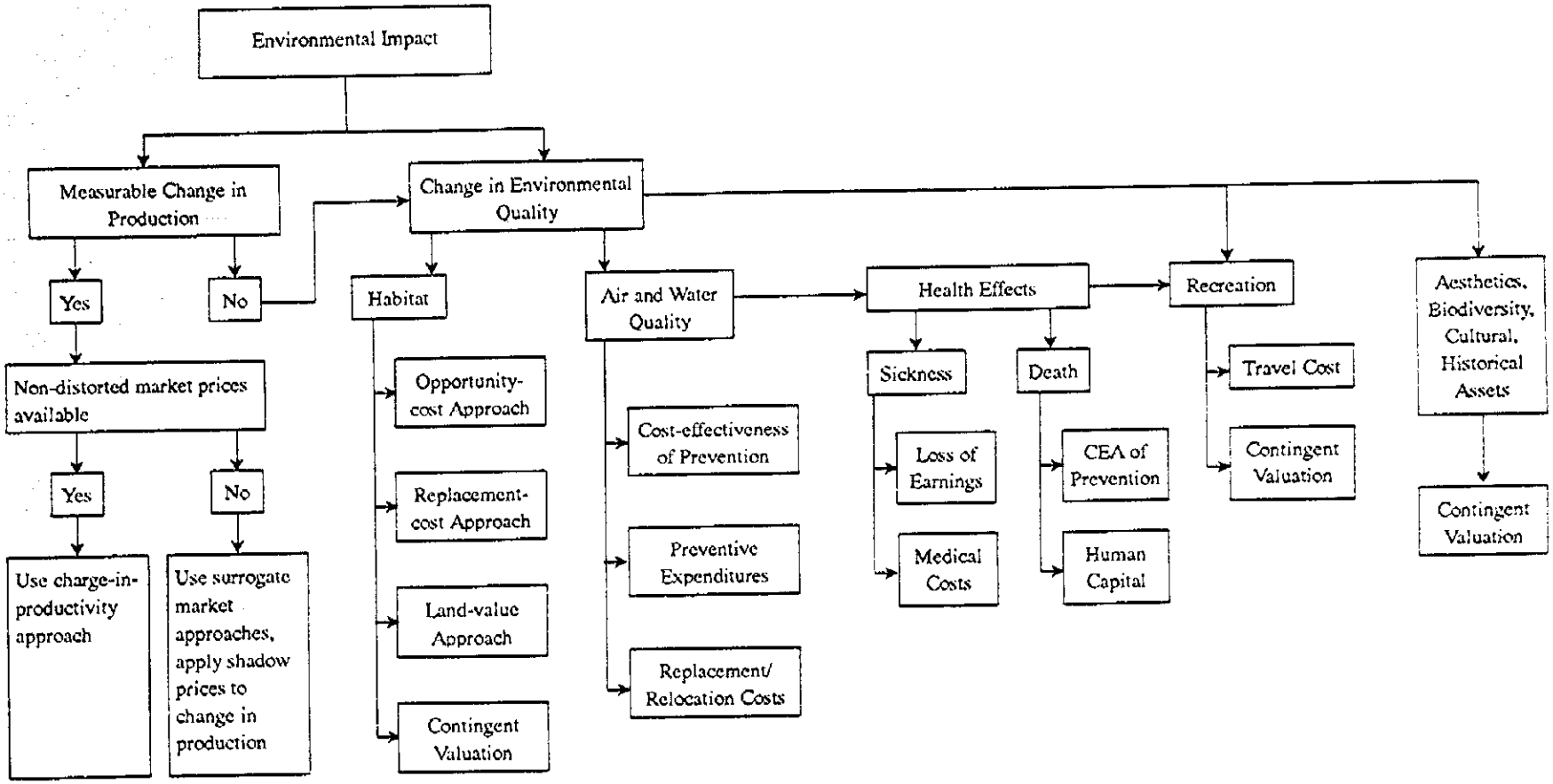
Table 23.3.9 Balance Sheet of EMP

Unit:US$

No.	Year	Total Revenue (1)	O & M Cost (2)	Interest Payment (3)	Repayment (4)	Balance (1)-(2)-(3)-(4)
0	2000	3,072,838	76,000	0	0	2,996,838
1	2001	3,284,944	21,000	32,150	0	3,231,794
2	2002	3,497,051	162,000	84,440	0	3,250,611
3	2003	4,036,057	743,000	182,860	0	3,110,197
4	2004	4,324,391	1,125,000	312,760	0	2,886,631
5	2005	4,612,726	2,350,000	479,610	0	1,783,116
6	2006	5,161,281	2,518,000	579,965	0	2,063,316
7	2007	5,709,836	3,594,000	669,169	0	1,446,667
8	2008	6,258,390	3,937,000	762,977	0	1,558,413
9	2009	6,806,945	4,683,000	890,250	0	1,233,695
10	2010	7,355,500	5,019,000	995,050	0	1,341,450
11	2011	7,355,500	5,006,500	1,039,590	0	1,309,410
12	2012	7,355,500	4,994,000	1,039,590	0	1,321,910
13	2013	7,355,500	4,981,500	1,039,590	0	1,334,410
14	2014	7,355,500	4,969,000	1,039,590	0	1,346,910
15	2015	7,355,500	4,956,500	1,039,590	0	1,359,410
16	2016	7,355,500	4,873,780	1,039,590	0	1,442,130
17	2017	7,355,500	4,791,060	1,039,590	0	1,524,850
18	2018	7,355,500	4,708,340	1,039,590	0	1,607,570
19	2019	7,355,500	4,625,620	1,039,590	0	1,690,290
20	2020	7,355,500	4,542,900	1,039,590	0	1,773,010
21	2021	7,355,500	4,472,680	1,039,590	3,465,300	-1,622,070
22	2022	7,355,500	4,402,460	1,004,937	3,465,300	-1,517,197
23	2023	7,355,500	4,332,240	970,284	3,465,300	-1,412,324
24	2024	7,355,500	4,262,020	935,631	3,465,300	-1,307,451
25	2025	7,355,500	4,191,800	900,978	3,465,300	-1,202,578
26	2026	7,355,500	4,147,280	866,325	3,465,300	-1,123,405
27	2027	7,355,500	4,102,760	831,672	3,465,300	-1,044,232
28	2028	7,355,500	4,058,240	797,019	3,465,300	-965,059
29	2029	7,355,500	4,013,720	762,366	3,465,300	-885,886
30	2030	7,355,500	3,969,200	727,713	3,465,300	-806,713
31	2031	7,355,500	3,924,680	693,060	3,465,300	-727,540
32	2032	7,355,500	3,880,160	658,407	3,465,300	-648,367
33	2033	7,355,500	3,835,640	623,754	3,465,300	-569,194
34	2034	7,355,500	3,791,120	589,101	3,465,300	-490,021
35	2035	7,355,500	3,746,600	554,448	3,465,300	-410,848
36	2036	7,355,500	3,702,080	519,795	3,465,300	-331,675
37	2037	7,355,500	3,657,560	485,142	3,465,300	-252,502
38	2038	7,355,500	3,613,040	450,489	3,465,300	-173,329
39	2039	7,355,500	3,568,520	415,836	3,465,300	-94,156
40	2040	7,355,500	3,524,000	381,183	3,465,300	-14,983
41	2041	7,355,500	3,524,000	346,530	3,465,300	19,670
42	2042	7,355,500	3,524,000	311,877	3,465,300	54,323
43	2043	7,355,500	3,524,000	277,224	3,465,300	88,976
44	2044	7,355,500	3,524,000	242,571	3,465,300	123,629
45	2045	7,355,500	3,524,000	207,918	3,465,300	158,282
46	2046	7,355,500	3,524,000	173,265	3,465,300	192,935
47	2047	7,355,500	3,524,000	138,612	3,465,300	227,588
48	2048	7,355,500	3,524,000	103,959	3,465,300	262,241
49	2049	7,355,500	3,524,000	69,306	3,465,300	296,894
50	2050	7,355,500	3,524,000	34,653	3,465,300	331,547
Total		348,339,960	187,113,000	31,498,776	103,959,000	25,769,184

FIGURE



Source: Dixon and Sherman, Economics of Protected Areas: A New Look at Benefits and Costs, 1990, Island Press

Figure 23.2.1 A Simple Valuation Flowchart to Select Applicable Methods

CHAPTER 24

CHAPTER 24 DEVELOPMENT PROGRAM OF THE MASTER PLAN

24.1 Implementation Schedules

24.1.1 Phased Plan of the EMP

A total of 32 projects and programs (the Projects) were proposed as a long list of the required measures under the EMP. To implement the Projects systematically and steadily, a stepwise implementation schedule, namely a phased plan, is required. Considering necessary time of capacity building for the implementation of the Projects such as preparation of financial, technical, and human resources, and the consistency and linkage with the planned socioeconomic development, a plan with three phases was proposed as follows:

- Phase I : commencement period of the Projects with a high priority and other urgent ones (year 2000 to 2002).
- Phase II : commencement period of the Projects which need preparation time for capacity building, and which proposed mainly against the development projects scheduled to be implemented at the middle term of HLMP (year 2003 to 2006).
- Phase III : commencement period of the Projects proposed mainly against the development projects scheduled to be implemented at the later term of HLMP (year 2007 to 2010).

These phases can be utilized for not only development of implementation schedules but also for checking the progress of the Projects.

24.1.2 Implementation Schedules

Corresponding to the phases set above, the implementation schedules of the Projects were developed. The urgency was taken into consideration for allocating the Projects to Phase I. Namely the Projects proposed against the current environmental problems need to be commenced soon, by the year 2000 or at least 2002. The environmental plans for coal mining and tourism, which are guideposts

of the relating projects, are also to be commenced soon. In addition, the Projects of the reinforcement of ongoing measures can be commenced at an early phase because they do not need a long preparation time. As for the others, they are allocated to Phases II and III based on the phased plan.

The developed implementation schedules of the Projects are shown in Table 24.1.1. In these schedules, the stage classification such as design, equipment procurement, construction, training, and O&M were incorporated as shown in the patterned bar charts in the table.

It must be noted that the restoration of the sound environment after degradation is always much more costly than the prevention. Therefore, the commencement of the Projects on schedule is strongly recommended.

24.2 Investment Program

The yearly costs of the Projects of the EMP were calculated for each of them, and then investment program was developed. The developed investment schedule of the EMP is shown in Table 24.2.2, including their O&M costs during 2000 to 2010. The total investment costs from 2000 to 2010, consisting of those for design, construction, and equipment procurement, will be about US$ 141.4 million, and about US$ 12.9 million per year on average. As the target year of 2010, the annual O&M cost will be about US$ 5.0 million. The average yearly O&M cost during 2000 to 2010 will be about US$ 2.4 million.

The investment schedule during 2000 to 2010 by phased plans is given in the table below:

Investment Schedule by Phased Plans (2000-2010)

(Unit:USx10^5$)

Items	Phase I (2000-2002)	Phase II (2003-2006)	Phase III (2007-2010)	Total (2000-2010)
Investment	27.7	65.1	48.6	141.4
O&M	1.6	7.6	17.2	26.4
Total	29.3	72.7	65.8	167.8

It is important to note that O&M costs will still need to be covered after the target year 2010 to implement the EMP continuously as discussed in Chapter 22.

24.3 Priorities of Projects and Programs

Some of the Projects need to be commenced more urgently and certainly in order to achieve the goals set in the EMP. Thus, priorities of the Projects for actual implementation of the EMP were examined. For this, three ranked points, 1 to 3, were put on the each project and program from the viewpoint of their urgency (urgency points), effectiveness (effectiveness points), and location (location points). The methods for scoring the Projects are as follows:

- Urgency points : The Projects to be commenced urgently are scored 3, rather urgently 2, and little urgently 1.
- Effectiveness points : The Projects and programs have relatively high effectiveness are scored 3, medium 2, and small 1.
- Location points : The Projects in SCZ (the World Heritage core area) and vicinity are scored 3, its' neighbor 2, and distance place from SCZ 1.

The Projects were largely divided into three groups: high, medium, and low priorities according to their scores. The results of scoring and allocated priorities are shown in Table 24.3.1. The Projects scored higher were selected as priority projects and programs. The priority projects and programs are listed below and descriptions of them are given in Table 24.3.2. The implementation of Feasibility Study (F/S) or Basic Design (B/D) is required for the next step.

Selected Priority Projects and Programs

No.*	Priority Projects and Programs
3	Bac Dang Wastewater Treatment Plant Construction Project
15	Pilot Rehabilitation Project on Coal Mining Area
22	Tourism Area Sanitation Improvement Project (Phase 1)
26	Mangrove Swamps Rehabilitation Project
29	Environmental Monitoring Program
32	Visitor Center Construction Project

Note: * Project Nos. in the EMP.

TABLES

Table 24.1.1 Implementation Schedules for Projects and Programs of the EMP

Category	Type	No.	Name of Projects/Programs	Phase I			Phase II				Phase III			
				2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Sanitation Measures	Domestic Wastewater Management	1	Doa Dien WWTP											
			Dong Dang Area (wastewater collection and convey system)											
		2	Dao Sen WWTP											
		③	Bach Dang WWTP											
		4	Cam Pha WWTP											
	Industrial Wastewater Management	5	Cai Lan WWTP (wastewater collection and convey system)											
		6	Honh Bo WWTP (wastewater collection and convey system)											
		7	Lang Bang WWTP											
	Domestic Solid Wastes Management	8	Procurement of Solid Wastes Collection Vehicles and Equipment											
		9	Extension of Quang Hanh Landfill Site											
		10	Clinical Solid Wastes Incinerator											
	Industrial Solid Wastes Management	11	Procurement of Solid Wastes Collection Vehicles and Equipment											
		12	Extension of Landfill Sites											
		13	Hazard Solid Wastes Incinerator											
Measures for Mining		14	Development of Environmental Plan for Mining											
		⑮	Pilot Project on Environmental Rehabilitation											
		16	Environmental Measures for Mine Wastewater											
		17	Environmental Measures for Coal Processing Plants											
		18	South Deo Nai Dumping Site Rehabilitation											
		19	Environmental Rehabilitation of River Basins											
		20	Dredging											
Measures for Tourism		21	Development of Environmental Plan for Tourism											
		㉒	Improvement of Sanitation Condition-Phase1											
		23	Improvement of Sanitation Condition-Phase2											
		24	Reinforcement of Patrolling Capability for Tourism Activities											
Measures for Environmental Resources		25	Reforestation in Bare Area											
		㉖	Rehabilitation of Mangrove Swamps											
		27	Fishing Activity Management Program											
		28	Measures for Landscape (Landscape Management Guideline) (Reinforcement of Patrolling Capability for Shipping Activities)											
Environmental Monitoring		㉙	Environmental Monitoring (water quality and environmental resources)											
		30	Environmental Inspection											
Institutional Development		31	Reinforcement of Environmental Management Capability											
		㉜	Establishment of Visitor Center											

Note: 1) ▭ Design, ▬ Construction, ▨ Equipment Procurement, ▭ Operation and Maintenance (O&M) or Training
2) ○ means priority project.

