Hoa Lac Hi-Tech Park Management Board,
Ministry of Science and Technology

Japan International Cooperation Agency (JICA)

THE STUDY FOR HOA LAC HIGH -TECH PARK FEASIBILITY STUDY IN THE SOCIALIST REPUBLIC OF VIETNAM

FINAL REPORT

MAIN REPORT

MARCH 2009

NIPPON KOEI CO., LTD.

THE EXCHANGE RATE USED IN THE REPORT IS:

1US$ = YEN 14.91

1 VND = YEN 0.0064

(AVERAGES 2008)

PREFACE

In response to the request from the Government of the Socialist Republic of Vietnam, the Japan International Corporation Agency (JICA) decided to conduct the Study for HOA LAC HIGH -TECH PARK FEASIBILITY STUDY, aiming at update of the feasibility study conducted by JICA from1996 to 1998.

JICA dispatched a team to Vietnam from August 2008 to March 2009, which was headed by Mr. Nobuhiro OSHIMA of Nippon Koei Co., Ltd.

In collaboration with the Vietnamese Counterpart Team, the JICA Study Team conducted the Study which consists of survey on the present review of HHTP, feasibility studies of the area, and promotion measures for project implementation, through lots of discussions with the relevant officials of the Government of Vietnam. Upon returning to Japan, the Team duly finalized the study and delivered this report.

I hope that this report will contribute to the development acceleration of Hoa Lack High-Tech Park and to enhancement of friendly relations between the two countries.

Finally, I wish to express my sincere appreciation to the officials of the Government of Vietnam for their close cooperation.

MARCH 2009

HASHIMOTO Eiji
Vice President
Japan International Corporation Agency

March 2009

HASHIMOTO Eiji
Vice President
Japan International Corporation Agency
Tokyo

Letter of Transmittal

Dear Sir,

We are pleased to formally submit herewith the final report of the Study for HOA LAC HIGH -TECH PARK FEASIBILITY STUDY in the Socialist Republic of Vietnam.

This report compiles the results of the study which was undertaken both in Vietnam and Japan from August 2008 to March 2009 by Nippon Koei Co., Ltd.

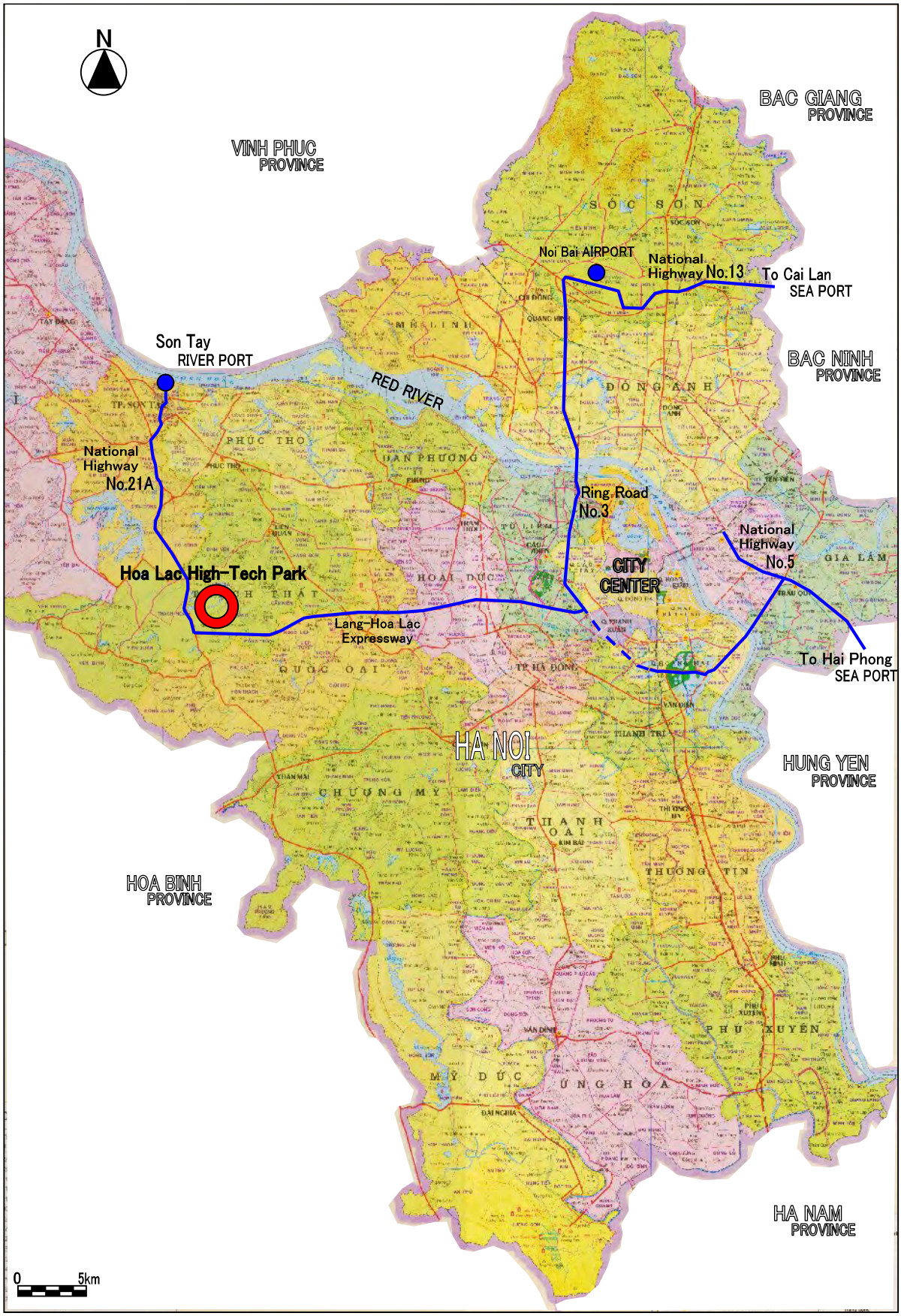
We owe a lot to many people for the accomplishment of this report. Firstly, we would like to express our sincere appreciation and deep gratitude to all those who extended their extensive assistance and cooperation to the Team, in particular the Hoa Lack Hi-Tech Park Management Board.

We also acknowledge the officials of your agency and the Japanese ministries and organizations related for their support and valuable advice in the course of the study.

We hope the report would contribute to the development of Hoa Lack High-Tech Park and advancement of science and technology in Vietnam.

Very truly yours,

Nobuhiro OSHIMA
Team Leader
The Study Team for the Study for
HOA LAC HIGH -TECH PARK FEASIBILITY STUDY



Location map

THE FEASIBILITY STUDY

FOR

HOA LAC HIGH-TECH PARK FEASIBILITY STUDY

FINAL REPORT

MAIN REPORT

Preface
Letter of Transmittal
Location Map
Table of Contents
List of Table and Figure
Abbreviations

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

ADB	Asian Development Bank
AIST	Advanced Industrial Science and Technology
BDS	Business Development Services
CIT	Corporate Income Tax
EIA	Environmental Impact Assessment
EIRR	Economic Internal Rate of Return
EVN	Electricity of Vietnam
FDI	Foreign Direct Investment
FIRR	Financial Internal Rate of Return
FPT	Financing and Promoting Technology Corporation
F/S	Feasibility Study
GOV	Government of the Socialist Republic of Vietnam
HAIDEP	The Comprehensive Urban Development Programme in Hanoi Capital City
HBI	High –tech Business Incubator
HCMC	Ho Chi Minh City
HHRP	Hoa Lac High-Tech Human Resource Platform
HHTP	Hoa Lac High-Tech Park
HHTP-MB	HHTP Management Board
HHTP-DC	HHTP Development Company
HLSC	Hoa Lac Space Center
HPC	Hanoi People's Committee
HUST	Hanoi University of Science and Technology
HUT	Hanoi University of Technology
HWTC	High-tech Workforce Training Center
ICD	Inland Clearance Depot
ICT	Information and Communication Technology
JETRO	Japan External Trade Organization
JAIF	Japan Atomic Industrial Forum Inc.
JAXA	Japan Aerospace Expiration Agency
JICA	Japan International Cooperation Agency
JICA updated M/P	JICA Updated M/P of the Hoa Lac High-Tech Park
JPY	Japanese Yen
LHLE	Lang-Hoa Lac Expressway
MARD	Ministry of Agriculture and Rural Development
MIC	Ministry of Information and Communications
MOC	Ministry of Construction
MOF	Ministry of Finance

