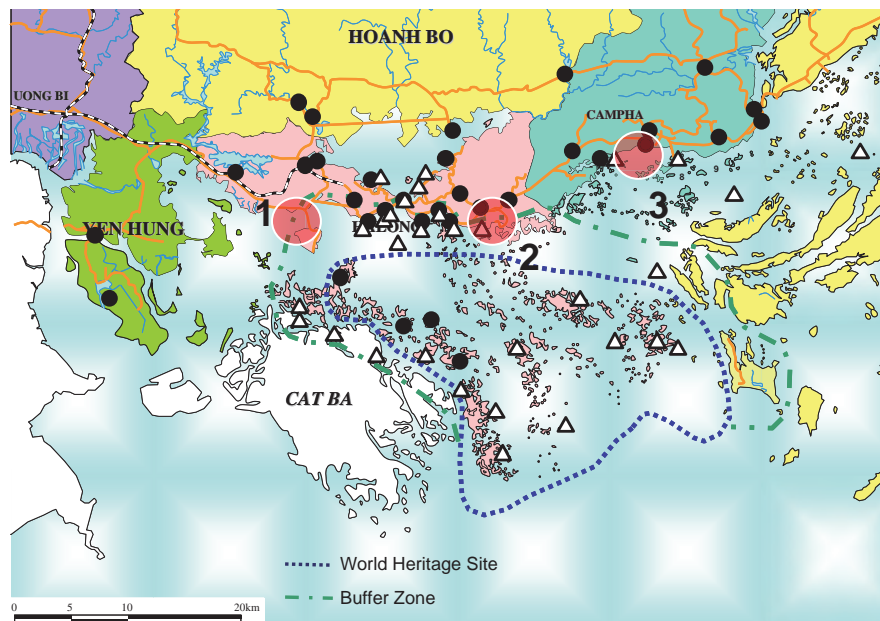
Source: WG-1 and JET

3) Tentative Reviewing of Current Water Environment Monitoring Network

Considering facilities and areas to be cared selected by WG-1 and distribution of existing monitoring points, current water environment monitoring network was reviewed tentatively. As a result of reviewing, the followings were found to be examined:

- Water quality of Lo Phong stream affected by coal mining areas is recommended to be checked.
- Impact of domestic wastewater from Reclaimed urban area from Cam Binh to Cam Phu Ward is recommended to be checked.
- Impact from shrimp firm in Yen Hung district is recommended to be checked.

JET recommends to implement water environment monitoring under the IEMIP in 2012 as tentative monitoring points by Quang Ninh DONRE. Further reviewing of current water environment monitoring network will be carried out in the next phase using information identified by other WGs, such as distribution of important tourism resources identified by WG-3, and proposed land use plan by WG-2.



- Note: ● Monitoring points by Quang Ninh DONRE ▲ Monitoring points by HBMD
1. Water quality of Lo Phong stream affected by coal mining areas is recommended to be checked.
 2. Impact of domestic wastewater from reclaimed urban area from Cam Binh to Cam Phu Ward is recommended to be checked.
 3. Impact from shrimp firm in Yen Hung district is recommended to be checked.

Source: JET

Figure 2-4 Tentative Recommendations on Monitoring Activity in 2012

(6) Monitoring Activities in 2013

In 2011, as mentioned above, EMAC and HBMD has their own monitoring plan, and those can cover all area of coastal zone and offshore area of Halong Bay, so those plan will be utilized, and collected information will be shared.

1) Monitoring Sites

In 2013, monitoring sites will be the planned sites by EMAC of DONRE and HBMD.

2) Monitoring Parameters

In 2013, monitored parameters will be the planned parameters by EMAC of DONRE and HBMD.

3) Monitoring Frequency

In 2013, monitoring frequency will be four times planned by EMAC of DONRE and HBMD.

(7) Recommendation on Additional Monitoring Points in Halong Bay

Based on the water quality monitoring results as attached Attachment-1, the followings are tentatively recommended to enhance the current water quality monitoring network in Halong bay.

- Coastal water along Hung Thang Ward is affected by domestic wastewater from central Halong city area. The area is also core area of tourism industry where many hotels are located. It is recommended to monitor coastal water around this area, especially around discharge point of the Cai Dam lake in Hung Thang ward.
- Tuan Chau island is being developed for promoting tourism industry and constructing new estates. Based on the monitoring result, coastal water quality is already seemed to be affected by human activity. Considering future development in this area, it is recommended to monitor coastal water quality in this area.
- Water of Lo Phang stream is considered to be affected by mining activities in the upstream area of the river. It is recommended to enhance water quality monitoring in coastal area around Lo Phang stream.
- Cam Binh to Cam Phu Wards area is being developed as new urban area. So far, there is no centralized wastewater treatment system, and domestic wastewater is discharged only treated by septic tank or without any treatment. Considering future development in this area, it is recommended to monitor coastal water quality in this area.
- Impact of shrimp farm in Yen Hung district should be monitored.