Table 24.2.1 Investment Schedules for Projects and Programs of the EMP

Unit:US$x10³

Category	Type	No.	Name of Projects/Programs	Stage	Phase I			Phase II				Phase III				Total
					2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	
Sanitation Measures	Domestic Wastewater Management	1	Dan Dien WWTP	Design & Construction			2,000	3,500	3,500			2,482	3,000			14,482
				O&M						200	200	200	250	250	250	1,350
			Dong Dang Area (wastewater collection and conveyance system)	Design & Construction				2,500	3,600	3,945	4,000					14,045
				O&M								200	200	443	443	1,286
		2	Deo Sen WWTP	Design & Construction			3,000	5,600	5,600			6,000	6,583	7,000		33,783
				O&M						420	420	420	420	580	580	3,120
		③	Poch Dang WWTP	Design & Construction	1,000	1,800	1,800				1,000	2,294	2,294			10,188
				O&M				90	90	90	90	90	90	200	201	941
		4	Cam Pha WWTP	Design & Construction					2,000	2,300	2,552					6,852
				O&M								158	158	158	158	632
			Subtotal	Design & Construction	1,000	1,800	6,800	11,600	14,700	6,245	7,552	8,294	11,359	10,000	0	79,350
				O&M	0	0	0	90	90	750	780	1,338	1,176	1,637	1,638	7,359
	Industrial Wastewater Management	5	Cai Lan WWTP (wastewater collection and conveyance system)	Design & Construction	1,300	1,602						1,200	1,602			5,664
				O&M			80	80	80	80	80	124	160	160	160	1,004
		6	Hoanh Bo WWTP (wastewater collection and conveyance system)	Design & Construction						1,200	1,602			1,200	1,602	5,604
				O&M								251	251	251	251	1,004
		7	Long Bang WWTP	Design & Construction						600	865					1,465
				O&M								63	63	63	63	252
			Subtotal	Design & Construction	1,300	1,602	0	0	0	1,800	2,467	1,200	1,602	1,200	1,602	12,613
				O&M	0	0	80	80	80	80	80	438	474	474	474	2,260
	Domestic Solid Wastes Management	8	Procurement of Solid Wastes Collection Vehicles and Equipment	Equipment Procurement				801	801	801	801	801	801	801	801	6,408
				O&M					165	192	224	262	306	357	417	1,923
		9	Extension of Quang Hanh Landfill Site	Design & Construction				1,000	1,723							2,723
				O&M					135	158	185	216	252	294	343	1,583
		10	Clinical Solid Wastes Incinerator	Design & Construction		407	500									907
				O&M				29	32	35	38	39	39	39	39	290
			Subtotal	Design & Construction	0	407	500	1,801	2,524	801	801	801	801	801	801	10,038
				O&M	0	0	0	29	332	385	447	517	597	690	799	3,796
	Industrial Solid Wastes Management	11	Procurement of Solid Wastes Collection Vehicles and Equipment	Equipment Procurement				196	196			400	400			1,192
				O&M				18	23	31	41	55	81	120	129	498
		12	Extension of Landfill Sites	Design & Construction			270									570
				O&M				17	22	29	39	52	76	112	121	468
		13	Hazard Solid Wastes Incinerator	Design & Construction				450	911							1,361
				O&M						51	65	83	106	146	173	624
			Subtotal	Design & Construction	0	270	300	646	1,107	0	0	400	400	0	0	3,123
				O&M	0	0	0	35	45	111	145	190	263	378	423	1,590
Measures for Mining		14	Development of Environmental Plan for Mining	Design	202	374	259				86					921
																0
		⑮	Pilot Project on Environmental Rehabilitation	Design & Construction	675	727	261									1,663
				O&M				38	40	44	44					166
		16	Environmental Measures for Mine Wastewater	Design & Construction				58	360	720	720					1,858
				O&M								90	90	90	90	360
		17	Environmental Measures for Coal Processing Plants	Design & Construction		58	58	53	53							224
				O&M						226	238	250	250	250	250	1,464
		18	South Deo Nai Dumping Site Rehabilitation	Design & Construction		144	2,736									2,880
				O&M				62	62	62	62	62	62	62	62	496
		19	Environmental Rehabilitation of River Basins	Design & Construction		173	173	997	1,034	1,028	958	861	898	1,130	976	8,228
				O&M				133	171	311	381	443	528	608	711	3,292
		20	Dredging	Design & Construction	1,315	1,315	1,315	1,315	1,315	1,315	1,075	1,075	1,075	1,075	1,075	13,265
																0
			Subtotal	Design & Construction	2,192	2,791	4,802	2,423	2,764	3,063	2,839	1,936	1,973	2,205	2,051	29,039
				O&M	0	0	0	233	273	643	725	853	930	1,010	1,113	5,778
Measures for Tourism		21	Development of Environmental Plan for Tourism	Design	50						25					75
																0
		㉓	Improvement of Sanitation Condition-Phase1	Design & Procurement	29	241	241									511
				O&M				125	125	125	125	125	125	125	125	1,000
		23	Improvement of Sanitation Condition-Phase2	Design & Construction				14	176	224	257					671
				O&M								108	108	108	108	432
		24	Reinforcement of Patrolling Capability for Tourism Activities	Design & Procurement			67		32		32		32		32	195
				O&M				60	73	85	98	110	124	136	149	835
			Subtotal	Design & Construction	79	241	308	14	208	224	314	0	32	0	32	1,452
				O&M	0	0	0	185	198	210	233	343	357	369	382	2,767
Measures for Environmental Resources		25	Reforestation in Bare Areas	Construction		122	124	135	125	125	155	155	150	150	150	1,381
				O&M				5	6	10	10	12	13	14	16	86
		㉖	Rehabilitation of Mangrove Swamps	Design & Construction	92	81	81	88	81	81	81	88	81	81	81	916
				O&M				8	10	11	12	13	16	17	18	105
		27	Fishing Activity Management Program	Equipment Procurement		32										32
				O&M		6	6	6	6	7	7	7	7	7	7	66
		28	Measures for Landscape (Landscape Management Guideline)	Design		50						25				75
																0
			(Reinforcement of Patrolling Capability for Shipping Activities)	Equipment Procurement				32								32
				O&M				4	4	5	5	5	5	5	5	38
			Subtotal	Design & Construction	92	285	205	245	266	206	236	268	231	231	231	2,436
				O&M	0	6	6	23	26	33	34	37	41	43	46	295
Environmental Monitoring		㉙	Environmental Monitoring (water quality and environmental resources)	Equipment Procurement	30			79	24	108	90					331
				Monitoring	72	11	32	24	37	64	40	23	42	25	87	457
		30	Environmental Inspection	Equipment Procurement	30							30				60
				Inspection	4	4	4	4	4	4	4	7	7	7	7	56
			Subtotal	Design & Construction	60	0	0	79	24	108	90	30	0	0	0	391
				O&M	76	15	36	28	41	68	44	30	49	32	93	513
Institutional Development		31	Reinforcement of Environmental Management Capability	Equipment Procurement	134					74					74	282
				Training	350	572	432	22	391	11	412	10	10	10	10	2,250
		㉝	Establishment of Visitor Center	Design & Construction	300	235	2,236									2,671
				O&M			40	40	40	40	40	40	40	40	40	360
			Subtotal	Design & Construction	334	235	2,236	0	0	74	0	0	0	0	74	2,953
				O&M	350	572	472	62	431	51	452	50	50	50	50	2,610
Total		Design & Construction + Equipment Procurement			4,957	7,631	15,151	15,806	21,533	12,521	14,239	12,929	16,395	14,437	8,791	141,395
		O&M + Training			426	593	614	765	1,516	2,361	2,930	3,594	3,937	4,683	5,619	26,438
		Grand total (Design & Construction + Equipment Procurement + O&M + Training)			5,383	8,224	15,765	17,573	23,049	14,882	17,169	16,523	20,335	19,120	9,810	167,833

Note: ⊙ means priority projects.

Table 24.3.1 Selection of Priority Projects and Programs

Type	No.	Project/Program Name	Urgency (1)	Effectiveness (2)	Location (3)	Total Score (1)+(2)+(3)	Priority
Domestic wastewater	1	Don Dien WWTP	2	3	2	7	Medium
	2	Deo Sen WWTP	2	3	2	7	Medium
	③	Bach Dang WWTP	3	3	2	8	High
	4	Cam Pha Area WWTP	1	1	1	3	Low
Industrial wastewater	5	Cai Lan WWTP	2	3	1	6	Medium
	6	Hoanh Bo WWTP	1	3	1	5	Medium
	7	Lang Bang WWTP	1	1	1	3	Low
Domestic solid wastes	8	Collection Equipment	1	2	2	5	Medium
	9	Quang Hanh Landfill Extension	1	2	2	5	Medium
	10	Clinical Wastes Incinerator	1	1	1	3	Low
Industrial solid wastes	11	Collection Equipment	1	2	1	4	Low
	12	Extension of Landfill Sites	1	2	1	4	Low
	13	Hazard. Wastes Incinerator	1	1	1	3	Low
Mining	14	Environmental Plan	1	1	1	3	Low
	⑮	Pilot Project on Rehabilitation	3	3	2	8	High
	16	Mine Wastewater	3	2	2	7	Medium
	17	Processing Plants	3	2	2	7	Medium
	18	South Deo Nai Dumping Site	3	2	2	7	Medium
	19	Rehabilitation of River Basins	2	3	2	7	Medium
	20	Dredging	1	2	1	4	Low
Tourism	21	Environ. Manage. Plan	1	3	-	4	Low
	㉒	Improvement Sanitation-Phase1	3	2	3	8	High
	23	Improvement Sanitation-Phase2	1	2	3	6	Medium
	24	Reinforce. Patrolling Capability	1	1	3	5	Medium
Environmental Resources	25	Reforestation in Bare Area	2	2	2	6	Medium
	㉖	Rehabilitation of Mangrove	2	3	3	8	High
	27	Fishing Activity Management	1	1	3	5	Medium
	28	Measures for Landscape	1	1	3	5	Medium
Monitoring	㉙	Environ. Monitoring	3	3	3	9	High
	30	Environ. Inspection	2	2	3	7	Medium
Institutional Development	31	Reinforce. Manage. Capability	2	3	1	6	Medium
	㉜	Establishment of Visitor Center	3	3	2	8	High

Note: (1) Urgency point: projects and programs to be commenced urgently scored 3, rather urgently 2, little urgently 1.
(2) Effectiveness point: projects and programs have relatively high effectiveness are scored 3, medium 2, and small 1.
(3) Location point: projects and programs in SCZ and its vicinity are scored 3, neighborhood 2, distant place 1.
Projects and programs with more than eight points were selected high priority projects and programs.

Table 24.3.2(1) Description of Priority Projects and Programs

1. Project Title	Bach Dang Wastewater Treatment Plant Construction Project
2. Location	Hong Gai quarter, Ha Long city, Quang Ninh Province, Vietnam.
3. Implementation Agency	Vietnam, Quang Ninh province, Department of Construction (DOC)
4. Objectives	(1) To treat domestic, and industrial and markets wastewater in southern area of Hong Gai quarter in Ha Long city. (2) To improve sanitation conditions in Hong Gai quaeter.
5. Expected Effects	(1) Reduction of pollution loads into the bays (2) Improvement of water quality in the bays (3) Improvement of sanitation conditions in the sewered area.
6. Project Costs	US$ 11.1 million (for design, construction, and O&M during 2003-2010)
7. Implementation Schedule	1st Phase Design: 1 year: (Year 2000) Construction: 2 years (Year 2001-2002) O&M: from Year 2003 2nd Phase Design: 1 year: (Year 2006) Construction: 2 years (Year 2007-2008) O&M: from Year 2009

Main Components of the Project

Since domestic wastewater together with industrial and commercial wastewater runs into the bay without appropriate treatment, the contaminated water can be found nareshore areas especially densely populated area in Hong Gai. The present sanitation conditions are unsatisfactory too. In many cases onsite sanitation facilities are poorly constructed and septage is often disposed of unhygienic and unacceptable methods. To cope with these situations, Bac Dang wastewater treatment plant is proposed by using planed drainage improvement project by the first stage of the Ha Long City Water Supply and Sanitation Project. The main components of the project are as follows:

(1) *Wastewater treatment plant*: Sequencing Bach Reactor (60,000 people in 2010)
(2) *Main collectors including pump stations*: total length 9 km
(3) *Interceptor sewers and structure*
(4) *Local sewerage in new and existing development*

Table 24.3.2(2) Description of Priority Projects and Programs

1. Project Title	Pilot Rehabilitation Project on Coal Mining Area
2. Location	Cam Pha Town, Quang Ninh Province, Vietnam. (Highly disturbed area in Mong Duong river basin)
3. Implementation Agency	VINACOAL Quang Ninh province, Department of Science, Technology and Environment (DOSTE)
4. Objectives	To foster working experiences in designing and implementing the environmental rehabilitation
5. Expected Effects	Development of practical, working experiences in designing and implementing environmental rehabilitation technologies including revegetation, drainage improvement for runoff control, and mine wastewater treatment
6. Project Costs	US$ 1.8 million (for design, construction, and O&M during 2003-2006)
7. Implementation Schedule	Design: 1.5 year (Year 2000-2001) Construction: 1.5 year (Year 2001-2002) O&M: 4.0 year (Year 2003-2006)

Main Components of the Project

The project aims at providing the Vietnamese professionals with opportunities for practical technology testing and hands-on experiences in mine sites rehabilitation under directions of international mining and/or environmental experts. The following studies are proposed.

(1) *Slope Control*: For the terrain where erosion is intense, contour banking, surface roughing, slope diks and other measures are tested.
(2) *Drainage Improvement*: Constructions of drainage channels and downdrains (total channel length 11,000 m), temporary check dams, and a permanent erosion control dam.
(3) *Mine Wastewater Treatment*: Treatment of mine wastewater to the Industrial Wastewater Discharge Standard, TCVN5945-1995, improvement of pumping systems, pre-treatment, pH adjustment (anoxic limestone drain or similar system).
(4) *Revegetation*: Permanent vegetation (50 ha) with acacia, eucalyptus, pine, and indigenous species. Temporary revegetation with shrub and grass (50 ha): Ghine grass, vetiver and indigenous species.

Table 24.3.2(3) Description of Priority Projects and Programs

1. Project Title	Tourism Area Sanitation Improvement Project - Phase 1
2. Location	Ha Long City, Quang Ninh Province, Vietnam. (World Heritage Area)
3. Implementation Agency	Ha Long Bay Management Board (HLMB) Ha Long City Sanitation Company
4. Objectives	(1) Essentially 100 % recovery of tourism-related wastewater from tourism boats and islands by 2010 (2) Essentially 100 % recovery of tourism-related solid wastes from tourism boats and islands by 2010 (These objectives will be achieved in 2 phases)
5. Expected Effects	(1) Establishment of wastewater collection system (mobile and stationary stations) (2) Installation of 8 toilets at major tourism islands (3) Encouragement of solid waste collection by boat operators (4) Collection of solid wastes from islands by 2 dedicated boats
6. Project Costs	US$ 1.5 million (for design, construction, and O&M during 2003-2010)
7. Implementation Schedule	Design: 1 year (Year 2000) Construction: 2 year (Year 2001-2002) O&M: from Year 2003

Main Components of the Project

The improvement of sanitary conditions on tourism boats, and in and around tourism islands will be achieved in 2 phases. This is the Phase-1, and mainly focus on the existing tourism facilities and islands (Sung Sot Cave, Soi Sim Beach, Me Cung Sea Park, Trang Luoi Liem Beach, Ngoc Vung Beach, and others). The main components of Phase-1 project are as follows:

(1) *Wastewater Collection from Tourism Boats and Islands*: Procurement of 6 boats (mobile stations) for collection of wastewater from tourism boats and islands, procurement of 2 pumping stations (stationary stations) at convenient wharves to pump up wastewater to public sewer system, installation of 8 toilets throughout major tourism islands; collection of used oil.