MOET	Ministry of Education and Training
MOIT	Ministry of Industry and Trade
MOND	Ministry of National Defense
MONRE	Ministry of Natural Resources and Environment
MOST	Ministry of Science and Technology
MOT	Ministry of Transport
MOU	Memorandum of Understanding
M/P	Master Plan
MPI	Ministry of Planning and Investment
MPT	Ministry of Post and Telecommunication
MSL	Mean Sea Level
NARO	National Agriculture and Food Research Organization
NEDO	New Energy and Industrial Technology Development Organization
NIHE	National Institute of Hygiene and Epidemiology
NIIP	National Institute of Plant Protection
NITE	National Institute of Technology and Evaluation
O&M	Operation and Maintenance
ODA	Official Development Assistance
PMU	Project Management Unit
R&D	Research & Development
ROW	Right of Way
S&T	Science and Technology
SHTP	Saigon High-Tech Park
SME	Small and Medium Enterprise
STI	Space Technology Institute
S/S	Substation
TCVN	Vietnamese Standard
TCXDVN	Vietnamese construction specifications
USD	US Dollar
URENCO	Urban Environment Company
VAEC	Vietnam Atomic Energy Committee
VAST	Vietnamese Academy of Science and Technology
VCCI	Vietnam Chamber of Commerce and Industry
VIETTEL	VIETTEL Corporation
VINASHIN	Vietnam Shipbuilding Industry Corporation
VINACONEX	Vietnam Construction and Import Export Corporation
VITEC	Vietnam Training & Examination Center

VIWASEEN	Vietnam Water Supply, Sewerage and Environment Construction Investment Corporation
VMI	Vietnam Meteorology Institute
VND	Vietnamese Dong
VNPT	Vietnam Post and Telecommunications
VN Revised M/P	Vietnam Revised M/P of the Hoa Lac High-Tech Park
VNU	Vietnam National University

CHAPTER 1 INTRODUCTION

1.1 BACKGROUND OF THE STUDY

The Government of the Social Republic of Vietnamese's (GOV's) national policy places emphasis on promoting science and technology. The aim of the policy is to make Vietnam into an industrial nation by 2020. Promotion of a high-tech park in Hanoi City is a part of the government's policy. Based on the outputs of the "JICA Hoa Lac High-Tech Park Master Plan and Feasibility Study", which was undertaken from 1996 to 1998, the Prime Minister of Vietnam agreed to implement the Hoa Lac High-Tech Park project (hereinafter referred to as "HHTP"). In October 1998, a site of about 1,650ha was allocated for the HHTP. The Hoa Lac Hi-Tech Park Management Board (hereinafter referred to as "HHTP-MB") was established as the implementing body under the Ministry of Science and Technology (MOST). The infrastructure in the HHTP area has been improved and some stakeholders, including companies in the telecommunications, banking, and training industries, have established in the park. However, because the level of infrastructure improvement and investment promotion has not been sufficient, development of the project has become stagnant.

As a result, the GOV requested the Japanese government to update the existing master plan and review the feasibility study that was prepared earlier for the HHTP. In response, the Japanese government dispatched a study mission to Vietnam and a preliminary review of the current situation was made between January 31 and February 2, 2007. Following this preliminary review, the Japanese and GOV agreed that the existing master plan and feasibility study should be separated. Doing this would allow the master plan to be updated prior to a detailed review of the feasibility study being undertaken. The Japan International Cooperation Agency (hereinafter referred to as "JICA") undertook "The Study for Update of the Hoa Lac High-Tech Park Master Plan" between April and November 2007 and assisted the GOV to update the master plan. After this, the Update Master Plan was revised by the GOV. In May 2008 the Prime Minister of Vietnam approved the revised master plan for the HHTP, including some changes of the size of the study area, which now comprises a land area of 1,586 ha. Following this, JICA initiated the current project to undertake a detailed review the feasibility study, which is focusing specifically on an area of 1,036 ha within the HHTP that is to be urgently developed.

1.2 OBJECTIVES OF THE STUDY

The objectives of the Study are as follows:

- To conduct a feasibility study for an area of 1,036 ha that is to be urgently developed in the HHTP, based on the revised Master Plan that was approved by GOV in May 2008.
- To recommend the measures to promote and implement projects and encourage facilities to locate within the HHTP.

1.3 STUDY AREA

The area to be covered by the feasibility study is defined as "the Study Area", which corresponds to the area that was specified in the Terms of Reference (TOR) for the Study. This is to an area of 1,036 ha out of the total 1,586 ha that was decided in the revised Master Plan. The Study Area is located about 30 km west of the Hanoi City (former Ha Tay Province), as illustrated in the following figure.