Considering above mentioned matters, WG-1 will set priority on the above recommendation, and summarize recommendations on monitoring network considering monitoring results, and reflect to the monitoring network in 2013.

Table 2-2 Recommendation on Additional Monitoring Points

No.	Sampling Location	Code	Objectives of Monitoring
1	Aquaculture Area, Minh Thanh Commune, Yen Hung District	NB9	To assess coastal water quality under impacts from aquaculture activities and sources of waste from Yen Hung District
2	Tuan Chau Ferry Area	NB16	To assess coastal water quality in the area receiving waste from tourism and commercials activities of the Tuan Chau Island
3	Buffer Zone in front of Bai Chay Area	NB17	To assess coastal water quality in the area receiving waste from tourism activities, waterways transportation and domestic
4	Coastal of Hung Thang Urban Area	NB18	To assess coastal water quality under impacts from domestic activities of the resident areas
5	Coastal boundary road of Lan Be – Km8, Halong City	NB22	To assess coastal water quality at the buffer zone of Hon Gai – Hong Ha under impacts from domestic waste on land, floating houses and waterways transportation
6	Area receiving water from the Lo Phong stream	NB24	To assess coastal water quality in the area receiving waste from coal mining and domestic

No.	Sampling Location	Code	Objectives of Monitoring
7	Coastal area from the Cam Pha Cement Factory to Vung Duc, at Km 6 Port.	NB26	To assess coastal water quality in the area receiving waste from activities of coal exporting port, coal mining, cement production industry, shipyards, waterways transportation and domestic

Note: Code is the number of sampling points designated by Environmental Monitoring Center of Quang Ninh Province.