(2) *Solid Wastes Collection from Tourism Boats and Islands*: Procurement of 2 boats for collection of solid wastes from islands including floating solid wastes.

Table 24.3.2(4) Description of Priority Projects and Programs

1. Project Title	Mangrove Swamps Rehabilitation Project
2. Location	Hoanh Bo district, and Yen Hunng district, Ha Long City, Cam Pha Town, Quang Ninh Province, Vietnam.
3. Implementation Agency	Quang Ninh province, Department of Agriculture and Rural Development (DARD)
4. Objectives	(1) To conserve area of tidal flats covered by mangrove (mangrove swamps) about 4,000ha in 2010 (2) To keep mangrove swamps in good conditions
5. Expected Effects	Improvement of water quality purification capacity, provision of nursery grounds for aquatic and intertidal lives, and improvement of aesthetic values.
6. Project Costs	US$ 1.0 million (for design, construction, and O&M during 2003-2010)
7. Implementation Schedule	Design: 1 year (Year 2000) Construction: 9 years (Year 2001-2010) O&M: from Year 2003

Main Components of the Project

Since the mangrove swamps in the Ha Long bay area have degraded seriously, their functions such as water purification, nursery grounds for aquatic and intertidal lives, and improvement of aesthetic values. The rehabilitation consists of bed preparation and tree planting including design. The main components of the project are as follows:

(1) *Bed preparation and tree planting:* 150ha in Quang Hanh, 200ha in Binh Hung estuary, 210ha in Bai Chay coastal area, 400ha in Bay Chay bay, 70ha in Hong Gai coastal area, 290ha in Cam Pha and Cua Ong coastal area. Tree planting of *Aegiceras corniulatum, Kandelia cardel, Avecinnia lanata,* and *Rhizopher stylosa.*

(2) *O&M:* follow up tree planted areas such as re-planting.

Table 24.3.2(5) Description of Priority Projects and Programs

1. Project Title	Environmental Monitoring Program
2. Location	Hoanh Bo district, and Yen Hunng district, Ha Long City, Cam Pha Town, Quang Ninh Province, Vietnam.
3. Implementation Agency	Quang Ninh province, Department of Science, Technology, and Environment (DOSTE)
4. Objectives	(1) To collect environmental information to establish database (2) To assess achievement levels to goals of the EMP (3) Clarify necessity of future revision on the measures proposed in the EMP (4) To recommend on environmental considerations to the existing and future development activities
5. Expected Effects	(1) Provide data and knowledge of actual environmental conditions (2) Reveal effectiveness of measures taken (3) Promote public awareness of environment (4) Improve scientific understandings of environmental pollution mechanism
6. Project Costs	US$ 0.1 million (for design, procurement of equipment, and O&M during 2000-2010)
7. Implementation Schedule	Monitoring : Short term (Year 2000 - 2002) : Transition term (Year 2004 - 2006) : Long term (Year 2007 - 2010)

Main Components of the Project

The existing environmental monitoring system in the Ha Long bay area is not sufficient. In order to protect and conserve the environment of the Ha Long bay area, it is essential to continuously monitor the environmental quality. The environmental monitoring consists of water quality including sediment quality and dust monitoring, and environmental resources (natural environment, landscape) monitoring. The main components of the environmental monitoring are as follows:

(1) *Water quality monitoring*: procurement equipment, reinforcement of staff, technical training, and
(2) *Environmental resources monitoring*: forests, tidal flats and mangrove swamp, coral reefs, fish and shellfish, phytoplankton and zooplankton, benthos (natural environment), and landscape element and value.

Table 24.3.2(6) Description of Priority Projects and Programs

1. Project Title	Visitor Center Construction Project
2. Location	Ha Long City, Quang Ninh Province, Vietnam.
3. Implementation Agency	Quang Ninh province, Department of Science, Technology, and Environment (DOSTE)
4. Objectives	(1) To disseminate environmental information (2) To open environmental data to public (3) To enhance environmental awareness (4) To provide opportunity for environmental education
5. Expected Effects	(1) Enhancement of public and tourist awareness about environment and importance of conservation of Ha Long bay. (2) Income generation of local government as an entrance fee.
6. Project Costs	US$ 3.0 million (for design, construction, and O&M during 2003-2010)
7. Implementation Schedule	Design : 1 year (Year 2000) Construction: 2 years (Year 2000 - 2001) O&M: from Year 2002

Main Components of the Project:

The general level of public awareness of the local people is relatively low. The pressure from socioeconomic development by those people lacking in environmental awareness can decline the environmental quality in the Ha Long bay area. Therefore, enhancement of environmental awareness is required for environmental management of Ha Long bay. To cope with this situation, the establishment of visitor center is proposed for enhancement of environmental awareness of local people as well as tourist. The main components of the visitor center are as follows:

(1) *Inside building:* display and observation corner, exhibit and study corner, video theater, liberally and meeting room for environmental education. Total floor space is about 900m^2.
(2) *Outside building:* Experimental tidal flat, glass garden, promenade, jetty: Total land area is about 20,000m^2.

CHAPTER 25

CHAPTER 25 RECOMMENDATIONS

25.1 Recommendations

25.1.1 Recommendations on Execution of the EMP

The EMP is prepared for provincial environmental management of the Ha Long bay area. This means that QNPC has the primary responsibility for implementation of the EMP. Although a lot of difficulties will confront to QNPC, it should be noted that an actual challenge could break current problems of environmental management. In order to pave the way for execution of the EMP, the following points are strongly recommended to be set up by QNPC.

(1) To Incorporate the EMP into the Development Master Plan of Ha Long City (HLMP)

By executing the proposed projects and programs in the EMP, the conservation criteria can be attained under HLMP toward target year 2010. It is important that development projects of HLMP should follow the proposed land use guidelines in the EMP. Considering the importance of environmental management in the Ha Long bay area, the involvement of the EMP in HLMP is an effective way to:

- state QNPC's commitment on implementation of the EMP,
- authorize the right and power related to the EMP,
- make EMP a common knowledge among the departments in QNPC,
- keep EMP in mind among officers in daily decision making,
- receive supports from national level ministries and institutions as an advisory committee, and
- ensure allocation of budget from QNPC.

It is also recommended that, after 2010, immoderate development in and around Bai Chay bay, disordered land reclamation should be avoided. Invitation of environmentally friendly industry is also recommended in the future.

(2) To Establish the Implementation Committee (IC) of the EMP

This is the first actual step to be taken by QNPC. IC should be a core organization for implementation of the EMP. The purposes of this action are to:

- announce the top down decision to QNPC staff,
- unify the ultimate responsible body,
- identify official agencies and stakeholders to be involved,
- demarcate roles and responsibilities among bodies concerned,
- clarify a procedure of planning, coordination, execution, inspection, monitoring, evaluation, and revision of the EMP, and
- accumulate experience and information to establish the Quang Ninh Environmental Management Authority (QNEMA).

(3) To Put High Priority on Conservation of Tidal Flats

The tidal flats play very important roles in the EMP area from environmental viewpoint, such as conservation of flora and fauna as well as natural ecosystem. The tidal flats have been targeted for reclamation for urban and industrial development without enough recognition of their functions. Therefore, QNPC should put high priority on conservation of tidal flats aiming to:

- protect tidal flats from encroachment and reclamation,
- demarcate roles and responsibilities between FPA and DARD under IC,
- reflect tidal flats protection in land use planning,
- enhance purification capacity of tidal flats by reforestation of mangrove trees, and
- maintain the natural conditions of the coast line to preserve biodiversity and landscape.

(4) To Cooperate with State Owned Enterprises (SOE)

Since the proposed EMP is mainly prepared under the leadership of QNPC, there could be some limitations to incorporate intentions of SOE such as VINACOAL mainly due to the different management level from provincial to national. An

agreement of cooperation between QNPC and SOE is required for effective environmental management in the EMP area. Its major aims are to:

- clarify implication of SOE to the EMP,
- demarcate roles and responsibilities between IC and SOE,
- reflect the EMP in SOE's environmental management plans,
- submit SOE's environmental management plans and monitoring data to IC periodically,
- allow inspections and report the results to those governed ministries, and
- provide basic data for data base preparation.

(5) To Control Pollution Loads from Ships

The proposed EMP suggests that the pollution loads derived from ships during transshipment may impact on the environment in the Ha Long bay area. Although it is difficult to tackle them qualitatively, the following measures are strongly recommended:

- enforcement of inspection and patrol of shipping activities,
- holding bilge water for next port-call of cargo ships,
- offshore recycling of ballast water of tankers,
- control by MARPOL Protocol of 1978 (MARPOL 73/78) and the Guidelines of Baltic Marine Environment Protection Commission (HELCOM),
- proceeding the modernization of ships and ports facilities, and
- proper allocation of ports including floating ones and B12 oil port.

(6) To Reinforce Actual Activities of the EMP

Actual activities will bring difference from the present conditions, and give positive incentives to staff and stakeholders. It is important to continue actual activities of the EMP especially environmental monitoring even if it is small scale at first, because the continuation contributes to:

- motivate accountability of staff and stakeholders,
- understand environmental conditions in the field as much quantitatively as extend,
- develop technical tools to be applied and strengthen enforcement capability,

- learn lessons from actual practices,
- train staff for future trainers,
- identify and formulate necessary projects and programs to be implemented in the EMP,
- disseminate experiences in the world as a model in Vietnam, and
- promote international cooperation.

(7) To Tackle Environmental Impacts Brought from the Outside of the EMP Area

In the course of the Study, the environmental impacts brought from the outside of the EMP area were identified. The origin of the impacts is considered to be the discharged fresh water from the Thai Binh and Bach Dang rivers. Therefore, it is necessary to pay attention on the water quality in the southern outskirts of the EMP area.

- develop and implement a wide-range environmental monitoring program,
- research and clarify the mechanism of environmental impacts (degrees, seasonal and yearly changes) on the EMP area brought from the outside as much quantitatively as extend,
- develop comprehensive projects and programs against the wide-range environmental issues such as development of land use plan,
- review and update the EMP based on the results of the monitoring and research, and
- promote cross-provincial cooperation on the environmental issues.

(8) To Reinforce Capability of Emergency Response against Environmental Accidents

There is always a possibility that an environmental accident such as fire, oil leakage and spill, or vessel collision could occur in the EMP area. These environmental accidents would damage natural and social assets including human lives especially in the World Heritage area. Therefore, an emergency response system in case of the accidents should be established aiming to:

- reinforce capability of emergency response system,
- clarify responsibilities of ships owners and enterprises for emergency response legally,
- install facilities for emergency response such as oil spill and absorption booms (oil fences), mobile pump for sucking oil, and extinguishers in each port and industry, and responsible agency,
- organize emergency response team in each port and industry, and responsible agency , and
- examine the preventive measures of the risks in detail by individual EIA.

25.1.2 Recommendations on Technical Aspects

For the execution of the EMP, recommendations and suggestions in technical aspects are given as follows:

(1) Review and Update of the EMP

- The EMP should be reviewed/updated by DOSTE and agencies concerned under IC,
- The EMP should be reviewed timely according to the change of economic and social conditions, and be updated at least once every five years.
- Statistical data should be collected and arranged continuously, and database should be updated timely according to the statistical survey periods.
- The EMP should be reviewed based on the results of the environmental monitoring.

(2) Sanitation

- Flush toilets should be provided in all tourism and commercial developments. They are also recommended for high density residential development.
- Dry sanitation methods and septic tanks draining to soakaways are generally suitable in low density and rural areas.
- Education and advertisement to campaign for promoting public environmental awareness should be urgently undertaken.
- The existing anti-littering bye laws should be enforced.

- Measures to control increase of residents on the sea, such as registration of boat, and regulation and restrict of anchor place, should be implemented.
- All factories should treat their wastewater to meet the proposed conservation criteria.
- Industrial parks should have collection sewer systems so that the combined discharges can receive further treatment or be transferred to a suitable discharge location.
- Regulation of the handling and disposal of hazardous wastes in EMP area is urgently required.
- Collection of the solid wastes should be carried out either by industry itself, or private contractors, or by the public sector at commercial rates.
- Minimization of industrial solid wastes generation, maximization of recycling and reuse, and co-siting of 'compatible' industries should all be encouraged.

(3) Coal Mining

- Responsibility of environmental measures for coal mining issues should be clarified.
- Rehabilitation plan of coal mining areas should be developed and submitted to the Ministry of Industry, MOSTE, and QNPC for review and approval.
- Assessment of environmental damages caused by coal mining should be implemented and evaluated periodically.
- Internal environmental performance auditing system should be established.
- Environmental considerations should be integrated into production plan.

(4) Tourism

- Educational signs and information boards about, for example, the brief explanation of geology, cave systems, animals and plants found in the area, ecosystem should be installed.
- Tourists should be clearly instructed about prohibited activities, such as littering, wastewater discharge, and damaging or trading sensitive environmental resources such as corals.
- Tours should be conducted with qualified guides.

- Access control for the conservation areas should be strictly imposed.

(5) Environmental Resources

- Reclamation on tidal flats and mangrove swamps should be strictly controlled with environmental consideration.
- Binh Huong estuary should be designated as an environmental conservation area.
- Prohibited fishing methods and gears should be controlled strictly to conserve fishery resources.
- Landscape conservation and harmony with surroundings should be taken into consideration in design of new buildings.
- Beautification activities should be implemented periodically and continuously.

(6) Environmental Monitoring

- Reinforcement of staff and intensive and routine training for monitoring skills should be commenced soon.
- The monitoring equipment in possession by DOSTE should be utilized soon and their maintenance and overhaul should be implemented periodically and continuously.
- Research and monitoring of the EMP area should be implemented continuously, so that the pollution mechanism can be analyzed more clearly and accurately.
- Wide-rage environmental monitoring covering the inter-provincial areas should be established.
- Monitored data and results of the environmental inspection should be opened.
- Environmental survey and monitoring of flora and fauna in the Ha Long bay area should be implemented together with local institutes.

25.1.3 Recommendations on Institutional and Organizational Aspects

The EMP shows desirable organization for its execution. The recommendations for institutional and organizational aspects are summarized as follows:

- Unified environmental management system should be established, and rights and responsibilities of each agency and organization should be set up clearly.
- EMD in DOSTE should be an implementation and coordination agency for the EMP.
- ERMU and TFMD should be set up soon, at least by 2000, for the execution of the EMP.
- The Quang Ninh Environmental Management Authority (QNEMA) should be set up in future for a new authority with a broad mandate for environmental conservation.
- Legal obligation for EIA of various development projects and establishment of the evaluation system should be establishment.

25.1.4 Recommendations on Economic and Financial Aspects

The recommendations for economic and financial aspects are summarized as follows:

- Further basic study on socio-economy and environment for the study area should be carried out to accumulate reliable data to enhance the benefit evaluation of the EMP or the World Heritage site.
- A system of environmental bonds should be actually introduced on the central and local levels, under the Environmental Protection Law, to provide immediate financial sources for environmental conservation.
- The central government and QNPC should make a special arrangement to finance the EMP implementation including exclusive budget allocation to the EMP based on the proposed environmental and wastewater fees collected from tourists and local residents.
- There should be active coordination on the central and local levels so that VINACOAL and other industrial sectors are directed to pay the proposed charges to recover the costs for the EMP.

25.2 Conclusion

The Ha Long bay area is planned to be developed as the North Focal Economic Area in Vietnam. Without proper countermeasures, however, environmental deterioration caused by the socioeconomic growth has gradually become serious, so that the negative impacts will fall on the economic growth. Therefore, environmentally sound and sustainable development should be recognized as one of the important issues in this area.