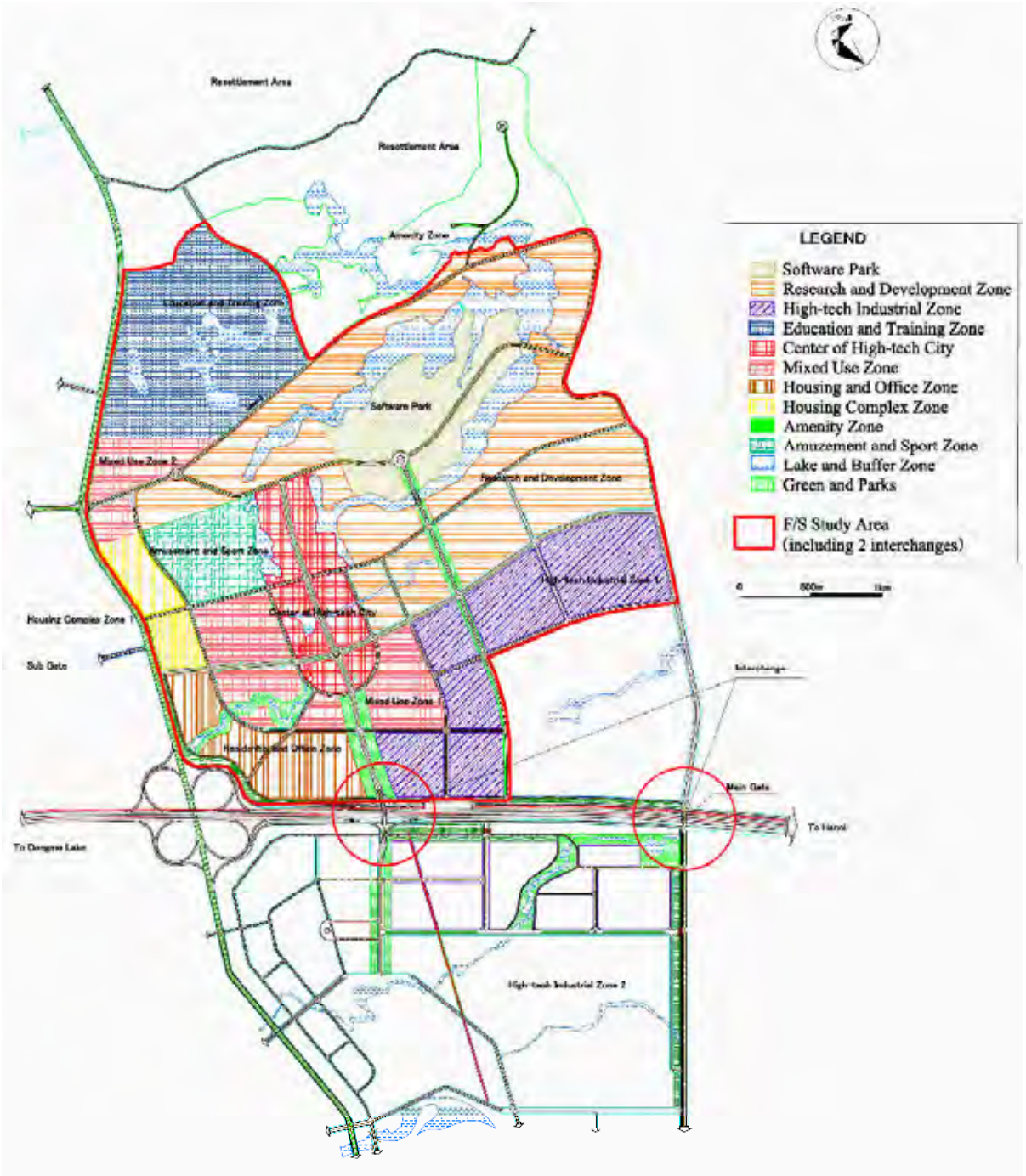


Figure 1.3.1 Study Area for Feasibility Study

CHAPTER 2 BACKGROUND OF HOA LAC HIGH-TECH PARK DEVELOPMENT

2.1 BACKGROUND OF HHTP DEVELOPMENT

Vietnam is on the process of development and global integration toward the objective in the year 2020 "to be an industrial country". In the process of industrialization and modernization, the development in national science and technology becomes main direction in the technological innovation in production, business and other industries. For Vietnam, the government's policy on developing the National High-tech Park in order to create an attractive environment to foreign investment flow in high-tech industry are; (i) to build a national high-tech centre as a nuclear to boost focal economic zones, and (ii) to develop an environment which can coordinate scientific and technological researches with high-tech human resource education competent to the socio-economic context and national scientific -technological level.

In accordance with the government policy on National High-tech Park development, Decision No.198/ QD-TTg dated on 12 October 1998, Prime Minister was issued to establish Hoa Lac High-tech Park within 1,650ha and considered it the important factor to speed up the regional and national industrialization and modernization and to bridge the technological transference and innovation, the pilot point to earn experience in developing other high-tech zones nationwide.

The location HHTP is 30km west of Hanoi to the direction of the Lang-Hoa Lac Expressway (LHLE). The company to implement the construction of Hoa Lac High-tech Park (HHTP) is the HHTP-MB.

HHTP acts as the centre of national high-tech development network, focusing on high-tech research and development; is combination between production, trading of high-tech products, and nursery garden for high-tech enterprises, moving towards a national scientific and technological city. It is also a technology-intensive environment with full equipment and infrastructure to facilitate education- research- and application activities, and a well legal status with the intensified management in high-tech industry so as to promote investment with a wide range of partners.

Together with the fast development of science and technology regionally and worldwide, HHTP plays an essential role in nation's development and becomes a typical model of high-tech zone in Vietnam. In order to strengthen the development of HHTP, the following missions need to be fulfilled:

- Timely develop high-tech industry to enable Vietnam to keep up with other countries in region or all over the world.
- Direct high-tech and finance resources to focus on key areas so as to promote development as well as create attraction for other industries, concentrating on development research and technology manufacture.
- Keep the balance and the link between high-tech industries, amongst research institutes, universities, and manufacturers in order to reach fastest growth rate in competitive high-tech industries.

To complete the mission above, not only development of industries and/or research institutes are required. Moreover, it is necessary to develop one compact city to accompany the peoples belongs to HHTP activities. The population of the area was forecast as about 189,000 at the completion period. Therefore, it is also required to develop sufficient infrastructures and facilities to support their life within the area.

In 1998, the general planning of HHTP is approved in Decision No. 198/1998/Qd_TTg of the Prime Minister with total area of 1,650 acres. However, the land/ surface dissolution/ release in the Hoa Lac area met difficulties due to the existence of crowded ancient villages. In the official document no. 86/TB – VPCP on 23rd April 2007 the Prime Minister concludes that Ha Tay province shall contribute about 1,600 acres to build HHTP. Based on the conclusion, a part of Hoa Lac area has been compensated by the expansion of HHTP's boundary to the west.

The Prime Minister has approved the mission of general planning on the construction of HHTP in Decision No. 274/QD-TTg on 31st October 2005. JICA dispatched the study team to conducted study on justification of HHTP general planning since April 2007. In order to carry out the project of justified general planning of HHTP smoothly with right Vietnamese legal procedures, Prime Minister's office recommended a Vietnamese consultancy unit to cooperate with JICA specialist team through official letter No. 4430/VPCP dated on 09 August 2007. The HHTP-MB chose National Institute of Urban and Rural planning to participate in Decision No.129/QD- CNCHL dated on 17August 2007 to prepare VN Revised M/P.

2.2 HHTP DEVELOPMENT CONTEXT

2.2.1 Law on High-technology (Law No.21-2008-QH12)

The Law on High-Technology (hereinafter referred to as "the Law") that relates to high-tech activities done by the enterprises in Vietnam was issued on November 13, 2008. The Law comprises six chapters; i) Chapter 1 "General Provisions", ii) Chapter 2 "Application, Research and Development", iii) Chapter 3 "Developing the High-tech in the Technical and Economic Industries", iv) Chapter 4 "High-tech Human Resource", v) Chapter 5 "Technical Infrastructure for the High-tech Activities", and vi) Chapter 6 "Provision of Implementation". A summary of each chapter is provided as follows:

(1) Chapter1: General Provisions

Chapter 1 specifies the Government's high-tech policy, defines specific terms used in the legislation, sets out the Government's priorities and objectives and defines responsibilities for the management of high technology. The Government strongly supports activities that are related to high-technology.

Article 2 of this chapter specifies the scope of the Law as it applies to Vietnamese organizations, Vietnamese people living in Vietnam and abroad, as well as foreigners and foreign organizations that participate in high-tech activities in Vietnam.

Articles 5 and 6 enunciate the criteria for prioritizing high-tech fields for investment and high-tech products, respectively.

(2) Chapter 2: Application, Research and Development of High-Technology

This chapter stipulates the activities of high-tech application, the encouragement of high-technology and the Government's measures for doing that. For instance, there is public assistance for the transportation of high-tech equipment, for R&D activities, as well as preferential treatment in regard to taxation and charges.

(3) Chapter 3: Developing the High-tech in the Technical and Economic Industries

In this chapter, the Law stipulates a number of issues including; i) a strategy on development of the high-tech industries and high-tech in agriculture by the State, ii) investment projects for producing high-tech products, iii) the criteria that high-tech enterprises and the agricultural

enterprises applying high-tech must meet, iv) the foundation and cultivation of high-tech enterprises, v) the development of high-tech foundations, vi) the National Program on the high-tech development, and vii) risky investment for high-technology.

(4) Chapter 4: High-tech Human Resource

This chapter focuses on developing a high-tech human resource, which requires higher technical skills, and mentions the measures and foundation necessary for conducting high-tech training. This chapter also stipulates that the State shall have mechanism, incentive policies to attract and use the high-tech human resource including; i) creating the most advantage working and living conditions for the high-tech activities, ii) providing salary, benefits, insurance to appoint competent persons to the key position to implement the duties on science and technology of the State, iii) providing the highest incentives on personal income tax, iv) encouraging to attend the international activities on the high-tech, and v) giving award, compensation for the excellent persons.

(5) Chapter 5: Technical Infrastructure for the High-tech Activities

This chapter mentions the functions and tasks of a high-tech parks and agricultural zones applying the high-tech, as well as issues relating to the development of a high-tech park. In addition, this chapter specifies incentives for the development of high-tech parks, as well as the responsibilities of the State and concerned governmental agencies for the operation and management of a high-tech park.