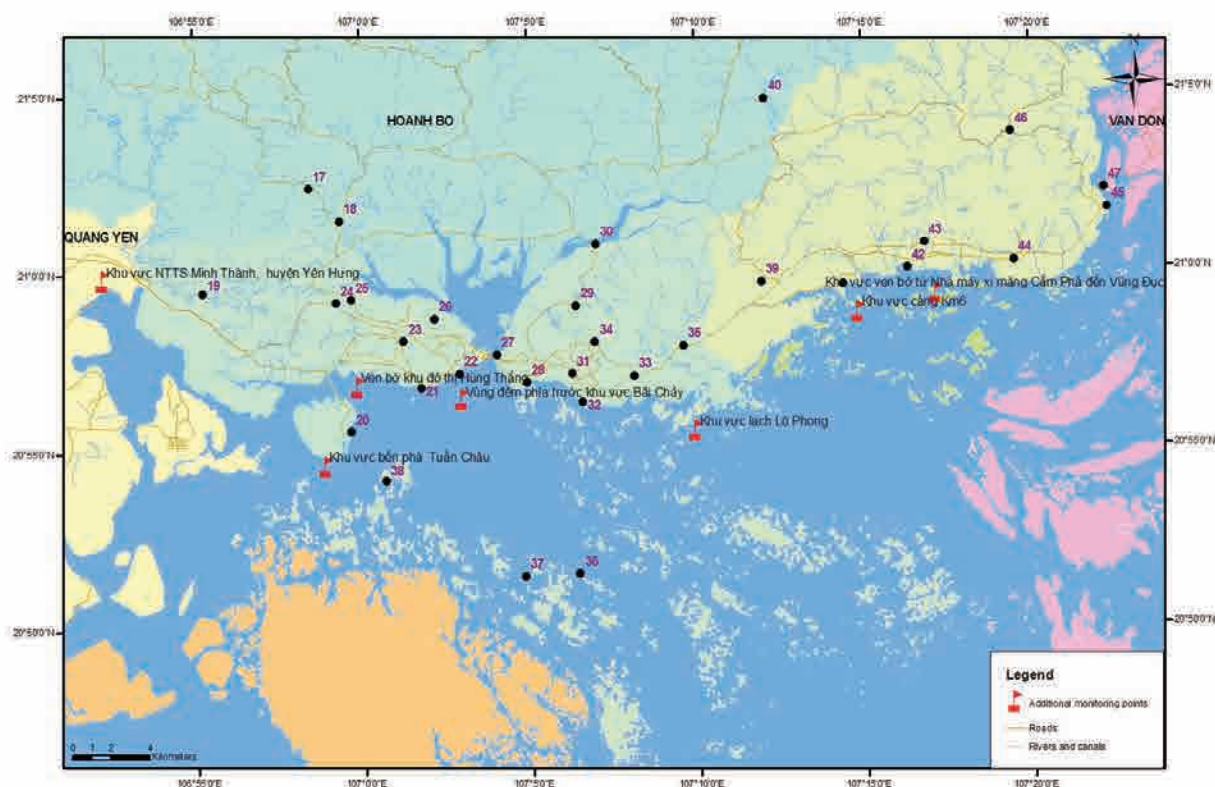


Figure 2-5 Recommendation on Additional Monitoring Points

(8) Initial Discussion on Development of Water Environment Management Database

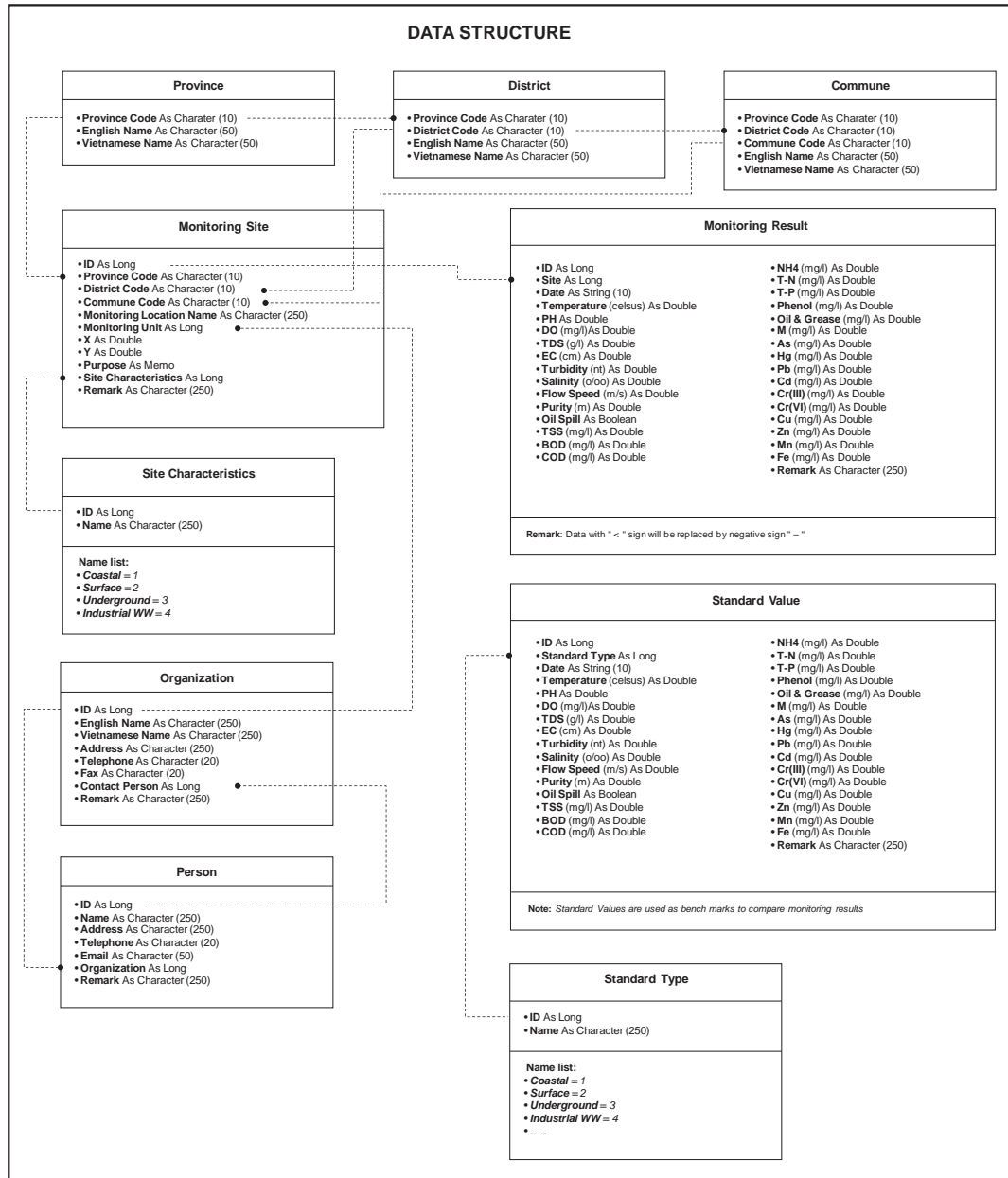
The water quality monitoring has been conducted by a number of the concerned organizations such as DONRE, the Halong Bay Management Department (HBMD), Halong City and district DONREs. At present, data/information coming from different organizations are kept in different units concerned in different places, hampering effective uses of data/information. The development of the database is aiming to achieve an integrated and systematic management of water quality monitoring data, thereby realizing effective and efficient environment management in Quang Ninh Province. Tentative outline of the water environment database is shown in Table 2-3 and Figure 2-4.