In the course of the Study, the current environmental problems were identified and also the possible environmental problems which would be caused by the future development projects were predicted. The Study presented a vision, namely "Environmentally Sound and Sustainable Development of the Ha Long Bay Area", for the target year 2010, and three goals were set to attain this vision. In addition, the environmental conservation criteria by environmental zones were examined, together with necessary counter and preventive measures. Consequently, a total 32 projects and programs consisting of both hard and software components were proposed. The Environmental Management Plan for Ha Long Bay (EMP) was developed by systematizing the proposed projects and programs.

Realization of the EMP surely contributes to absolute protection of the World Heritage area and the achievement of environmental protection for sustainable economic growth in the Ha Long bay area. The EMP plays an important role as a guidepost for not only environmental protection but also sustainable development in the Ha Long bay area. Although the realization of the EMP would need much time, costs, and endeavors by all organizations concerned, the commencement of the concrete measures as early as possible toward the target year 2010 is strongly recommended.

APPENDICES

Appendix 1 Scope of Work and Minutes of Meeting

SCOPE OF WORK
FOR
THE STUDY
ON
ENVIRONMENTAL MANAGEMENT FOR HA LONG BAY
IN
THE SOCIALIST REPUBLIC OF VIET NAM

AGREED UPON BETWEEN
MINISTRY OF SCIENCE, TECHNOLOGY AND ENVIRONMENT
AND
PEOPLE'S COMMITTEE OF QUANG NINH PROVINCE
AND
THE JAPAN INTERNATIONAL COOPERATION AGENCY

Hanoi, September 19, 1997

Dr. PHAM KHOI NGUYEN
Vice Minister,
Ministry of Science, Technology and Environment

Mr. SENRO IMAI
Leader of the Preparatory Study Team,
Japan International Cooperation Agency (JICA)

Mr. NGO DINH THO
Vice Chairman,
People's Committee of Quang Ninh Province

I. INTRODUCTION

In response to the request of the Government of the Socialist Republic of Viet Nam (hereinafter referred to as "the Government of Viet Nam"), the Government of Japan has decided to conduct The Study on Environmental Management for Ha Long Bay in the Socialist Republic of Viet Nam (hereinafter referred to as "the Study") in accordance with the relevant laws and regulations in force in Japan.

The Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of technical cooperation programs of the Government of Japan, will undertake the Study, in close cooperation with the authorities concerned of the Socialist Republic of Viet Nam.

The present document sets forth the Scope of Work with regard to the Study.

II. OBJECTIVES OF THE STUDY

The objectives of the Study are:

1. to formulate environmental management plan for Ha Long Bay area to be compatible with nature conservation and human activities.
2. to transfer technology to the counterpart personnel in the course of the Study.

III. STUDY AREA

The Study will cover Ha Long Bay which is designated by UNESCO as the World Natural Heritage and its buffer zone, and the surrounding area.

IV. SCOPE OF THE STUDY

Phase I: Basic Study

1. Collection and review of related data and information
   (1) natural conditions, including meteorological, geological, coastal environment, water quality, fauna and flora data
   (2) social and economic conditions
   (3) national, urban and regional development plans
   (4) laws, regulations, policies and customary practices relevant to environment
   (5) land use
   (6) solid and liquid waste
   (7) present institutions, organizations, administration and their function relevant to environment
   (8) on-going and planned projects relevant to environment and Ha long Bay
   (9) social and economic infrastructures relevant to the Study
   (10) existing water supply and sewerage facilities
   (11) on-going and planned projects relevant to the Study
   (12) other relevant data and information

2. Remote sensing survey

3. Field reconnaissance
   (1) present environmental conditions of Ha Long Bay and its coastal area
   (2) present conditions of Ha Long area such as land use, sewerage, solid waste and etc.

4. Field Survey
   (1) geographic conditions
   (2) tidal current
   (3) water quality
   (4) sediment
   (5) eutrophication
   (6) biological indicators

5. Analysis of mechanism of the pollution of environment
   (1) identification of pollutant sources and important environmental item(s)
   (2) establishment of simulation model

Phase II : Formulation of environmental management plan for Ha Long Bay

1. Confirmation of socio-economic framework
   (1) population projection
   (2) economic growth
   (3) estimation of waste water and solid waste
   (4) other socio-economic conditions such as industrial development, tourism, coal mining and etc.

2. Projection of future impact on environmental conditions of Ha Long Bay area
   (1) impact on water quality
   (2) impact on environmental resources

3. Confirmation of planning framework
   (1) environmental zoning
   (2) set-up of management criteria
   (3) others

4. Confirmation of basic policy for formulation of environmental management plan

5. Formulation of environmental conservation measure(s)

6. Formulation of environmental monitoring system
   (1) monitoring system
   (2) inspection system
   (3) data and information management plan

7. Formulation of institutional development plan

8. Cost estimation
   (1) facility(ies) plan including equipment, if necessary
   (2) cost estimation

9. Evaluation
   (1) economic and financial evaluation
   (2) social evaluation
   (3) technical evaluation
   (4) environmental evaluation

10. Recommendation for environmental management plan

V. STUDY SCHEDULE

The study will be carried out in accordance with the tentative schedule as attached in the Appendix 1. The schedule is tentative and subject to be modified when both parties agree upon any necessity that arise during the course of the Study.

VI. REPORTS

JICA shall prepare and submit the following reports in English to the Government of Viet Nam.

1. Inception Report:

Forty (40) copies at the commencement of the first field survey in Viet Nam. This report will contain the schedule and methodology of the Study as well as outline of the field survey.

2. Progress Report (1):

Forty (40) copies at the end of the first field survey.

3. Progress Report (2):

Forty (40) copies at the end of the second field survey.

4. Interim Report:

Forty (40) copies at the end of Phase I. This report will contain the results of the Phase I survey and outline of the Phase II study program.

5. Progress Report (3):

Forty (40) copies at the end of the third field survey.

6. Draft Final Report:

Forty (40) copies at the end of the forth field survey. The Government of Viet Nam shall

submit its comments within one (1) month after the receipt of the Draft Final Report.

7. Final Report:

Eighty (80) copies within one (1) month after the receipt of the comments on the Draft Final Report.

VII. UNDERTAKINGS OF THE GOVERNMENT OF VIET NAM

1. To facilitate the smooth conduct of the Study, the Government of Viet Nam will take the following necessary measures:

   (1) To secure the safety of the Japanese study team (hereinafter referred to as "the Team")

   (2) To permit the members of the Team to enter, leave and sojourn in Viet Nam for the duration of their assignment therein, and exempt them from foreign registration requirements and consular fees

   (3) To exempt the members of the Team from taxes, duties, fees and any other charges on equipment, machinery and other materials brought into Viet Nam for the conduct of the Study

   (4) To exempt the members of the Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Team for their services in connection with the implementation of the Study

   (5) To provide necessary facilities to the Team for remittance as well as utilization of the funds introduced into Viet Nam from Japan in connection with the implementation of the Study

   (6) To secure permission for the Team to enter into private properties or restricted areas for the implementation of the Study

   (7) To secure permission for the Team to take all data and documents (including photographs and maps) related to the Study out of Viet Nam to Japan

   (8) To provide medical services as needed, expenses for which will be chargeable to the members of the Team.

2. The Government of Viet Nam shall bear claims, if any arises, against the members of the Team resulting from, occurring in the course of, or otherwise connected with, the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the member of the Team.

3. Ministry of Science, Technology and Environment (hereinafter referred to as "the MOSTE") and People's Committee of Quang Ninh Province (hereinafter referred to as "the QNPC") shall act as a counterpart agency to the Team and also as a coordinating body in relation with other governmental and non-governmental organizations for the smooth implementation of the Study. The MOSTE and the QNPC shall, at its own expense, provide the Team with the

followings, in cooperation with other organizations concerned:

(1) available data and information relevant to the Study
(2) counterpart personnel
(3) suitable office space with necessary equipment in Hanoi and Ha Long
(4) credentials or identification cards
(5) an appropriate number of vehicles with drivers.

VIII. UNDERTAKINGS OF JICA

For the implementation of the Study, JICA shall take the following measures:

1. to dispatch, at its own expense, study teams to Viet Nam

2. to pursue technology transfer to the counterpart personnel in the course of the Study.

IX. CONSULTATION

JICA, the MOTE and the QNPC shall consult with each other in respect of any matter that may arise from or in connection with the Study.

APPENDIX I

TENTATIVE SCHEDULE

MONTH / DESCRIPTION	1	2	3	4	5	6	7	8	9	10	12	13	14	15	16	17	18	19
WORK IN VIET NAM		▒▒▒	▒▒▒	▒▒▒		▒▒▒	▒▒▒	▒▒▒	▒▒▒		▒▒▒	▒▒▒	▒▒▒		▒▒▒			
WORK IN JAPAN	▭									▭				▭		▭		
PHASE OF THE STUDY	◄	—	—	—	—	PHASE 1	—	—	—	—	►◄	—	—	PHASE 2	—	—	—	
REPORT PRESENTATION		▲ IC/R		▲ P/R(1)					▲ P/R(2)		▲ IT/R		▲ P/R(3)		▲ DF/R		▲ F/R	

▒▒▒ : JICA Study Team's Work in Viet Nam

▭ : JICA Study Team's Work in Japan

IC/R : Inception Report DF/R : Draft Final Report

P/R : Progress Report F/R : Final Report

Appendix A1.2

MINUTES OF MEETINGS

ON

SCOPE OF WORK

FOR

THE STUDY

ON

ENVIRONMENTAL MANAGEMENT FOR HA LONG BAY

IN

THE SOCIALIST REPUBLIC OF VIET NAM

AGREED UPON BETWEEN

MINISTRY OF SCIENCE, TECHNOLOGY AND ENVIRONMENT

AND

PEOPLE'S COMMITTEE OF QUANG NINH PROVINCE

AND

THE JAPAN INTERNATIONAL COOPERATION AGENCY

Hanoi, September 19, 1997

Dr. PHAM KHOI NGUYEN
Vice Minister,
Ministry of Science, Technology and
Environment

Mr. SENRO IMAI
Leader of the Preparatory Study Team,
Japan International Cooperation
Agency (JICA)

Mr. NGO DINH THO
Vice Chairman,
People's Commitee of Quang Ninh Province

1. Introduction

In response to the request of the Government of the Socialist Republic of Viet Nam (hereinafter referred to as "the Government of Viet Nam"), the Preparatory Study Team (hereinafter referred to as "the Team") of the Japan International Cooperation Agency (hereinafter referred to as "JICA") visited Viet Nam from September 9 to September 21, 1997 to discuss the Scope of Work (hereinafter referred to as "S/W") for The Study on Environmental Management for Ha Long Bay in the Socialist Republic of Viet Nam (hereinafter referred to as "the Study").

The Team carried out field surveys of the study area and held a series of discussions with the authorities concerned of Ministry of Science, Technology and Environment (hereinafter referred to as "the MOSTE"), People's Committee of Quang Ninh Province (hereinafter referred to as "the QNPC"), and other organizations.

The list of attendants is shown in the Appendix 1.

The Minutes of Meetings have summarized main points of the discussions made in the course of the preparation of S/W for purpose of better understanding S/W agreed upon among the MOSTE, the QNPC and the Team on September 19, 1997.

2. Study Title

Both sides agreed that the title of the Study would be "The Study on Environmental Management for Ha Long Bay in the Socialist Republic of Viet Nam" as described in S/W.

3. Study Area

(1) Both sides agreed on the Study area as described in S/W, and both sides also agreed on the Study area for macro analysis which is shown mainly in the Appendix 2.

(2) The MOSTE and the QNPC pointed out that Bai Chay area and Cua Ong area might be covered for in-depth study. The Team recognized the situation and promised to convey the message to JICA H.Q. for consideration.

(3) The MOSTE and the QNPC requested to include the coastal area of eastern part of Cat Ba Island for the Study area since that area has been related to environmental conservation for Ha Long Bay, and the Team agreed to it and requested that the necessary data and information would be provided in the course of the Study.

4. Target Year

Both sides agreed that the target year for the Study would be set in the year 2010.

5. Counterpart Agency

The MOSTE and the QNPC shall act as the counterpart agencies as described in S/W.

6. Coordination with Other Ministries and Organizations

The Team requested the MOSTE and the QNPC to coordinate with other ministries and organizations concerned to get maximum cooperation from these organizations as well as to avoid any duplicated works. The Team also suggested to establish a Steering Committee and Working Group(s) to achieve the above mentioned coordination. The MOSTE and the QNPC agreed to this point and promised to set up the committee and to invite representatives from relevant ministries and

organizations for the smooth implementation of the Study. The tentative function and composition of the committee is shown in Appendix 3.

7. Coordination with International Organizations

The Team requested the MOSTE and the QNPC to coordinate with international organizations concerned such as UNDP, UNESCO, World Bank, ADB, CIDA, SIDA and DANIDA to exchange view and information with these organizations as well as to avoid any duplicated works, and the MOSTE and QNPC agreed to this point.

8. Undertakings of the Government of Viet Nam

(1) It was confirmed that the MOSTE and the QNPC would secure the full support and participation of organizations concerned in the course of the Study.

(2) It was confirmed that the MOSTE and the QNPC would assign the appropriate number of counterpart personnel to the JICA Study Team. The MOSTE and the QNPC suggested that both sides would discuss the effective way of coordination for the effective implementation of the Study.

a. Supervision
b. Environmental management
c. Natural environment
d. Water quality analysis
e. Hydrology / simulation model
f. Solid and liquid waste treatment
g. Regional development / land use
h. Harbor and navigation Management
i. Coordination for JICA Study Team
j. Others

(3) The Team requested that the MOSTE and the QNPC would provide suitable office space with necessary equipment in Hanoi and Ha Long, and sufficient numbers of vehicles with drivers for the Study. The MOSTE and the QNPC replied that the office space enough to work could be prepared by the MOSTE and the QNPC. The MOSTE and the QNPC, however, expressed concern that, due to budgetary constraints, it would be hard to provide office equipment, secretary(ies) and vehicles with drivers. The Team recognized the situation and promised to convey the message to JICA H.Q. for consideration.

9. Counterpart Training

The MOSTE and the QNPC requested that JICA conduct counterpart training in Japan, in addition to on-the-job-training, for the purpose of the smooth technology transfer during the Study. The Team agreed to convey the request to JICA H.Q. for consideration.

10. Technology Transfer Seminar

The MOSTE and the QNPC requested that JICA hold a seminar as a part of the technology transfer in the course of the Study. The Team recognized the necessity and promised to convey the request to JICA H.Q. for consideration.

Further, based on the valuable results of a Mini Workshop which was held on September 16, 1997 under the sponsorship of the MOSTE, the team suggested that this type of Mini Workshop might be held in the course of the Study.

11. Technology Transfer

The MOSTE and the QNPC expressed a strong wish to transfer technology relevant to the methods which are used to form the policies, regulations and management systems through the implementation of the Study.

12. Equipment

The MOSTE and the QNPC requested the Study Team to bring the basic equipment for water quality analysis using in the course of the Study. The Team agreed to convey the request to JICA H.Q. for consideration.

13. Report

As for the Study reports, the MOSTE and the QNPC agreed to make them open to the public in order to achieve maximum use of the Study results.

The MOSTE and the QNPC requested that JICA provide executive summaries for each reports as a reference in Vietnamese for better understanding of the Study result. The Team recognized this necessity and promised to convey this request to JICA H.Q. for consideration.