Article 31 defines the following functions of high-tech parks; i) to carry out the activities of research, application, development of the high-tech and incubating the high-tech enterprises; production of the high-tech products, supply of the high-tech services, ii) to cooperate with the activities of research, application of the high-tech, training the human for the high-tech, producing of the high-tech products, iii) to train the human for the high-tech, iv) to organize the exhibitions, trade events, showroom for high-tech products from the results of research, application of the high-tech, and v) to attract the resources from domestic and foreign countries to promote the high-tech activities.

In addition, this article stipulates the Ministry of Science and Technology shall coordinate with the ministries, the ministerial level agencies, the People Committees of provinces to submit the Prime Minister to establish and issue the regulations on operation of the high-tech zones.

Article 33 stipulates the measures to promote investment in construction of technical infrastructure servicing high technology development.

(6) Chapter 6: Provision of Implementation

Article 34 stipulates that this Law shall be of full force and effect as of July 1, 2009. According to Article 35, the Government shall make specific regulations and provide guidelines for the implementation of articles, items under the Law; guiding other necessary contents of this Law to meet requirements of state administration.

2.2.2 Collaboration between Japan and Vietnam in Science and Technology

The agreement between the Government of Japan and the Government of the Socialist Republic of Vietnam on Co-operation in Science and Technology (hereinafter referred to as the "Japan-Vietnam Science and Technology Co-operation Agreement") was signed in August 2006. Following this, the first joint meeting of the Japan-Vietnam Joint Committee on Cooperation in

Science and Technology (S&T) was held in March 2007. The second Joint Committee Meeting will be held this year (2008) in Vietnam. The main subjects discussed in the first Joint Committee Meeting were mainly biomass, ICT, medical and epidemical sciences. In the days ahead, the topics that Vietnam is particularly interested in, such as energy, nuclear power, space aeronautics, and environmental conservation, will be discussed. GOV has prepared a Science and Technology Development Strategy 2010 (Decision No.67/2006/QD-TTg 2006-2010), and the abovementioned topics are considered as the highest priority fields for the development in this plan. In addition to these, other fields such as machine automation technology and the preservation and processing of agricultural products are also specified in the plan as priority fields.

Collaboration between Japan and Vietnam in the fields of science and technology, including high-tech, had already been conducted before the signing of the Japan-Vietnam Science and Technology Co-operation Agreement. Most of this earlier collaboration has been initiated by universities and concerned public research institutes. Based upon the agreed MOUs among those entities, personnel exchanges and joint studies were actively conducted. Therefore, it can be said that bilateral collaboration on science and technology has been initiated more by the academic interaction rather than by private enterprise, and this tendency has continued until recently.

Major bilateral collaboration that has taken place up to the present is summarized below. Only the major events are mentioned in the following section as there will have been hundreds of examples of minor collaboration, especially in the academic fields.

(1) Major Cases of Collaboration between Japan and Vietnam

Prior to the conclusion of Japan-Vietnam Science and Technology Co-operation Agreement in 2006, the major bilateral collaboration between Japan and Vietnam was;

- Osaka University and Vietnam National University, Hanoi School (VNU-HANOI) in 1997,
- Tohoku Electric Power Co., Inc. and Electricity of Vietnam (EVN) in 2000,
- Japan Atomic Industrial Forum, Inc. (JAIF) and Vietnam Atomic Energy Committee (VAEC) in 2000,
- Advanced Industrial Science and Technology (AIST) and Vietnamese Academy of Science and Technology (VAST) in 2004,
- National Institute of Informatics (NII) and Hanoi University of Technology (HUT) in 2004,
- NII and Vietnam National University, Ho Chi Minh School (VNU-HCMC) in 2005, and
- National Institute of Technology and Evaluation (NITE) and VNU-HANOI in 2005.

Following the signing of the Japan-Vietnam Science and Technology Co-operation Agreement in 2006, the major collaboration between Japan and Vietnam was;

- Nagasaki University and National Institute of Hygiene and Epidemiology (NIHE) in 2006,
- Japan Aerospace Exploration Agency (JAXA) and VAST in 2006,
- National Agriculture and Food Research Organization (NARO) and National Institute of Plant Protection (NIIP) in 2007,
- Toshiba Co., Ltd. and VNU in 2007, and
- Ehime University and Nong Lam University in 2008.

In addition, some other Japanese universities, such as Tokushima University, Hiroshima University, Obihiro University of Agriculture and Veterinary Medicine, Okayama University, Japan Advanced Institute of Science and Technology, Keio University and Kinki University, etc., have participated in cooperative research with Vietnam. Most of this inter-college collaboration has been supported by programs administered by the Japan Society for the Promotion of Science (JSPS).

On the other hand, it is very difficult to identify major collaborative research activities that have been undertaken by private enterprise. However, the establishment of a joint research institute through collaboration between Toshiba Co., Ltd. and VNU-HANOI in 2007, which is included in the above collaboration list, was a novel event. Earlier examples of major collaboration include; i) collaboration between Tohoku Electric Power Co., Inc. and EVN in 2000, as listed above, ii) collaboration between Mitani Sangyo Co., Ltd. and HUT/Ho Chi Minh Natural Science University in 2001, and iii) long-term collaboration between Nippon Telegraph and Telephone Corporation (NTT) and Vietnam Post and Telecommunications (VNPT) between 1994 and 2000. In addition, two Japanese enterprises, Astellas Pharmacy Inc. and Chugai Pharmaceutical Co., Ltd, participated in the collaboration between NITE and VNU-HANOI.

(2) Main Topics Studied in Research Collaboration

There have been two major types of the bilateral collaboration between Japan and Vietnam. Much of the collaboration is focusing on studying specific topics related to social needs and potential resource studies in various regions of Vietnam, while some collaboration agreements have covered integrated topics. Most of the joint research themes are directed at academic and fundamental research, because the collaborators have mainly come from the academic or fundamental research sectors.

1) University-affiliated Research Topics

Since 1997, Osaka University and VNU have been jointly studying integrated environmental technology for global environmental creation and conservation. Nagasaki University and NIHE undertook joint research to identify the cause of emerging and re-emerging tropical infectious diseases and their preventive measures. In 2008, Ehime University and Nong Lam University collaborated in research on the effects of toxic substances on the environment, organisms, the human body, and micro organisms. In addition, Keio University and HUT signed a joint agreement for integrated academic collaboration in 2005. Japan Advanced Institute of Science and Technology has established a permanent collaborative research facility on the VNU-HANOI campus, and Okayama University has also established a facility on the Hue University campus.

2) Public Research-affiliated Research Topics

In 2007, the Kyushu - Okinawa Agricultural Research Center, operated under NARO and NIIP, initiated joint research on preventive methods to control green rice leafhoppers1. This research has investigated the harm these insects cause to paddy fields and the insect's drug resistance.

Based on the comprehensive agreement between AIST and VAST in 2006, many joint studies are currently being undertaken by both parties. These include collaborative research on disaster-prevention with the Vietnam Geological Research Institute. To date, there have been three (3) collaborative workshops on science and technology. These workshops have discussed various themes including wastewater treatment, biomass,

[1] The source of the outbreak of leafhoppers is determined as northern Vietnam, and they fly to Japan to over-winter.

marine geology, geo-grid systems, multilingual processing, and open source software.

As a member of the Nagasaki University's research group, in 2006 NII participated in joint research with Bach Mai Hospital on diseases including SARS, Avian Flu, and Dengue Fever. Various space engineering topics, such as the development and application of mini satellites, development of remote sensing, and construction of a satellite tracking station have been jointly studied between JAXA and VAST since 2006. In addition, NITE and two pharmaceutical companies formed a joint ventured with VNU and undertook a joint survey project on microorganisms in 2005. This research was aimed at investigating lead compounds for drug discovery.