Table 2-3 Outline of Water Environment Database (Tentative)

No.	Area	Proposed Measures (Tentative)
1	Concerned organizations	<p>A number of organizations in Quang Ninh Province will use the Database, representatively:</p> <ul style="list-style-type: none"> a) Quang Ninh DONRE b) Halong Bay Management Department c) Halong City DONRE d) District/town DONREs e) Provincial Environmental Police Department <p>Among organizations involved in the environment management, Quang Ninh DONRE is a center player and a main user of the Database.</p>
2	Parameters to be	Parameters designated by

No.	Area	Proposed Measures (Tentative)
	inputted	<ul style="list-style-type: none"> ➢ QCVN 08:2008/BTNMT: National technical regulation on surface water quality ➢ QCVN 09: 2008/BTNMT: National technical regulation on underground water ➢ QCVN 10: 2008/BTNMT: National technical regulation on coastal water quality ➢ QCVN 14: 2008/BTNMT: National technical regulation on domestic wastewater ➢ QCVN 40: 2011/BTNMT: National technical regulation on industrial wastewater
3	Frequency of update of data/information	Data will be updated every quarter of a year.

Source: JET



Source: JET

Figure 2-4 Proposed Data Structure of Water Environment Database (Tentative)

(9) Proposal on Wastewater Management in the Coastal Environmental Protection Corridor

WG-2 is preparing proposals on management of Coastal Environmental Protection Corridor (CEPC). By each area, WG-2 plans to propose activities to avoid impacts from inland to coastal and sea areas of Halong Bay. It is considered that WG-1 can contribute to assisting the activities proposed by WG-2. Outline of the tentative proposed measures are shown in Table 2-4.

Table 2-4 Proposal on Wastewater Management in Coastal Environmental Protection Corridor (CEPC)

No.	Area	Proposed Measures (Tentative)
1	Cam Pha City - urban residential area and mining facilities	In this area, WG-2 recommends to decrease impact by domestic wastewater and control mining facilities. WG-1 can propose the followings. <ul style="list-style-type: none"> ➤ Select mining facilities to be controlled carefully ➤ Prepare inspection plans focusing mining facilities ➤ Provide relevant monitoring results on domestic and mining wastewater
2	Eastern Halong City - urban residential area	In this area, WG-2 recommends to decrease impact by domestic wastewater and control industrial wastewater. WG-1 can propose the followings. <ul style="list-style-type: none"> ➤ Provide list of industries to be focused for industrial wastewater management ➤ Prepare inspection plans on industries to be focused for industrial wastewater management ➤ Provide relevant monitoring results on domestic and industrial wastewater
3	Hoang Bo District - Cua Luc estuary area	In this area, WG-2 recommends to control aquaculture activity. WG-1 can propose the followings. <ul style="list-style-type: none"> ➤ Provide list of main aquaculture companies ➤ Prepare inspection plans focusing on aquaculture ➤ Provide relevant monitoring results on aquaculture
4	Western Halong City - Cai Lan Industrial zone	In this area, WG-2 recommends to decrease impact by domestic wastewater and industrial wastewater from Cai Lan industrial zone. WG-1 can propose the followings. <ul style="list-style-type: none"> ➤ Provide recommendations on wastewater treatment measures on industries which will be operated in Cai Lan industrial zone ➤ Cooperate with industrial management board for controlling industries in Cai Lan industrial zone ➤ Provide relevant monitoring results on domestic and industrial wastewater
5	Western Halong City - Bai Chay international tourism area	In this area, WG-2 recommends to decrease impact by domestic wastewater and tourism activity. WG-1 can propose the followings. <ul style="list-style-type: none"> ➤ Provide relevant monitoring results on domestic wastewater and tourism impacts
6	Quang Yen Town - estuary area	In this area, WG-2 recommends to control aquaculture activity. WG-1 can propose the followings. <ul style="list-style-type: none"> ➤ Provide list of main aquaculture companies ➤ Prepare inspection plans focusing on aquaculture ➤ Provide relevant monitoring results on aquaculture

Source: JET