14. JICA's Development Study Program

The Team explained JICA's Development Study Program and the MOSTE and the QNPC fully understood the Program.

APPENDIX 1

LIST OF ATTENDANTS

(Vietnamese side)

Ministry of Science, Technology and Environment

Dr. Pham Khoi Nguyen	Vice Minister
Dr. Truong Manh Tien	Director, Planing and International Relations Division, National Environment Agency (NEA)
Dr. Nguyen Dac Hy	Director, Policy Dept., NEA
Dr . Nguyen Tien Dung	Deputy Director, Policy Dept., NEA
Dr. Tran Hong Ha	Policy Dept., NEA
Mr. Nguyen Xuan Bao Tam	International Relation Dept.

People's Committee of Quang Ninh Province

Mr. Ngo Dinh Tho	Vice Chairman
Mr. Vu Van Thanh	Director, Dept. of Science Technology and Environment (DOSTE)
Mr. Le Van Giao	Deputy Director, DOSTE
Mr. Tran Van Chuong	Chief of Environmental Management, DOSTE
Mr. Vu Khac Tu	Deputy Director of Quang Ninh Port
Mr. Nguyen Van Tuan	Director, Ha Long Bay Management Dept.
Mr. Nguyen Van Tuc	Deputy Director of Ha Long Hotel
Mr. Vu Tien De	Deputy Director Hong Gai Coal Industry

Office of Government

Dr : Kieu Tien Quang	General Director
Mr. Le Minh Hung	International Relation Dept.

Parliament Office

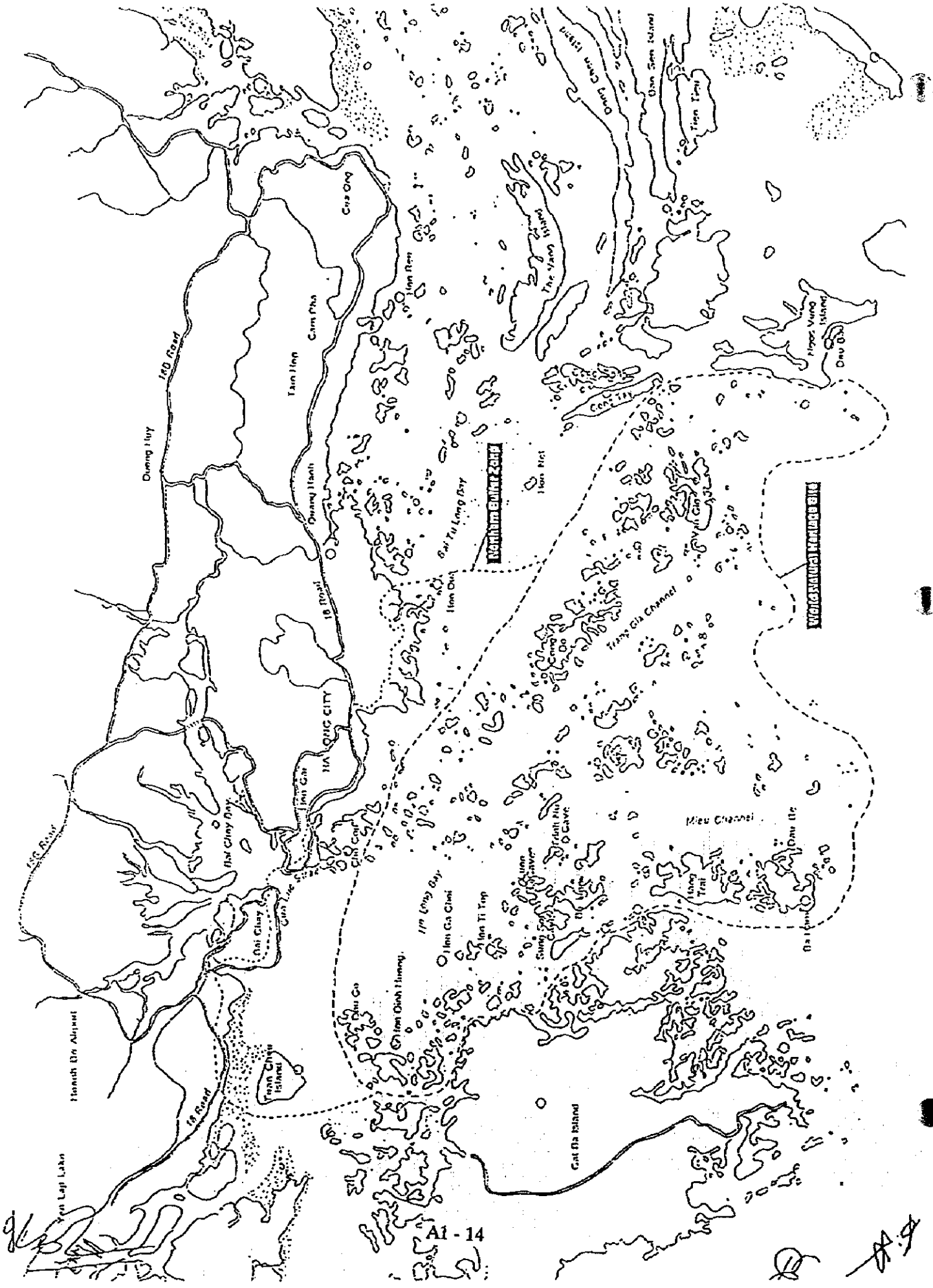
Mr. Nghiem Xuan Banh

Ministry of Planning and Investment

Mr. Vo Hong Phuc	Vice Minister
Mr. Ho Quang Minh	Deputy Director of International Economic Relations Dept.
Mr. Nguyen Xuan Tien	International Economic Relation Dept., Japan Desk
Mr. Tran Loc	Environment Science and Education Dept.

Ministry of Foreign Affairs	
Mr. Nguyen Tam Chien	Deputy Minister for Foreign Affairs
Mr. Nguyen Minh Ha	Asian Dept.
Ministry of Agriculture and Rural Development	
Mr. Tran Nhat Hau	Policy Dept.
Ministry of Construction	
Mr. Ngo Trung Hai	Rural and Urban Planning Dept.
Mr. Huynh Dang Hy	Architecture Planning Dept.
Ministry of Industry	
Mr. Le Quoc Khanh	Vice Minister
Mr. Huynh Dang Hy	Quality and Quantity Management Dept.
Ministry of Culture and Information	
Mr. Dang Van Bai	Environment Protection Dept.
Ministry of Commerce	
Mr. Tran Trong Ho	Training - Consulting Center
(Japanese Side)	
Embassy of Japan	
Mr. Naoto Ikeda	First Secretary
OECF Hanoi Office	
Mr. Tosio Nagase	Representative
JICA Vietnam Office	
Mr. Masaru Todoroki	Resident Representative
Mr. Hirosi Tsujino	Assistant Representative
Preparatory Study Team	
Mr. Senro Imai	Leader
Mr. Masahito Kuse	Member
Mr. Hiroyuki Sakuraoka	Member
Mr. Katsuyoshi Saito	Member
Mr. Hiroyuki Doi	Member
Mr. Hiroshi Sumikawa	Member
Ms. Ran Nagai	Member

Appendix 2 Study Area for Macro Analysis



APPENDIX 3

The Tentative Function and Composition of the Steering Committee

I . Function

The Study on Environmental Management for Ha Long Bay in the Socialist Republic of Viet Nam (hereinafter referred to as "the Study") will cover a wide range of subjects handled by other organization and agencies. Therefore, Ministry of Science, Technology and Environment and People's Committee of Quang Ninh Province will establish a Steering Committee and Working Group(s) which consist of other organizations and agencies for overall management of the Study.

II . Composition

1. Office of Government
2. Ministry of Science, Technology and Environment
3. Ministry of Planning and Investment
4. Ministry of Foreign Affairs
5. Ministry of Culture and Information
6. Ministry of Transport
7. Ministry of Industry
8. Ministry of Commerce
9. Ministry of Agriculture and Rural Development
10. Ministry of Construction
11. Ministry of Defense
12. Vietnam National Administration of Tourism
13. People's Committee of Quang Ninh Province
14. Others

The above organization and agencies are the subjects would be confirmed at the commencement of the Study.

THE MINUTES OF MEETING

ON

THE INCEPTION REPORT

OF

THE STUDY ON ENVIRONMENTAL MANAGEMENT FOR HA LONG BAY

IN

THE SOCIALIST REPUBLIC OF VIETNAM

Hanoi, February 27, 1998

Mr. NGO DINH THO
Vice Chairman,
People's Committee of Quang Ninh Province

Mr. YOICHI IWAI
Team Leader,
JICA Study Team

In accordance with the Scope of Work (S/W) for the Study on Environment Management for Ha Long Bay (The Study) agreed upon between the Ministry of Science, Technology and Environment (MOSTE), the People's Committee of Quang Ninh Province (QNPC), and Japan International Cooperation Agency (JICA), the JICA Study Team prepared the Inception Report, and submitted 40 copies to MOSTE and QNPC on February 17, 1998.

The meeting was held as the Steering Committee Meeting (S/C) to discuss the Inception Report (IC/R) on February 26, 1998 from 9:00 am at MOSTE conference room in Hanoi. The meeting was chaired by Mr. N.Tho, Vice Chairman of QNPC, and the attendants are listed in the Attachment-I.

1. Counterpart

QNPC is to be the main counterpart (C/P) of the Study, and MOSTE will play a coordinating role to involve the relevant Vietnamese Governmental agencies. The office space for the Study Team will be provided in Ha Long City.

2. Discussion on Inception Report

The Study Team presented the I/R to the S/C. The members of the S/C agreed on the general framework of the Study. The S/C emphasised that the IC/R could not replace the technical project outline. In order to implement effectively the Study, S/C requested the Study Team to build up detailed technical project outline, based on S/W agreed upon by Vietnam side and Japanese Government on September 19, 1997. The detailed technical project outline should be provided to the S/C for approval not later than two weeks after the signing of this Minutes of Meeting on February 27,1998.

2.1 Objectives of the Study

The two main objectives of the Study, namely

(1) the formulation of environmental management plan for Ha Long Bay area to be compatible with nature conservation and human activities, and

(2) to transfer technology to the counterpart personnel in the course of the Study.

were accepted by the S/C members.

The members of the S/C described Ha Long as an area of many development potentials; there exist a number of development projects, such as further development of coal mining industry, Cai Lan Port Project, and navigation activities inside the Study area. Tourism is another important aspect of the development of Ha Long area. Both sides agreed on the importance of balancing development and environmental conservation, and the need for Environmental Management Plan was acknowledged.

2.2 Approach of the Study

Introduction of experiences of Japan : The members of the S/C commented that similar experiences of Japan to overcome environmental issues would be helpful for the environmental management of Ha Long Bay. The Study Team also agreed on this, and promised to introduce the experiences of Japan through the Study.

The target year of the Study : The target year of the study is the year of 2010 as stated in the S/W for the Study. On the other hand, Government of Vietnam is presently drafting the development master plan to 2020, and the members of the S/C asked the possibility of incorporating this scheme into the Study. The Study Team answered that the Study Team could take account of the plan, in particular for establishing the socio-economic framework of the Study.

The Study area : The members of the S/C requested detailed description of the Study area. In particular, the importance of watershed has been pointed out. The members of the S/C also recognised the need to consider the potential impacts of Cat Ba island and other islands with inhabitant on the environmental quality of Ha Long Bay and to divide the Study area into sub-areas. In response to these comments and requests, the Study Team replied that the Team would conduct macro-analysis during the First Works in Vietnam Part I to divide the Study area into sub-areas and identify the areas for detailed study. The Study Team will reflect watershed and potential pollution sources as important criteria to select detailed study area.

The S/C members requested the Study Team to explain research methodology, techniques, scope for selection of detailed Study area.

The members of the S/C asked definition of the surrounding area. The Study Team replied that the surrounding area for macro-analysis is the estimated zone of environmental impact to Ha Long Bay.

The Study period : The members of the S/C asked the possibility of shortening the Study period so that Vietnam side can reflect the result of the Study to their development plans. However, the Study Team explained the necessity of original plan as described in the IC/R for implementation of scientific and objective study in depth, and both sides agreed on the Study period from February 1998 to October 1999.

The Study items : S/C members emphasised the importance of landscape, which is one of the main attractions of the Ha Long area. The Study Team also agreed on this point and explained that a landscape specialist is assigned in the Study. Another environmental issue raised during the discussion was air pollution. The Study Team agreed to include dust, solid waste from coal mining and urban areas in the Study which could be pollution sources of water pollution.

The field survey : S/C members asked about the detailed plans of field surveys, i.e., schedule, location, method, and so forth. Based on the existing information and the results of the field reconnaissance to be conducted in the First Works in Vietnam Part I (Feb. to Mar., 1998), the Study Team is to develop detailed plans of field surveys and discuss them with the Vietnam side. The plans will be included in the Field Report. The Vietnam side requested

that before doing field survey, the Study Team should formulate detailed plans for implementation of each concrete task, and these plans should be discussed and approved by both sides.

The work schedule: The S/C members requested that the work schedule of the Study should be clarified in IC/R. The Study Team explained that the work schedule of each expert will be decided by discussion with the S/C.

2.3 Organization of the Study

The members of the S/C commented that the detailed explanation of the organization should be necessary in order to implement the Study. The Study Team proposed the organization for implementation of the Study, such as required counterpart personnel and local experts.

The S/C members raised the need to discuss detailed framework for effective cooperation between both sides i.e. contents ,effective cooperation mechanism of the Study Team, the S/C and concerning agencies ; the evaluation criteria to assess the results of each task of the Study.

2.4 Technology Transfer

The members of the S/C asked that detailed process and items of technology transfer should be mentioned in the IC/R. The S/C members commented that preparation of training program for the staff in Vietnam is required. The Study Team explained that on the job training through the daily works, Mini Workshops, Seminar of technology transfer, and training of C/P personnel in Japan will be implemented in the Study. Through the implementation of the Study, transfer technology is focused on the methods used to form the policies, regulations and management systems. In addition, training for use of water quality analysis equipment (basic equipment) will be conducted in the course of the Study. The Vietnam side mentioned that the Study Team presented only the methods of how to transfer technology, and requested the Study Team to specify particular technology that should be transferred to Vietnam. Relevant to capacity building, Vietnam side requested that training courses should be provided to a large number of Vietnamese managers in concerned organizations.

3. Specific Programs for Implementation of Environmental Management Plan

The S/C members requested the detailed components of the Environmental Management Plan in terms of institution, organization, procurement of equipment, capacity building, and finance. The Study Team responded that these specific programs for the implementation of environmental management plan will be developed during the course of the Study based on the current status of the environment management capacity in Vietnam.

4. Mini Workshop

The 1st Mini Workshop will be scheduled to be in March in Hanoi. The contents of Mini Workshops should be discussed and agreed upon by the Study Team and the S/C on targets, values, schedule, participants, supporting conditions and so on.

5. Other Terms

The Study Team and the S/C should clearly discuss and agree on each task in order to fully implement the Study.