3) Private Company-affiliated Research Topics

Although there have not been so many collaborative projects initiated by private enterprise, several enterprises have participated with Vietnam in this type of collaborative activity for science and technology development. Toshiba Corporation set up a software laboratory at VNU-HANOI (COLTEC: College of Technology) to promote cooperative research and development on platform technology for embedded software and systems. The COLTEC joint research laboratory is expected to contribute to the development of high-tech human resources in Vietnam. In addition, Mitani Sangyo Co., Ltd., an IT industry-based trading house, have made agreements with two Vietnamese universities to carry out cooperative research on information system development, while Tohoku Electric Power Inc. and EVN have implemented a pilot project for a hybrid solar and wind power generation system.

Although an actual joint research project has not yet been conducted, it is understood that communication between Vietnam and Japan regarding nuclear energy development has been occurring since 2000. It is expected that a program for nuclear energy human resources training projects among the private enterprises will be launched in the near future. This kind of bilateral cooperation for human resources development is also expected to be applied to environmental preservation technologies if assistance schemes funded by public institutes like the New Energy and Industrial Technology Development Organization (NEDO), could be applied for private enterprise activities.

As noted above, collaboration between Japan and Vietnam has mainly been initiated by universities and public research institutes and therefore has an academic basis. This tendency will continue and could be strengthened. On the other hand, although there have not been so many private sector cooperative research projects so far, it is expected that private-driven cooperative research and development will become active as industrial clusters and supporting industries develop in Vietnam. To summarize, since the current collaboration between Vietnam and Japan in private sector is still in the technology transfer and human resources development stage, this situation is less beneficial for Japanese investors. Therefore, to date, bilateral collaboration has focused on academic and fundamental issues.

Table 2.2.1 Initiatives for Science and Technology by MEXT Japan

Reference 1: The Asia S&T (Science and Technology) Strategic Cooperation Program (2006), initiated by Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT), is designed to strengthen science and technology cooperation with Asian countries by promoting international R&D efforts and the construction of a human network through the exchange of researchers and conducting joint research to solve common regional issues. Potential R&D topics include; (a) short term: i) response to natural disasters, and ii) fight against infectious diseases; (b) mid to long term: i) development of sustainable environmental and energy technologies, and ii)

development within Asia of new ICT-related international standards.

Reference 2: Through interviews with experts on S&T cooperation with Asian countries facilitated by MEXT, it was found that that there are common opinions regarding the purpose of S&T cooperation with Asian Countries, expected benefits, and processes. This paper made the following findings and recommendations:

- Except for Singapore, the research levels of Southeast Asian countries pale against those of China, South Korea, and Taiwan. There is less benefit for Japan to undertake cooperative research on S&T, especially in the field of advanced technology;
- To solve the common regional issues, there are a certain beneficial sectors in which Japan can undertake cooperative research with Asian countries; and
- Japan should place importance on the cultivation of young scientists for future S&T cooperative relationships with Asian countries.

Reference 3: MEXT has announced that the number of overseas researchers that the country undertook in the year 2005-2006 was 34,939. In the same period, 137,251 Japanese researchers were dispatched overseas. In the regional context, approximately half of the foreign researchers were from Asian countries, accounting for 48.9%, while 33.6% of the Japanese researchers were dispatched to Asian countries. Both these figures were ranked 1st in the respective categories. Out of these figures, Japan undertook 515 Vietnamese researchers, the sixth largest number for Asian countries, while it dispatched 1,812 Japanese researchers to Vietnam, which was the seventh largest number.

(3) Recent major collaboration between Japan and Vietnam on Science and Technology

Recent major cooperative research activities between Vietnam and Japan are summarized in Table 2.2.2.

Table 2.2.2 Recent Collaboration between Japan and Vietnam

- April, 2008	- Ehime University – Nong Lam University	- Research on effects of toxic substances on the environment, organisms, the human body, and micro-organisms.
- December, 2007	- Toshiba Corporation – VNU/HANOI	- Platform technology for embedded software and systems.
- March, 2007	- NARO and National Institute of Plant Protection	- Research on preventive methods for controlling green rice leafhoppers.
- **August, 2006**	- **Signing of the Japan-Vietnam Science and Technology Co-operation Agreement**	
- June, 2006	- JAXA – VAST	- Agreement on future cooperative research.
- March, 2006	- Nagasaki University - NIHE	- Establishment of a research laboratory in NIHE.
- December, 2005	- NII - VNU(HCMC)	- CIS (Cyber Science Infrastructure) related studies.
- November, 2005	- NITE/ Astellas Pharma Inc./ Chugai Pharmaceutical Co., Ltd. - VNU(HANOI)	- Cooperative study on micro-organisms in Vietnam.
- September, 2005	- Keio University - HUT	- Comprehensive agreement on exchange studies.
- December, 2004	- AIST – VAST	- Comprehensive agreement for joint research on science and technology.
- December, 2004	- NII - HUT	- CIS (Cyber Science Infrastructure) related studies.
- June, 2004	- GOJ - GOV	- Cooperation agreement on AITI for IT skill improvement program, followed by implementation of IT skill examination, etc.

- March, 2001	- Mitani Sangyo Co., Ltd. – HUT/ University of National Science, HCMC	- Information system development.
- January, 2000	- Tohoku Electric Power Inc. – VAEC	- Pilot project for a hybrid power generation system (solar and wind power).
- December, 1999	- JAIF - VAEC	- Human resources development, Legal development, and PA (Public Acceptance).
- October, 1997	- Tohoku Electric Power Inc. – EVN	- MOU for an inter-exchange program.
- Before 1997	- Osaka University – VNU(HANOI)	- Development of integrated environmental technology for global environmental creation and conservation.

2.2.3 Relocation Project of Vietnam National University

A new campus of the Vietnam National University (VNU) – Hanoi has been developed in the adjacent area of HHTP shown on the map below. Phased relocation of VNU-Hanoi from the existing campus in the center of Hanoi City to the new campus will commence in 2010 to follow a relocation plan that was approved by the GOV in February 2003.

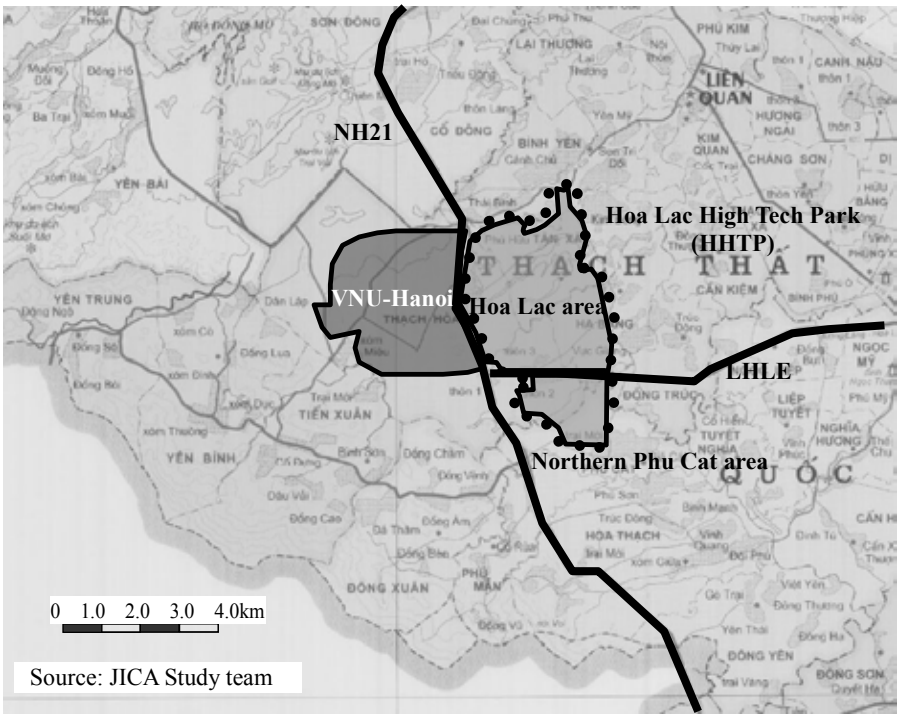


Figure 2.2.1 Location of VNU-Hanoi Construction Project in Hoa Lac

The investor of the Hoa Lac campus construction project was changed from VNU-Hanoi to MOC by the Prime Minister's decision No. 1404/QD-TTg dated September 30, 2008. MOC, taking main responsibility, together with VNU-Hanoi and related agencies manage and speed up the construction progress. Designs for infrastructure and facilities, as well as the construction of dormitories (refer to the photograph below), were partially completed as of October 2008. Construction of the school buildings has not yet been started. The following information was in August, 2008 gathered both from interviews with concerned officers in VNU-Hanoi and from materials distributed by the university.

Figure 2.2.2 Constructions of Dormitories of VNU-Hanoi (as of October 28, 2008)

Purpose

The relocation plan for VNU, Vietnam's most prestigious higher education institution, is a symbolic project that will cap the State's development plan for higher education and science and technology in Vietnam. There are high expectations that this opportunity opens the way for the new VNU campus to become an international education and academic research center for the new age.

Plan

The new VNU campus will cater for 41,000 students and cover an area of 1,220 ha. The relocation plan comprises a total of 13 sub-projects, as listed below.

- Land acquisition, compensation, and relocation project
- Technical infrastructure development project
- VNU center construction project
- Sports facility construction project (under the national defense and education center)
- Dormitory construction project
- Service facilities construction project
- Natural Science College and Master's course establishment project
- Technical College establishment project
- School of Humanities establishment project
- Foreign Language School establishment project
- Economics, Law and Business Administration Schools establishment project
- Science and Technology Research Institute establishment project
- International University establishment project

Except for the International University establishment sub-project, the other twelve sub-projects listed above are currently in progress in some way or another. The International University establishment sub-project is planned to be implemented via international tendering as a separate off-budget project. It is expected that the tender for this work will be announced in 2010.

Current situation

Although land acquisition and the relocation of the people who currently live in the development area is still about 184ha of land out of a total of 1,220ha that has not been surveyed. Housing for the people who are being relocated is under the construction and about 200 families are expected to move to this new housing.

Four dormitories, accommodating 2,500 people in total, and part of the faculties' housing have been built. As for the other sub-projects, each is in different stage of development, such as already approved, in the design stage, or still in the conception stage. Except for the International University construction sub-project that will be implemented via international tendering, most of the other sub-projects will be constructed sequentially from 2009.

Issues

- The VNU relocation project is the first large scale program for the university. Therefore, VNU's capacity for overall management of the project is a major issue. The capacity and management skills of the related institutes and consultants are also of concern.
- The existing laws, regulations, criteria, and policies are uncertain, unclear and outdated.
- Cumbersome procedures have taken extra time to complete.
- Delays in land acquisition, relocation, and compensation have affected overall progress.
- The proposed site is located on the boundary between former Ha Tay Province and Hoa Binh Province. Land management in this area is not clear and this has led to difficulties in conducting the survey work required for land acquisition.

2.3 OBJECTIVES OF HHTP DEVELOPMENT

2.3.1 Vision

HHTP will be an area to attract different forms of high-tech research and development in a fair and competitive environment. This aims at promoting the development of hi-tech industries nationwide. HHTP shall be a dynamic, flexible and effective–operated park. It has an architectural space synchronizing with modern infrastructure system. This feature is relevant to the structure of knowledge hub (U-city), standard living and working environment to ensure the sustainable development.

2.3.2. Objectives

Objectives of HHTP development stated in the approved VN Revised M/P are shown below.

- Combine activities of hi-tech park with activities of other functional zones of Hoa Lac Urban area and adjacent area; combine infrastructure system, architectural space and surrounding landscape.
- Create favorable conditions for activities within HHTP.
- Comprehensively exploit terrain, landscape; creating attractive environment for investing, minimizing expense for technical infrastructure investment.

- Create legal foundation for implementing invested construction projects and plan management in the high-tech zone.
- Based on criteria for using land, technical infrastructure, and advanced requirements of the high-tech zone, investigate and justify the location, boundary, land scale of functional zones and infrastructural works should meet the management requirement in short-term as well as in the long run.
- Construction has to be complying with the approved plan.
- For the areas that have not been constructed, it is necessary to justify the detailed plan conforming to the JICA Update M/P.

CHAPTER 3 REVIEW OF VIETNAM REVISED MASTER PLAN

3.1 BACKGROUND

This chapter presents the results of the following: i) a review of the Vietnam Revised Master Plan (VN Revised M/P) for the Hoa Lac High-Tech Park (HHTP); ii) a study on the present condition of the HHTP. To understand the present conditions of the HHTP project, the following reports were referred to:

- The Master Plan and Feasibility Study on the Hoa Lac High-Tech Park Project (JICA),
- JICA Updated M/P, and
- VN Revised M/P.

The VN Revised M/P for the Hoa Lac High-Tech Park (HHTP) was prepared by the GOV, based on the results of the JICA Updated M/P study. The VN Revised M/P was approved by the Prime Minister of Vietnam as a general plan for the development of the national project in May 2008. The VN Revised M/P was reviewed in order to determine the current situation of the HHTP. The results of reviewing the VN Revised M/P are described hereinafter.

3.2 OUTLINE OF VIETNAM REVISED MASTER PLAN

The outline of the VN Revised M/P is summarized in the following sections.

3.2.1 Land Use Plan of Hoa Lac High-Tech Park

(1) Present Land Use Conditions

The HHTP has a total area of 1,586.51ha and is divided by the Lang-Hoa Lac Expressway (LHLE) into two areas: Hoa Lac area (north of the LHLE) and Northern Phu Cat area (south of the LHLE). The present land use pattern in the HHTP is summarized in Table 3.2.1 below.

The Hoa Lac area, with total land area of 1,268.51ha, is located to the north of the LHLE. Of the total, the present land use pattern in the Hoa Lac area consists of a waterfront area of 11%, an agriculture area of 50%, a developed area of 34% and an undeveloped area of 5%.

Table 3.2.1 Present Land Use in the HHTP

Land Use Type	Hoa Lac Area		Northern Phu Cat Area		Total Area of the HHTP	
	Area (ha)	Proportion	Area (ha)	Proportion	Area (ha)	Proportion
I. Developed Area	435.61	34.34%	65.81	20.69%	501.42	31.61%
1 Residential Area	236.22	18.62%	44.55	14.01%	280.77	17.70%
2 New Industrial Area	11.50	0.91%	4.15	1.31%	15.65	0.99%
3 Specialized Use Area	187.89	14.81%	9.55	3.00%	197.44	12.44%
1) Public Utility	20.68	1.63%	-	0.00%	20.68	1.30%
2) Transportation	80.73	6.36%	9.55	3.00%	90.28	5.69%
3) Irrigation	12.15	0.96%	-	0.00%	12.15	0.77%
4) Cultural Assets	0.28	0.02%	-	0.00%	0.28	0.02%
5) Security & Defense	68.13	5.37%	-	0.00%	68.13	4.29%
6) Cemetery	5.92	0.47%	-	0.00%	5.92	0.37%
4 Existing Industrial Area	-	0.00%	7.56	2.38%	7.56	0.48%
II. Agricultural Area	636.00	50.14%	200.77	63.14%	836.77	52.74%
III. Surface Water	139.00	10.96%	34.50	10.85%	173.50	10.94%
IV. Undeveloped Area	57.90	4.56%	16.92	5.32%	74.82	4.72%
1 Forestry Area	51.51	4.06%	16.92	5.32%	68.43	4.31%
2 Open Space	6.39	0.50%	-	0.00%	6.39	0.40%
Total	1,268.51	100.00%	318.00	100.00%	1,586.51	100.00%

Source: VN Revised M/P

(2) Land Use Plan of HHTP

The distribution of the area and its proportion in the land use plan for the HHTP which comprises the Hoa Lac area (north of the LHLE) and Northern Phu Cat area (south of the LHLE) is summarized in Table 3.2.2.