Attachment-1

LIST OF ATTENDANTS

(Vietnamese Side)

Pepole's Committee of Quang Ninh Province

Mr.Ngo Dinh Tho	Vice Chairman
Mr.Nguyen Trong Chi	Secretary
Mr.Vu Van Thanh	Director, Dept. of Science Technology and Environment (DOSTE)
Mr.Tran Van Chuong	Chief of Environment Management, DOSTE
Mr.Hoang Danh Son	Staff of DOSTE
Mr.Pham Quang Vinh	Staff of DOSTE
Mr.Vu Nam Phong	Staff of DOSTE
Mr.Nguyen Ngoc Can	Ha Long Bay Management Department

Ministry of Science, Technology and Environment

Dr.Truong Manh Tien	Vice Director, National Environment Agency (NEA)
Dr.Nguyen Dac Hy	Chief, Policy Department of NEA
Dr.Nguyen Tien Dung	Deputy Chief, Policy Department of NEA
Dr.Tran Hong Ha	Policy Department of NEA

Ministry of Transportation

Mr.Bui Duc Nhuan	Vice Director of Vietnam National Maritime Bureau

Vietnam National Administration of Tourism

Ms.Do Thi Thanh Hoa	Research Institute for Tourism Development

Ministry of Industry

Mr.Nguyen Dinh Hai	Vice Director of Industrial Technology Quality Management Department

Ministry of Construction

Mr.Ngo Trung Hai	Chief of Department of Research and Development Institute of Urban and Rural Planning

Ministry of Finance

Mr.Vu Van Truong	AIDRECEPT Department

UNESCO Vietnam

Mr.Pham Quang Tho	Vice General Secretary
Mr.Ho Minh Tuan	Expert in World Heritage Bureau

Other governmental agencies

Mr.Nguyen Chu Hoi	Director of Hai Phong Institute of Oceanography
Mr.Nguyen Quoc Hung	Deputy Head of Museum and Conservation

(Japanese Side)

Embassy of Japan	
Mr. Naoto Ikeda	First Secretary
JICA Vietnam Office	
Mr.Hiroshi Tsujino	Representative
JICA Head Office	
Mr. Katsuyoshi Saito	Representative
JICA Advisory Committee	
Mr.Masahito Kuse	Strategic Environmental Planning Division, Planning and Coordination Bureau, Environment Agency of Japan (EA)
Mr.Hiroyuki Sakuraoka	Water Pollution Control Division, Water Pollution Bureau, Environment Agency of Japan
Mr.Ikuo Fujita	Shimizu Port Construction Office, Ministry of Transportation
JICA Study Team	
Mr.Yoichi Iwai	Team Leader/Environmental Management Plan
Mr.Toshiyuki Ujiie	Hydrology/Water Pollution Analysis
Dr.Mamoru Osada	Regional Development/Land Use
Dr.Donald Meisner	Water Quality Analysis
Dr.Itaru Okuda	Pollution Control (Mining and Tourism)
Mr.Kiyoshi Mizutani	Port Engineer
Mr.Seiji Kikuchi	Coordinator
Interpreter	
Ms.Vu Nhu Quynh	Interpreter

THE MINUTES OF MEETING

ON

THE PROGRESS REPORT (1)

OF

THE STUDY ON ENVIRONMENTAL MANAGEMENT FOR HA LONG BAY

IN

THE SOCIALIST REPUBLIC OF VIETNAM

Hanoi, September 11, 1998

Mr. VU VAN THANH
Vice Chairman
of Steering Committee

Mr. YOICHI IWAI
Team Leader,
JICA Study Team

In accordance with the Scope of Work (S/W) for the Study on Environment Management for Ha Long Bay (The Study) agreed upon between the Ministry of Science, Technology and Environment (MOSTE), the People's Committee of Quang Ninh Province (QNPC), and Japan International Cooperation Agency (JICA), the JICA Study Team prepared the Progress Report (1), and submitted 40 copies to MOSTE and QNPC on September 10, 1998.

The meeting was held as the Steering Committee Meeting to discuss the Progress Report (1) (P/R(1)) on September 10-11, 1998 at MOSTE conference room in Hanoi. Dr. Van Khoi Nguyen, Vice Minister of MOSTE, made an opening speech of the meeting. The meetings were chaired by Mr. Vu Vanh Thanh, Vice Director of the Steering Committee (ST/C) and the chief manager of the Executive committee, and the attendants are listed in the Attachment-1.

The members of the JICA Study Team presented the P/R(1) to the ST/C. After two days discussions, the followings have been agreed by the ST/C members and the JICA Study Team.

1. Discussion of the Progress Report (1)

1.1 Implemented Activities in the First Works in Vietnam

During the First Works in Vietnam, the JICA Study Team and the Vietnamese C/P have made close cooperation and made the initial achievements. The conducted tasks include :

- identifications of the Study Area and the scope of the Study,
- collection of the information and data related to the project,
- contacting with the relevant agencies to clarify some concerned issues in the Study Area,
- field survey, verification and collection of information and data as additional information for the field reconnaissance by cars, boats, and helicopters,
- training program to transfer technology and sampling technique in the field, and making environment monitoring plan for the local staff, and
- organisations of 4 Mini-Workshops as planned in the First Work of the Study in Vietnam.

With above mentioned activities, the JICA Study Team collected crucial information on the existing socio-economic conditions and environmental development and plans for future development to year 2010 in the Study Area and Quang Ninh province. The information is of great importance for the JICA Study Team to develop the frame for the Environmental Management Plan (EMP) for Ha Long bay.

1.2 Contents of the Progress Report (1)

The JICA Study Team has presented the components of the P/R(1). The participants of the conference agreed on the presented issues. After the discussion, the ST/C members made the following comments :

(1) The ST/C highly appreciated the efforts by the JICA Study Team, and the other participants concerned the Study, and the achieved results presented in the P/R(1).

(2) The ST/C came to the conclusion that the approaches and methodologies conducted by the JICA Study Team are appropriate. However, the methodologies and study methods in water quality components and other preliminary results of the Study presented in the P/R(1) require further verifications to be able to apply for the existing conditions in Vietnam.

(3) Due to the difficulties in using, editing, and updating information, some issues presented in the P/R (1) are needed further verifications and corrections such as :

- at the moment, the socio-economic development plan of Quang Ninh province up to Year 2010 is being adjusted and revised to develop to be the socio-economic plan up to Year 2020. Therefore, related information and adjusted data in the Study Area will have been to be provided to the JICA Study Team, and
- existing information and data on natural and socio-economic conditions of Quang Ninh province and the Study Area have not been systematically processed in the Vietnamese side, providing unreliable seasonal variations. Consequently, the information and data are not convincible, especially parameters on the water quality in the Ha Long bay.

(4) Some suggestions presented in the P/R(1) may be not appropriate in terms of the practical situations in Vietnam and in the Ha Long bay, and thus these suggestions should be further considered and rectified to improve the appropriateness of their application into the Study Area. These issues have been raised by Vietnamese counterparts with the JICA Study Team during the previous mini-workshops organised during the first phase. These issues are as follows:

- Pollution load calculations adopted in some parts of the world but have not been tried and tested in the Study Area.
- Water quality simulation model to be adopted in the Ha Long bay is considered a powerful tool for the bay water quality management and environmental management planning. This model developed by the JICA Study Team is complex and logical. However, constraints of input data which are less systematic cause lower reliability of the model.
- Environmental zoning proposed by JICA Study Team were agreed by all the members to the workshop, but due consideration should be given to boundary definition and particularly to active management zone.
- Potential impacts of coal mining and other major industries of the provincial economy have not been given proper consideration by the JICA Study Team and thus further consideration and assessment should be required.
- Methodologies of economic and financial analysis are appropriate but advantages of using these methodologies in the development of economic/environmental policies and particularly the development of effective environmental management tools to be adopted for other areas of the Quang Ninh province have to be considered.

(5) In the P/R (1), training and technology transfer results through the performance of the first phase studies, have not been clearly presented and evaluated by the JICA Study Team.

1.3 Presentation of the P/R (1)

Basically, the P/R (1) was rationally and logically presented and illustrated with suitable study methodologies adopted by the JICA Study Team. However some duplications have been found in some chapters of the report.

40 copies of summary of P/R(1) in Vietnamese were submitted to the ST/C. The JICA Study Team has made much effort on the translation. This effort was highly evaluated by the ST/C to facilitate the access and reference to the P/R (1) by Vietnamese participants. However, to

minimise misunderstandings, further effort should be required to improve the quality of the translation. The ST/C is responsible for the completion of the translation.

2. Requirements for the Further Study Period

2.1 Requirements for the Vietnamese side

Further review of the P/R(1) should be given by all the members of the ST/C and Executive Committee in order to feed back to the JICA Study Team and to update the all necessary information for the Team. Information and data are needed by the JICA Study Team in their study activities should be identified and provided. Especially, due consideration should be given to different forms of information and data which seem useful for the team, must be provided.

2.2 Requirements for the JICA Study Team

All the comments by the Vietnamese side on all issues discussed in the previous Mini Workshops and this ST/C meeting should be further considered by the JICA Study Team in order to minimise confusions or misunderstandings relating to the Study contents, as well as those to be presented in the Interim Report, which will be submitted to the ST/C by January, 1999.

The information and data obtained should be reviewed and handled by the JICA Study Team, and especially compared to all the results of the field survey and theory of the Study. Any requirement of additional information and data should be identified and kept informed of, so that the Vietnamese side will provide in the extent of their possibility.

The ST/C requested the JICA Study Team to ask JICA to consider further the proposal to provide the water quality modelling software and necessary hardware to Vietnamese side. The ST/C also requested additional field survey to be conducted as a part of the Study.

List of Attendants of Steering Committee of the Study on Environmental Management for Ha Long Bay

(Vietnamese Side)

Dr.Pham Khoi Nguyen	Vice Minister of MOSTE

<Steering Committee>
People's Committee of Quang Ninh Province

Mr.Vu Van Thanh	Vice Chair Steering Committee, Exzective Committee, Director, Dept. of DOSTE
Mr.Nguyen Van Long	Vice Director, Dept. of Finance
Mr.Ta Duy Thinh	Dept. of Construction

Ministry of Construction

Mr.Nguyen Van Thai	Dept. for Architecture and Urban, Rural Planning and Public Works Management

National Tourism Administration

Mr.Pham Trung Luong	Vice Director, Research for Tourism Development

National Agency of Conservation and Museum

Mr.Nguyen Quoc Hung	Vice Director

National Marine Agency
Mr.Nguyen Huu Tri

UNESCO

Mr.Pham Quang Tho	Deputy Secretary General

<Ministry of Science, Technology and Environment(MOSTE)>

Mr.Tran Hong Ha	Vice Director of Exzective Committee Policy Dept., NEA
Mr.Nguyen Dac Hy	Head of Policy Div., NEA
Mr.Ho Thi Van	NEA,MOSTE
Mr.Hoang Huong Giang	NEA,MOSTE
Mr.Hoang Thanh Nhan	NEA,MOSTE
Mr.Hoang Minh Dao	NEA,MOSTE

<Executive Committee>
People's Committee of Quang Ninh Province

Mr.Vu Quang Mon	Vice Director of Executive Committee Dep. of Planning and Investment
Mr.Nguyen Duc Long	Vice Director, Dept. of Industry
Mr.Nguyen Van Thanh	Dep. of Planning and Investment
Mr.Cao Tuy	Dept. of Fishery

Mr.Do Dang Duong	Dept. of Culture and Information
Mr.Pham Toan	Dept. of Transportation

<Counterpart Team>

People's Committee of Quang Ninh Province

Mr.Hoang Danh Son	Deputy Head of Environmental Management Division, DOSTE Secretary of Executive Committee
Mr.Vu Nam Phong	Staff of DOSTE
Mr.Pham Quang Vinh	Staff of DOSTE
Mr.Nguyen Duong Thuat	Dept. of Finance
Mr.Nguyen Manh Hai	Dept. of Construction
Mr.Vu Quang Cu	Dept. of Construction
Mr.Pham Quang Trung	Head of Forestry Division, Dept. of Agriculture and Rural Development
Mr.Bui Huu Khuynh	Dept. of Industry
Mr.Le Duy Ky	Dept. of Fishery
Ms.Dang Kim Van	Dept. of Tourism
Mr.Nguyen Quang Hao	Board of Halong Bay Management
Ms.Bui Thi Cuong	Ha Long City People's Committee

<Others>

Hanoi University of Civil Engineering, Center for Environmental Engineering of Towns and Industrial Areas (CEETIA)

Mr.Tran Dong Phong	Director Assistant
Mr.Nguyen Viet Anh	

Hanoi Politechnical Insutitute

Dr.Nhan	Vice Director for Environmental Technology

(Japanese Side)

JICA Study Team

Mr.Yoichi IWAI	Team Leader/ Environmental Management Plan
Mr.Toshiyuki UJIIE	Hydrology/Water Pollution Analysis
Dr.Mamoru OSADA	Regional Development/Land Use
Dr.John D. MEISNER	Water Quality Analysis
Mr.Ikuro MITUMOTO	Tide and Water Quality Simulation
Dr.Yoshihiko KON	Monitoring Plan
Mr.Michael W. GRAY	Sanitation (Swage and Waste)
Dr.Haru OKUDA	Pollution Control(Mining &Tourism)
Mr.Kiyoshi MIZUTANI	Port Engineering
Mr.Robert EVERITT	Organization and Institution
Mr.Hiroshi HASEGAWA	Economic and Financial Analysis
Mrs.Ritsuko SATO	Coordinator

THE MINUTES OF MEETING

ON

THE INTERIM REPORT

OF

THE STUDY ON ENVIRONMENTAL MANAGEMENT FOR HA LONG BAY

IN

THE SOCIALIST REPUBLIC OF VIETNAM

Hanoi, January 22, 1999

Mr. TRUONG MANH TIEN
Vice Chairman
of Steering Committee

Mr. YOICHI IWAI
Team Leader,
JICA Study Team

In accordance with the Scope of Work (S/W) for the Study on Environment Management for Ha Long Bay (The Study) agreed upon between the Ministry of Science, Technology and Environment (MOSTE), the People's Committee of Quang Ninh Province (QNPC), and Japan International Cooperation Agency (JICA), the JICA Study Team prepared the Interim Report (IT/R), and submitted 40 copies of the original English version and 40 copies of the Vietnamese-translated version to MOSTE and QNPC on January 22, 1999.

The 3rd Steering Committee Meeting was held on January 21-22, 1999 at MOSTE conference room in Hanoi to discuss the contents of the IT/R. The attendants to the meeting from the Vietnamese side included the ST/C members, Executive Committee members, counter-part team members and local scientists. The attendants from the Japanese side include the representative from JICA, the JICA Advisory Committee members and the JICA Study Team members. The list of the attendants is provided in Attachment-I.

QNPC appointed Mr. Vu Vanh Thanh, Vice Director of the Steering Committee (ST/C) and the chief manager of the Executive committee, as the chairman of the 3rd ST/C meeting. Following the opening speech given by Mr. Truong Manh Tien, Vice Chairman of the ST/C, and Vice Director of National Environmental Agency, MOSTE, the JICA Study Team presented the contents of the IT/R. Then, the comments from the permanent council of the Executive Committee were presented. Based on the two-day discussions, the followings have been agreed between the ST/C members and the JICA Study Team.

1. Acceptance of IT/R

Although there are some minor errors and ambiguities in the IT/R, the ST/C members highly appreciated the efforts by the JICA Study Team, and accepted the IT/R. Following comments were made to the contents of the IT/R during the discussions.

2. Comments on Future Economic Frame

2.1 Further Revision of Future Economic Frame

The Vietnamese side agreed on the "Future Economic Frame" presented in the IT/R in general terms. There are needs for minor adjustment of the frame as some of the proposed projects have high uncertainties about their implementation schedules. QNPC had appointed Department of Planning and Investment, Committee on Foreign Economic Affairs, Department of Transportation, Department of Construction, Department of Industry, Department of Tourism, and DOSTE to cooperate with the JICA Study Team to make this adjustment. JICA Study Team has already initiated its efforts to further revise the Future Economic Frame.

2.2 Recommendations on Development Issues

The Vietnamese side requested the JICA Study Team to provide opinions and recommendations regarding the plans for industrial and regional development in the area including the plans covered in the Ha Long City Master Plan to Year 2010. The JICA Study Team explained that the development issues were given conditions to the Study, and the Study was not designed to conduct regional development study to give recommendations on the development-side of the plans. In stead, the JICA Study Team would include recommendations from environmental aspects so that these development plans can contribute to the sustainable development of the area.

3. Comments on Water Pollution Mechanisms

3.1 Dry Season Data

The Vietnamese side pointed out that the water pollution analysis in the IT/R was based mainly on the data taken in the rainy season, and it might not be consistent with the situation in dry season. With regard to this issue, the JICA Study Team promised to review the dry-season water quality data recently provided by the Vietnamese side. The results will be reflected in the monitoring plan.

3.2 Adoption of Japanese Data

In certain analyses of pollution mechanism, the Study Team adopted related Japanese data and norms. The Vietnamese side questioned the applicability of such data. In response to this question, the Study Team explained how they had accounted for the regional characteristics and historical changes of such data to parameters that were otherwise not available in the Study Area.

3.3 Water Quality in the Offshore Area

Generally speaking, water quality gets better as the distance from a shore increases. However, the data presented by the Study Team indicated the existence of water body in the offshore area that was apparently more polluted than the water body in the World Heritage area. The Vietnamese side requested the JICA Study Team an interpretation of this result. Although data were limited, and it was still premature to give any conclusion about this trend, the JICA Study Team suggested the potential influence of Hong River system.

4. Framework of Environmental Management Plan

4.1 General Framework

The Vietnamese side commented that the IT/R provided essential components of the environmental management plan, including the targets, zoning concepts, environmental measures, monitoring, legal and institutional framework, and economic analysis; IT/R was satisfactory, as of this period.

4.2 Air Pollution

The Vietnamese side requested the JICA Study Team to incorporate specific strategies against air pollution problems within the Environmental Management Plan (EMP). JICA Study Team had investigated the issue of dust problem as a potential source of water pollutants. However, to provide specific instructions and conservation criteria within the framework of the EMP, much comprehensive studies on air quality, meteorology, and air pollution sources would be needed. Therefore, JICA Study Team stated that incorporation of the specific instructions and conservation criteria within the framework of the EMP would be beyond the scope of the Study. However, considering the importance of the dust problems in the mining area, the JICA Study Team promised to include the measures for dust control in mining area. The JICA Study Team would also provide general options to control emission of air pollutants within the legal and institutional framework: through reinforcement of EIA, for example.

5. Information

5.1 Accuracy and Credibility of Collected Information

The Vietnamese side urged the JICA Study Team to pay attention to the credibility of information as some of the information and data reported in the IT/R were not reliable due, in part, to the limited accessibility to data, non-systematic research method, conflicting information, error, and other reasons. JICA Study Team admitted the fact that the lack of information, as it was the case in coal mining, was becoming a limiting factor of the progress of the Study. The Study Team requested the Vietnamese side to provide more relevant data, and to point out any questionable information in the IT/R. Vietnamese side accepted this request.

5.2 Additional Information

The JICA Study Team had recently carried out a questionnaire survey to assess the values of the environment as quantitatively as possible. The JICA Study Team promised to revise its economic analysis based on the data obtained from this survey.

6. Technology Transfer

6.1 Technology Transfer Programs

The Vietnamese side commented that the issues of technology transfer were not fully addressed in the IT/R. The JICA Study Team explained that the details of the technology transfer programs conducted during the previous period of Study in Vietnam had been summarised in the Progress Report (1). Details of the technology transfer programs to be conducted during this study period will be summarised in the Progress Report (2).

6.2 Provision of Simulation Model

The Vietnamese side stated the importance of transferring the simulation model developed as a part of the Study, as an essential part of the technology transfer. The JICA Study Team told the Vietnamese side that the Team had already reported this request to the JICA Headquarter.

7. Translation of the Reports

Because both English and Vietnamese-translated version of the reports exist, it has been the source of some confusions of interpretation in the past. English version is the official version, and in case any doubt in interpretation arises, the English version shall prevail.

8. Conclusions

ST/C agreed to accept the IT/R. After carefully reviewing the comments given above, the JICA Study Team shall correct and/or readjust inaccurate information in IT/R, and reflect them in the future reports.

Attachment-I

List of Attendants in the Third Steering Committee Meeting of the Study on Environmental Management Plan for Ha Long Bay

Name	Affiliation
(Vietnamese Side)	
1. Steering Committee	
Truong Manh Tien	NEA, MOSTE
Vu Van Thanh	Quang Ninh DOSTE
Nguyen Van Thai	Ministry of Construction
Pham Trung Luong	Vice Director of Institute for Research and Development of Tourism
Nguyen Trong Chi	Conservation and Museum Agency (on behalf of Mr. Nguyen Quoc Hung)
Trinh Van Hoan	National Maritime Agency (on behalf of Mr. Bui Duc Nhuan)
Pham Quang Tho	Deputy Secretary General, UNESCO
2.Executive Committee	
Ta Duy Thinh	Director of Constructive Department
Nguyen Duc Long	Vice Director of Industry Department
Phung Danh Dai	Vice Chairman of HaLong City People's Committee
Nguyen Van Long	Vice Director of Financial Department
Do Dang Duong	Department of Culture and Information
Pham Toan	Department of Transportation
Tran Hong Ha	NEA (vice chairman of Executive Committee)
Nguyen Cong Thai	Vice Director of Ha Long Bay Management Board (on behalf of Mr. Tuan)
3. Counterparts	
Pham Quang Trung	Department of Agriculture and Rural Development
Bui Van Khuynh	Industrial Department
Vu Quang Cu	Department of Construction
Dang Kim Van	Department of Tourism
Bui Thi Cuong	Ha Long city People's Committee
Vu Nam Phong	DOSTE
Hoang Danh Son	DOSTE
4. Others	
Nguyen Dac Hy	NEA
Nguyen The Hung	Institute for Mining Science and Technology
(Japanese Side)	
1. JICA and JICA Advisory Committee	

Masahito Kuse	Japanese NEA
Ikuo Fujita	Japanese Ministry of Transportation
Katsuyoshi Saito	JICA

2. JICA Study Team

Yoichi Iwai	Team Leader, JICA Study Team
Toshiyuki Ujiie	JICA Study Team
Mamoru Osada	JICA Study Team
Kon	JICA Study Team
Tomoo Aoki	JICA Study Team
Itaru Okuda	JICA Study Team
Hiroshi Hasegawa	JICA Study Team

THE MINUTES OF MEETING

ON

THE PROGRESS REPORT (2)

OF

THE STUDY ON
ENVIRONMENTAL MANAGEMENT FOR
HA LONG BAY

IN

THE SOCIALIST REPUBLIC OF VIETNAM

Hanoi, March 18, 1999

Mr. NGO DINH THO
Chairman
of Steering Committee

Mr. YOICHI IWAI
Team Leader,
JICA Study Team

In accordance with the Scope of Work (S/W) for the Study on Environment Management for Ha Long Bay (The Study) agreed upon between the Ministry of Science, Technology and Environment (MOSTE), the People's Committee of Quang Ninh Province (QNPC), and Japan International Cooperation Agency (JICA), the JICA Study Team prepared the Progress Report (2) (P/R(2)), and submitted 40 copies of the original English version and 40 copies of the Vietnamese-translated version to MOSTE and QNPC.

The 4th Steering Committee Meeting was held on March 18, 1999 at Kim Lien Hotel in Hanoi to discuss the contents of the P/R(2). The attendants to the meeting from the Vietnamese side included the ST/C members, Executive Committee members and others. The attendants from the Japanese side were the JICA Study Team members. The list of the attendants is provided in Attachment-I.

Appointed by QNPC and MOSTE respectively, Mr. Ngo Dinh Tho, Chairman of the Steering Committee (ST/C) and the Vice Chairman of QNPC, and Mr. Truong Manh Tien, Vice Chairman of the Steering Committee (ST/C) and the Vice Director of National Environmental Agency, MOSTE, co-chaired the meeting. Following the presentations from JICA Study Team, the Vietnamese side and the Japanese side discussed the contents of P/R (2). Based on the discussions, the followings have been agreed between the ST/C members and the JICA Study Team.

1. General comments on P/R(2)

The P/R(2) reflected all major issues raised during the 3rd ST/C meeting (review on Interim Report), 5th Mini-Workshop, 6th Mini-Workshop, etc of the project.

2. Specific Comments

2.1 Future Economic Development Frame (Chapter 2)

On the basis of the opinion from relevant agencies of the central government and of Quang Ninh province, the JICA Study Team has adjusted successfully the issues on future economic development so that they are suitable with the current situation of the study area. However, the JICA Study Team should reconsider and modify the projected number of tourists in the future. The Vietnamese side promised to provide the data by the end of March 1999.

2.2 Water Quality (Chapter 3)

Additional water quality data in Ha Long bay in the dry season obtained and supplied by the Vietnamese side were incorporated into the P/R(2).

The Vietnamese side requested the JICA Study Team to provide more scientific clarification on the issues that are closely linked to the approach of conservation criteria and protection measures in the study such as exchange of water in the bay, the importance of internal production to water quality, etc.

The JICA Study team has not evaluated or presented the method used to obtain and analyzed data in order to ensure scientific backgrounds and reliability of the Study's output. The JICA Study Team promised to give more clarification in the DF/R.

2.3 Environmental Zoning (Chapter 4)

Both sides agreed on the general frame of the environmental zoning including the methodology and criteria.

The Vietnamese side requested the JICA Study Team to pay closer attention to the detailed delineation of the boundaries based on topographical and hydrodynamic considerations. The JICA Study Team explained that the detailed delineation required detailed topographical data at the scale of 1:5,000, which were not available at the time; the hydrodynamic conditions had been considered in designing the environmental zones. The JICA Study Team promised to improve the boundary delineation further based on available information such as the satellite images and field survey.

2.4 Target Conservation Criteria (Chapter 5)

The following three comments were raised from the Vietnamese side:

- The JICA Study team has not made clear presentation on scientific background to select conservation criteria as mentioned in the Report.
- The proposed conservation criteria are very stringent in comparison with the existing environmental standard of Vietnam. In order to attain these criteria, it is necessary to develop phased strategies and define suitable implementation method.
- Conservation criteria for biological indicators were not clearly defined.

The JICA Study Team promised to include mid-term conservation criteria in the Draft Final Report (DF/R), and to describe the rational background of the environmental conservation criteria in detail. With regard to the third question, the JICA Study Team responded that the available data were not sufficient to design detailed conservation criteria for biological indicators. Both sides agreed on the need to initiate systematic biological monitoring, and the JICA Study Team promised to give further recommendations in DF/R.

The Vietnamese side felt that the P/R (2) did not give specific approach about how to adopt the new environmental conservation criteria. The JICA Study Team explained that the more specific approach would be provided in DF/R along with the mid-term criteria and phased implementation programs.

2.5 Projects and Programs for EMP (Chapter 6)

The Vietnamese side believed that the proposed projects and programs were appropriate at this time. However, it is recommended that the practicality of some measures on waste treatment should be considered in combination with the current environmental project. Alternative 3.2 is selected but the location of waste water treatment plants should be more appropriate and their capacity should be adequate for the long term. It is necessary to approach and use the results by environmental sanitation projects for Ha long city and other relevant projects.

The JICA Study Team requested suggestions from the Vietnamese side for appropriate sites; particularly for a WWTP site in southeast Hon Gai.

2.6 Environmental Monitoring Plan (Chapter 7)

The Vietnamese side pointed out the need to coordinate the proposed local-level monitoring with the national level monitoring. The JICA Study Team requested the Vietnamese side to

clarify the overlap between the national level monitoring program and the proposed monitoring plan. The Vietnamese side promised to work it out with the JICA Study Team.

2.7 Optimization of EMP (Chapter 8)

It is recommended by the Vietnamese side that the title of this Chapter be confusing as it implies the optimization of entire EMP, and not the proposed environmental measures alone. The JICA Study Team promised to reflect these comments and clarify the optimization of EMP in the DF/R.

2.8 Legal and Institutional Framework (Chapter 9)

The Vietnamese side believed that the proposal to create inter-sectoral environmental management agency (the Implementation Committee) to perform advisory function for Quang Ninh PC and MOSTE is appropriate. However, the proposed long term solution namely the establishment of independent and authorized environmental management agency is difficult to implement because there are many changes in term of state apparatus on environmental protection from central level to local level. In addition, capacity of DOSTE shall be strengthened together with the strengthening of inter-sectoral co-ordination in order to ensure more effective actual implementation of EMP.

The JICA Study Team explained that the plan was drafted to shed the light on the weakness in existing environmental administration and to illustrate the potential changes. The proposed organizational structure is dynamic in nature. This structure should be readjusted once central and local state apparatus on environmental protection is completely restructured .

2.9 Economic and Financial Analysis (Chapter 10)

The economic and financial analysis of EMP concluded that EMP was economically and financially feasible. However, the Vietnamese side believed that the proposed EMP demanded significant financial resources. The major comments from the Vietnamese side include:

- Financial sources were not clearly identified in P/R (2).
- Some results on cost and benefit are not persuasive because the calculation method has not clearly presented, for example, cost for land compensation, discount rate, the contribution of the stakeholders (for example, VINACOAL) should be reconsidered.
- Vietnamese side believed that it is necessary to conduct economic analysis in the selection of proposed measures.

In response to these questions, the JICA Study Team explained that this Study was a Master plan study, and the details of the financial plans were to be developed in the subsequent stages. However, the JICA Study Team acknowledged the importance of financial issues, and agreed to carry out further analysis in the 2nd Works in Japan.

3. Other comments

3.1 Technical Transfer

While the JICA Study Team organized 5 training programs so far, P/R (2) did not clearly mention the progress and effectiveness of technical transfer, and there was no transfer of the water quality simulation software to Vietnamese side. The Vietnamese side would like the

JICA Study Team to explain the necessity of the transfer of water quality simulation model to JICA because this is an important tool to implement EMP. The Vietnamese side believed that the quality and effectiveness of actual implementation of EMP made by the JICA Study Team could be impacted if this model would not be transferred, and that transfer of the model is one important part of technology transfer that has been stated in the Scope of Work dated Sep. 19, 1997.

3.2 Evaluation of Input Data

The Vietnamese requested the JICA Study Team to give evaluation on the reliability of the original data used in the Study. The JICA Study Team agreed to describe the results of the assessment of crucial data in the DF/R.

3.3 Further Evaluation of P/R(2)

Due to limited time since the JICA Study Team submitted P/R (I2) to Vietnamese side (about 4 days), the Vietnamese side agreed to make further review on the P/R(2) and provide comments to the JICA Study Team.

4. Conclusion

1. The Steering Committee highly appreciated the work carried out by the JICA Study Team in Vietnam and has come to agreement to approve the main output of P/R (2) and at the same time required the JICA Study Team to clarify the issues mentioned above.

2. The Steering Committee will make further review of the Report and will inform additional comments and ideas to the JICA Study Team if necessary.