Table 3.2.2 Land Use Plan in the HHTP

Land Use	Area (ha)	Proportion (%)
1 Software park	76	4.8
2 R&D	229	14.4
3 Hi-tech Industrial	550	34.6
4 Education & Training	108	6.8
5 Center of Hi-tech City	50	3.2
6 Mixed Use	88	5.5
7 Houses & Offices	42	2.6
8 Housing Complex	26	1.6
9 Amenity	110	6.9
10 Amusement	34	2.1
11 Infrastructure	116	7.3
12 Lake & Buffer	117	7.4
13 Greeneries/Trees	42	2.6
Total	1,586	100.0

Source: VN Revised M/P

3.2.2 Infrastructure Development Plan

(1) Land Reclamation

Considering the last 100 year flood return period and to be above the flood level, the ground level is required to be above mean sea level (MSL+11m) by more than 11m for industry and more than MSL+10m for public/civil use thus to bring the land surface up to the required level. The estimated volume of earth work that will be required is shown in Table 3.2.3 below.

Table 3.2.3 Volume of Earth Works in the HHTP

Earth Work	Stage 1 (2015)	Stage 2 (2020)	Total
Cutting (m^3)	-547,900	0	-547,900
Filling (m^3)	4,852,340	6,096,660	10,949,000
Additional Soil (m^3)	4,304,440	6,096,660	10,401,100

Source: VN Revised M/P

(2) Transportation System

The plan for the transportation system consists of the followings:

- Extension of the Lang-Hoa Lac Expressway (LHLE) by a length of about 30 km (6 lanes × 12m) from Hanoi to Hoa Lac, which will be constructed by MOT,
- Upgrading of the National Road 21A between Son Tay and Mieu Mon which was planned by MOT,
- A new railway construction project for Urban Mass Rapid Transit (UMRT) to link the Bavi tourism area and Hoa Lac with Hanoi which was planned by MOT,
- Construction of a road network inside the HHTP to be managed by HHTP-MB, and
- Construction of a fly-over and an underpass for crossing the LHLE.

The road network plan within the HHTP area is summarized in Table 3.2.4 below.

Table 3.2.4 Road Construction Plan in the HHTP

Type of Road	Stage 1 (2015)			Stage 2 (2020)			Total		
	Length (m)	Width	Area (m2)	Length (m)	Width	Area (m2)	Length (m)	Width	Area (m2)
A Main Axle Road									
Type 1-1	6,097	50	304,850	0	33	0	6,097	50	304,850
Type 2-2	5,096	33	168,168	1,912	33	63,096	7,008	33	231,264
B Reginal Road									
Type 3-3	13,371	29	387,759	3,380	29	98,020	16,751	29	485,779
C Internal Road									
Type 4-4	5,375	22	118,250	415		0	5,790	22	127,380
Type 5-5	3,885	16	62,160	1,110	29	32,190	4,995	16	79,920
Total	33,824		1,041,187	6,817		193,306	40,641		1,229,193

Source: VN Revised M/P

(3) Drainage System

The entire area is divided into six (6) drainage basins. Storm water will be discharged into the Tich River, located to the east of the HHTP. The drainage basins are as follows:

- Hoa Lac Area (north of the LHLE): 4 basins comprising Tan Xa Lake, Dua Gai Stream, Vuc Giang Stream and a newly-built retention pond.
- Northern Phu Cat Area (south of the LHLE): 2 basins for 2 internal streams.

The major components of drainage system in the HHTP are listed in Table 3.2.5 below.

Table 3.2.5 Drainage Facilities in the HHTP

Item	Stage 1 (2015)		Stage 2 (2020)		Total	
	Length (m)	Number	Length (m)	Number	Length (m)	Number
1 Open Canal						
600x800	2,993		0		2,993	
800x1000	1,183		0		1,183	
2 Sewer						
D600	8,383		1,624		10,007	
D800	7,863		0		7,863	
D1000	5,021		940		5,961	
D1250	5,122		830		5,952	
D1500	2,329		0		2,329	
D2000	5,300		763		6,063	
D2500	1,790		0		1,790	
D3000	124		0		124	
3 Road Crossing						
D1500		8		1		9
D2000		2		0		2
Box Culvert	195		0		195	
Discharge Mouth		16		2		18
4 Embankment of Lake and Stream	33,466		2,315		35,781	
Total	73,769		6,472		80,241	

Source: VN Revised M/P

(4) Water Supply System

Water for the HHTP area will be supplied through a distribution pipeline having a diameter of 1,600mm. For distribution purpose in HHTP area, the pipeline will be extended from a Water Treatment Plant that will be located at the Da River intake. The estimated water demand for the HHTP is shown in Table 3.2.6.

Table 3.2.6 Estimated Water Demand in the HHTP

Stage	Hoa Lac Area (m^3/d)	Northern Phu Cat Area (m^3/d)	Total (m^3/d)
Stage 1 (2015)	29,078	11,691	40,769
Stage 2 (2020)	17,116	6,868	23,983
Total	46,194	18,558	64,752

Source: VN Revised M/P

(5) Sewerage System

Wastewater generated in the HHTP area will be collected and treated by the facilities under management of HHTP-MB. Wastewater treatment plants that are planned to be constructed in the HHTP area are listed in Table 3.2.7. These treatment plant and management will ensure in meeting the Vietnam effluence standard for Class A industrial wastewater (TCVN 5945-2005).

Table 3.2.7 Wastewater Facilities Plan in the HHTP

Wastewater Treatment Plant	Hoa Lac Area (m^3/d)	Northern Phu Cat Area (m^3/d)	Total (m^3/d)
Stage 1 (2015)	16,650	0	16,650
Stage 2 (2020)	9,350	8,000	17,350
Total	26,000	8,000	34,000

Source: VN Revised M/P

(6) Power Supply System

Electricity for the HHTP will be supplied from the Hoa Binh Hydroelectric plant and Hoai Duc 500kV Sub-station. Currently, both are managed by EVN. The power demand and planned sub-stations are summarized in Table 3.2.8.

Table 3.2.8 Power Demand and Sub-stations in the HHTP

Stage	Demand (kVA)	Source
Stage 1 (2015)	99,862	110kVA Sub-Station No.1 with Power of 3 × 63 MVA
Stage 2 (2020)	109,988	110kVA Sub-Station No.2 with Power of 2 × 40 MVA
Total	209,850	220kVA

Source: VN Revised M/P

(7) Telecommunication Systems

The general characteristics of the planned telecommunication system are summarized in Table 3.2.9 below. However, the telecommunication network system, including a wireless system, has not been planned in detail.

Table 3.2.9 Planned Telecommunication System in the HHTP

Item	Characteristic
Telephone demand	26,770 lines
Capacity of switchboard	30,000 lines
Transmission line system	Optical fiber transmission system

Source: VN Revised M/P

(8) Solid Waste Management System

Segregated Solid waste collected from the HHTP shall be transported to a final disposal site in Hanoi. The estimated solid waste generation rate for Stage 1 and 2 is listed in Table 3.2.10.