Attachment - I

List of Attendants in the Fourth Steering Committee Meeting of the Study on Environmental Management for Ha Long Bay

Name	Affiliation
(Vietnamese Side)	
1. Steering Committee	
Ngo Dinh Tho	Quang Ninh PC
Truong Manh Tien	NEA, MOSTE
Nguyen Van Thai	Ministry of Construction
Pham Trung Luong	Institute for Tourism Development Research
Nguyen Cong Hung	Ministry of Culture and Information
2. Executive Committee	
Le Dinh Tram	Department of Agriculture and Rural Development
Nguyen Duc Long	Department of Industry
Cao Trung	Department of Fisheries
Phung Danh Dai	Ha Long City PC
Ta Duy Thinh	Department of Construction
Tran Hong Ha	NEA, MOSTE
Nguyen Dac Hy	NEA, MOSTE
Pham Toan	Department of Transportation
Nguyen Cong Thai	Ha Long Bay Management Board
Hoang Danh Son	DOSTE
3. Others	
Pham Quang Trung	Department of Agriculture and Rural Development
Bui Khuynh	Department of Industry
Le Duy Ky	Department of Fisheries
Bui Thi Cuong	Ha Long City PC
Nguyen Manh Hai	Department of Construction
Vu Quang Cu	Department of Construction
Dang Kim Van	Department of Tourism
Hoang Huong Giang	NEA, MOSTE
Pham Quang Vinh	DOSTE
Vu Nam Phong	DOSTE
(Japanese Side)	
1. JICA Study Team	
Yoichi Iwai	Team Leader, JICA Study Team
Toshiyuki Ujiie	JICA Study Team
Tomoo Aoki	JICA Study Team
Michael Gray	JICA Study Team
Itaru Okuda	JICA Study Team
Hiroshi Hasegawa	JICA Study Team

THE MINUTES OF MEETING

ON

THE DRAFT FINAL REPORT

OF

THE STUDY ON ENVIRONMENTAL MANAGEMENT FOR HA LONG BAY

IN

THE SOCIALIST REPUBLIC OF VIETNAM

Hanoi, July 27, 1999

Mr. NGO DINH THO	Mr. YOICHI IWAI
Vice Chairman	Team Leader,
People's Committee of Quang Ninh Province	JICA Study Team

In accordance with the Scope of Work (S/W) for the Study on Environment Management for Ha Long Bay (The Study) agreed upon between the Ministry of Science, Technology and Environment (MOSTE), the People's Committee of Quang Ninh Province (QNPC), and the Japan International Cooperation Agency (JICA), the JICA Study Team prepared the Draft Final Report (DF/R), and submitted 40 copies of the original English version and 40 copies of the Vietnamese-translated version to MOSTE and QNPC.

On July 27, 1999 in Hanoi, the Steering Committee held a meeting to hear and discuss the contents of the DF/R prepared by the JICA Study Team. The attendants to the meeting from the Vietnamese side included the ST/C members, Executive Committee members, and many local scientists. The attendants from the Japanese side included the representatives from the Embassy of Japan, JICA Vietnam, the JICA Advisory Committee member, and the JICA Study Team members. The list of the attendants is provided in Attachment-I.

Appointed by QNPC and MOSTE respectively, Mr.Ngo Dinh Tho, Chairman of the Steering Committee (ST/C) and Vice Chairman of People's Committee of Quang Ninh Province, and Mr.Truong Manh Tien, Vice Chaiman of the ST/C and Vice Director of National Environmental Agency, MOSTE, co-chaired the meeting. Following the opening speech given by Mr.Ngo Dinh Tho, the JICA Study Team presented the contents of the DF/R. Then, the comments from the attendants to the meeting were presented. Based on the discussions, the followings have been agreed between the ST/C members and the JICA Study Team.

1. Comments on the DF/R

(1) Measures against Dust

The JICA Study Team has incorporated measures against dust by coal mining activities into the proposed environmental measures for mining.

(2) Water Pollution Mechanism

The JICA Study Team has identified through the analysis of the wide-range satellite image that the offshore water body of the study area is originated from the tributaries of the Red river and affect the water pollution mechanism in the rainy season.

(3) Socioeconomic Aspects

The JICA Study Team has proposed measures enough to conserve the present environmental levels based on the existing development plans in the study area. The JICA Study Team has therefore pointed out that sustainable development in the EMP area can be accomplished if these environmental measures are implemented.

(4) Accuracy and Reliability of Input Data

Regarding the water qualities, the data obtained through the team's Field Survey showed the similar results with the previous survey data. However, the team put priority on the Field Survey data for use in developing the EMP since sampling dates and locations as well as purposes of the previous survey data differ from one to another. As for the socioeconomic

data, the JICA Study Team selected the most reliable data from the collected ones, by hearing and discussing with the key agencies concerned.

(5) Delineation of Environmental Zone

The JICA Study Team more clarified the environmental zoning borders based on the available topographic maps with 1:50,000 scale.

(6) Conservation Criteria of the EMP

The JICA Study Team has described the conservation criteria of the EMP in greater detail than the P/R (II).
The JICA Study Team has proposed the intermediate conservation criteria on water quality considering the realistic accomplishment of the criteria.
The JICA Study Team has selected biological indicators and proposed methodology for their monitoring. More scientific base should be developed through accumulation of data from monitoring and research activities.

(7) Approach toward Conservation Criteria

The JICA Study Team has proposed measures to attain the conservation criteria, showing technical, financial and institutional approaches in the implementation plan.

(8) Optimisation of EMP

The JICA Study Team has selected the most optimal measures from the technical point of view to integrate them as components of the EMP and pollution control measures from cost-effectiveness viewpoint.

(9) Establishment of Inter-branch Unit

The JICA Study Team has proposed the establishment of an agency such as QN Environmental Management Authority after 2010. This is a necessary action, but further details should be worked out during the implementation of this proposal.

(10) Financial and Economic Analysis

The JICA Study Team has repeated examination on the obtained financial and economic data, and carefully evaluated the proposed financial plan for realistic implementation of the EMP.

2. Technology Transfer

(1) Technology Transfer Programs

The JICA Study Team explained that the technology transfer programs conducted during the Study in Vietnam had been summarised in the DF/R.

(2) Provision of Water Quality Simulation Model

The JICA Study Team explained that the JICA Headquarter does not have a plan to provide the water quality simulation model in the course of this Study.

3. Conclusions

(1) The ST/C members highly appreciated the work carried out by the JICA Study Team and have come to agreement to approve the DF/R.

(2) The Steering Committee will make further review of the DF/R and provide the Study Team with further comments by the end of August 1999. Meanwhile, the JICA Study Team is requested to receive and incorporate the comments by attendants to this meeting into the Final Report, which will be completed and submitted to the Vietnamese Government in October 1999.

LIST OF ATTENDANT IN 5TH STEERING COMMITTEE
The Study on Environmental Management for Ha Long Bay
(Hanoi 27/7/1999)

Item	Name	Organization
Vietnamese side		
1	Truong Manh Tien	Deputy Director of NEA
2	Ngo Dinh Tho	Vice chairman of QNPC
3	Vu Van Thanh	Director of DOSTE
4	Truong Trong Luat	Institute of Water Resources Planning
5	Le Van Hoc	Institute of Water Resources Planning
6	Bui Duc Nhuan	Vietnam Maritime Agency
7	Nguyen Canh Nam	Institute of Mining, Science, and Technology
8	Nguyen Dac Hy	NEA
9	Nguyen Tien Dung	NEA
10	Dang Kim Son	Ministry of Agriculture and Rural Development
11	Nguyen Dinh Hai	Ministry of Industry
12	Nguyen Xuan Tien	Ministry of Planning and Investment
13	Pham Trung Luong	Institute of Tourism Development Research
14	Nguyen Van Thai	Ministry of Construction
15	Nguyen Thi Thanh Ha	Ministry of Finances
16	Nguyen Xuan Ly	Ministry of Fisheries
17	Ho Minh Tuan	Vietnam UNESCO
18	Tran Hieu Nhue	CEETIA
19	Nguyen Quoc Hung	Ministry of Information and Culture
20	Phung Danh Dai	Vice Chairman of Ha Long City PC
21	Luong Viet Chung	Ha Long City PC
22	Ta Duy Thinh	Quang Ninh Dep. of Construction
23	Nguyen Duc Long	Quang Ninh Dep. of Industry
24	Le Dinh Tram	Quang Ninh Dep. of Agriculture and Rural Development
25	Hoang Danh Son	Quang Ninh DOSTE
26	Nguyen Minh Son	CMERSC
27	Nguyen Duc Cu	HIO
28	Vu Mau Dac	Quang Ninh DOSTE
29	Vu Nam Phong	Quang Ninh DOSTE
Japanese side		
30	Shoichi MIYAZAKI	First Secretory, Embassy of Japan
31	Takanori JIBIKI	Resident Representative of JICA Vietnam
32	Kazuhiko KIKUCHI	Assistant Resident Representative of JICA Vietnam
33	Masahito KUSE	Environment Agency of Japan
34	Yoichi IWAI	Team Leader, JICA Study Team
35	Toshiyuki UJIIE	JICA Study Team
36	Hiroshi HASEGAWA	JICA Study Team
37	Michael GRAY	JICA Study Team
38	Mamoru OSADA	JICA Study Team
39	Yoshiharu KON	JICA Study Team

Appendix 2 Mini Workshops, Training Programs, and Technology Transfer Seminar

Mini Workshop

No.	Theme and Main Contents	Date	Place	Number of Participants
1	Why Environmental Management Plan Is Required? (1) Introduction of Environment Management – Experience in Japan (2) Environment Management and Regional Development (3) An Overview on Development Master Plan of QNPC from 1995 to 2010, Major Environmental Problems and Environmental Management Policies of QNPC (4) Discussions	11 March, 1998	Hanoi	about 40
2	Balancing Environmental Conservation and Socioeconomic Development (1) Environmental Management Plan and Coastal Area Development - Case Study in the Philippines - (2) Environmental Conditions of the Ha Long Bay Area Analyzed by Satellite Images (3) Balancing Environmental Conservation and Socioeconomic Development in the Ha Long Bay Area (4) Discussions	20 May, 1998	Hanoi	about 60
3	Environmental Deterioration in Ha Long Bay 1st day (1) Environmental Conditions in the Ha Long Bay Area (2) Field Survey (3) Environmental Deterioration by Coal Mining Activities (4) Pollution Mechanism in the Ha Long Bay Area (5) Discussions 2nd day (1) Review of Pollution Mechanism in the Ha Long Bay Area (2) General Discussions, Part 1 (3) General Discussions, Part 2	18 & 19 August, 1998	Ha Long	about 75
4	Water Pollution Simulation (1) Objective and Methodology of Water Quality Simulation Model (2) Existing Water Quality Model of Ha Long Bay by WB Project (3) Explanation of JICA Study Team's Model (Hydrodynamic Model) (4) Explanation of JICA Study Team's Model (Diffusion Model & Eutrophication Model) (5) Discussions, Part 1 (6) Discussions, Part 2	4 Sept., 1998	Ha Long	about 30

No.	Theme and Main Contents	Date	Place	Number of Participants
5	Desirable Environmental Conservation Measures (1) Wastewater Management - Domestic wastewater and sewage conditions - Projects and program to be implemented - Question and answer (2) Solid Wastes Manager - Solid wastes problems - Projects and program to be implemented - Question and answer (3) Environmental Measures for Mining - Coal mining activities and their environmental problems - Projects and program to be implemented - Question and answer (4) Environmental Measures for Tourism - Tourism development and its environmental problems - Projects and program to be implemented - Question and answer (5) Natural Resources Management - Target of natural resources management - Project and programs to be implemented - Question and answer (6) Discussions	25 Feb., 1999	Hanoi	about 40
6	Toward Implementing the Environmental Management Plan (1) Environmental Zone (2) Conservation Criteria (3) Alternatives of Measures and Optimization (4) Environmental Monitoring Plan (5) Institution and Organization (6) Finance and Economic Analysis (7) Discussions (I) - Group-1: Zone, Criteria, Measures, and Monitoring - Group-2: Institution, Organization, Finance and Economic Analysis (8) Discussions (II)	11 March, 1999	Ha Long	about 80

Training Program

No.	Theme and Main Contents	Date	Place	Number of Participants
1	Survey skills of tidal current, water quality, bottom sediment, and biological indicators (1) Phase I: Training by the JICA Study Team 1st day: Lecture in the office - General schedule of training course - Purpose of surveys and selection of survey points - Planning method of field survey - Sampling and surrey skills on site - Operation and maintenance skills of equipment - Maintaining methods of samples on site and off site - Data recording and checking methods 2nd day: Field training on the bay - Skills of survey points selection - Survey skills of filed measurement items (air and water temp., pH, DO, salinity, transparency, etc.) - Sampling skills of the sea water and bottom sediment - Sampling skills of benthos and plankton - Transportation skills of samples - Data records skills 3rd day: Field training in the rivers and pollution sources - Skills of survey points selection - Survey skills of filed measurement items (air and water temp., pH, DO, etc.) - Survey skills of water flow in the rivers and at the end of pipe of factories - Sampling skills of the water - Transportation skills of samples - Data records skills (2) Phase II: Training by the local institute (training during the field survey)	10,11, &12 June, 1998	Ha Long	about 30
2	Environmental Monitoring and Management 1. Design of Environmental Monitoring (1) Purpose of Monitoring (2) Types of Monitoring Program (3) Steps in Design of Monitoring Programs (4) Objectives for Data Quality (5) Implementation (6) Quality Assurance and Control (7) Institutional and Management (8) Financial 2. Environmental Monitoring in Ha Long Bay (1) General Concept (2) Monitoring Stations (3) Monitoring Variables - Water quality, sediment quality, biological resources, landscape (4) Equipment (General) - Field, Lab (5) Capacity development in Environmental Monitoring - Definition of responsibilities, phased development, human resources (6) Implementation - Short-term plan, long-term plan (7) Data Management	4 March, 1999	Ha Long	about 30
3	Water Quality Simulation (1) Analysis of the Existing Results (2) Re-run of the Model by the New Boundary Condition (3) Evaluation of the New Results (4) Report of the Training Tasks	5 March, 1999	Ha Long	about 30

No.	Theme and Main Contents	Date	Place	Number of Participants
4	Database and Water Pollution Mechanism Part I: Database (1) Establishment of Pollution sources Inventory (2) Basic Structure of Database (3) Utilization of Database Part II: Water Pollution Mechanism (1) Estimation of Pollution Loads -Estimation of pollution loads generation -Setting run-off ratio -Estimation of pollution loads into the bays (2) Water Pollution Mechanism in the Bays -Basic mechanism of water pollution in the bays -Method of mass balance -Method of data analysis of pollution mechanism tests	12 March, 1999	Ha Long	about 30
5	Planning Method of EMP (1) Over view of EMP - Outline of EMP - Procedure (2) Preparation Method of EMP - Baseline Study - Study of future Economic Development Frame - Basic Framework Setting - Environmental Projects and Programs - Formulation of EMP (3) Economic and Financial Evaluation	13 March, 1999	Ha Long	about 30

Technology Transfer Seminar

No.	Main Contents	Date	Place	Number of Participants
1	1. Opening 2. Sessions 2.1 Environmental Conditions and Problems of the Study Area 2.2 Overall Framework of EMP 2.3 Environmental Measures (1) Sanitation (2) Measures for Mining, Tourism, and Environmental Resources, and Environmental Monitoring 2.4 Socioeconomic Development and EMP 2.5 Economic Analysis & Financial Plan 2.6 Organization, Implementation Plan, and Recommendations and Conclusion 3. Overall Discussion 4. Closing	28 July, 1999	Hanoi	about 100