Table 3.2.10 Solid Waste Generation Rate in the HHTP

Stage	Quantity (ton/day)
Stage 1 (2015)	133
Stage 2 (2020)	136
Total	269

Source: VN Revised M/P

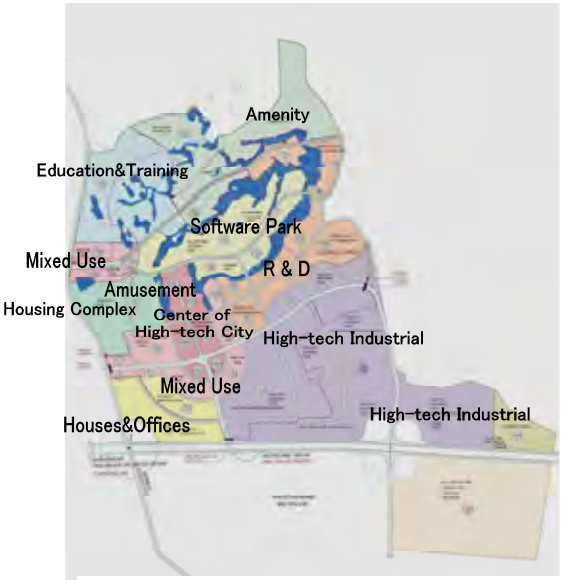
3.2.3 Modification from JICA Updated Master Plan

With reference to the land use planning, the land area allocated for various land uses has been compared between the VN Revised M/P and JICA Updated M/P and area shown in Table 3.2.11. The major difference among the two land use planning is the non existent of southeastern area of HHTP in the VN Revised M/P. The southeastern area of the HHTP was planned for development in the JICA Updated M/P, as shown below in the Figure 3.2.1 and Figure 3.2.2. Thus, to balance this shortfall in the required land area, the VN Revised M/P includes the northern Phu Cat area.

Table 3.2.11 Comparison of Land Use Plans

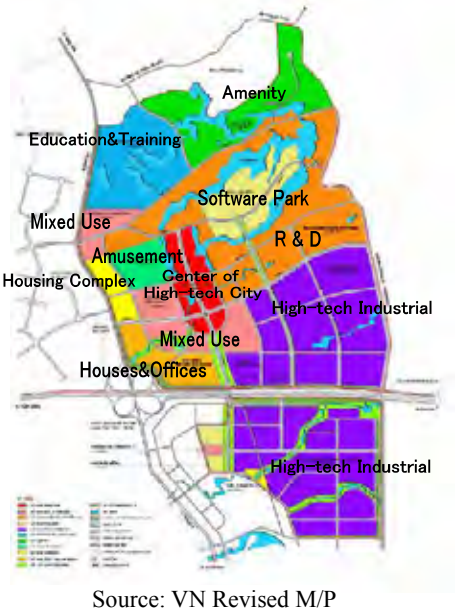
Land Use	VN Revised M/P: Area (ha)			JICA Updated M/P: Area (ha)			Deference
	Total	-2015	2016-2020	Total	-2015	2016-2020	(ha)
1 Software park	75.9	44.0	31.9	75.0	45.0	30.0	0.90
2 R&D	229.0	132.8	96.2	145.0	70.0	75.0	84.00
3 High-tech Industrial	549.5	226.3	323.2	340.0	140.0	200.0	209.50
4 Education & Training	108.0	50.0	58.0	95.0	55.0	40.0	13.00
5 Center of High-tech city	50.0	50.0		50.0	40.0	10.0	0.00
6 Mixed Use	87.7	48.5	39.2	100.0	75.0	25.0	-12.30
7 Houses & Offices	42.0	42.0		50.0	15.0	35.0	-8.00
8 Housing Complex	26.0	12.4	13.6	20.0	0.0	20.0	6.00
9 Amenity	110.0	110.0		110.0	100.0	10.0	0.00
10 Amusement	33.5	33.5		60.0	20.0	40.0	-26.50
11 Infrastructure	115.5	115.5		140.0	110.0	30.0	-24.50
12 Lake & Buffer	117.0	117.0		245.0	140.0	105.0	-128.00
13 Greeneries/Trees	42.0	42.0		0.0	0.0	0.0	42.00
14 Reserved Area				180.0		180.0	-180.00
Total	1,586.1	1,024.0	562.1	1,610.0	810.0	800.0	-24.00

Source: JICA Study Team



Source: JICA Study Team

Figure 3.2.1 JICA Updated M/P



Source: VN Revised M/P

Figure 3.2.2 Vietnam Revised M/P

3.3 REVIEW OF VIETNAM REVISED MASTER PLAN

The major differences between the JICA Updated M/P and the VN Revised M/P are summarized below:

1. The total development area has been reduced by 24ha.
2. The total development area on the north side of the LHLE remains similar.
3. The area of R&D Zone has been increased by 84ha.
4. The area of Education & Training Zone has been increased by 13ha.
5. The area of High-Tech Industrial Zone has been increased by 209.5ha.
6. The area of Housing Complex Zone has been increased by 6ha.
7. The areas of Mixed Use Zone and Houses & Offices Zone are reduced by 12.3ha and 8.0ha.
8. The area of Tan Xa Lake & Buffer Zone has been reduced by 128ha.
9. Technical service tunnels for utilities such as water supply lines, electricity power supply lines, telecommunications and gas supply lines, are planned to be constructed in the Hoa Lac Area (north of the LHLE).
10. Demand projections for development of infrastructures in the HHTP, such as population and water demand, were revised according to alterations in the land use plan.

CHAPTER 4 PRESENT CONDITIONS OF HHTP DEVELOPMENT

4.1 REVIEW OF HHTP DEVELOPMENT

Present condition of HHTP development was reviewed and the following issues were identified.

(1) Land Acquisition and Resettlement

The land area that has been acquired currently for the development purpose is summarized in Table 4.1.1 below. Only 47% of the required land area has been acquired for the HHTP in the Hoa Lac Area (north of the LHLE).

Table 4.1.1 Progress of Land Acquisition

As of November 2008

Land Acquired	Total Area	Acquired	Percentage
Hoa Lac Area	1,268	595.5	47%
Northern Phu Cat Area	318	231.0	73%
Total	1,586	826.5	52%

Source: HHTP-MB

(2) Current Progress of the Project

Currently construction works for Step-1 of Stage-1 Project is under progress by HHTP-MB. Step-1 of Stage-1 work is consists of approximately 200ha land preparation including necessary infrastructure for a part of High-Tech Industrial Zone, Center of the High-Tech City and common area comprising infrastructure, utilities, etc. The current progress status of the project is summarized in Table 4.1.2 below.

Table 4.1.2 Current Progress Status of the Project

Item	Description
a. Land Reclamation	Part of 200ha (the earth volume is not identified).
b. Road	14.5km constructed.
c. Drainage	26.0km installed.
d. Power	Supplied by the temporary overhead distribution line.
e. Water Supply	Supplied by the temporary system by boreholes inside the HHTP.
f. Sewerage	11,016m installed and construction of treatment plant with capacity of 6,000m^3/d nearly finished.
g. Telecommunications	Individually installed by different provider.

Source: JICA Study Team

(3) Issues and Constraints

The present organization of PMU under HHTP-MB has raised certain major issues. It is envisaged that with right approach and effective supervision, the issues and constraint can be minimized. The current issues, problems and constraints that have arisen from the current scenario of the HHTP development are summarized below:

1) Timely implementation plan, such as detail plan for each zone and implementation schedule, has not been made and, as a result, appropriate measures were not taken by HHTP-MB.
2) The insufficient coordination of HHTP-MB with other organizations such as the Ministry of Transport (MOT), Ministry of Agriculture and Rural Development (MARD) and developers, hindered the development of HHTP and resulted in the following issues:
   a) As a part of the LHLE Project, MOT using their own design intends to construct the main gate interchange and underpass for linkage between Hoa Lac High-Tech Park

(HHTP) and the Lang Hoa Lac Expressway (LHLE). This does not meet the requirement of HHTP-MB.

b) It is of major concern that the flood protection measures for downstream area of HHTP, such as retention pond and external drainage canal were not considered by the VN Revised M/P.

c) Without maintaining any harmony of elevations among each zones and stream/lake/pond, developers are developing their zones in a disorderly manner.

d) The High-Tech Industrial zone has been developed by two developers; VINACONEX and FPT, with insufficient border line from marketing and/or investor attraction point of view.

3) For smooth land acquisition and resettling residents, People's Committees, HHTP-MB and local authorities have not yet been fully mobilized.

4) Infrastructure development such as land reclamation, roads, drainage, sewerage and water supply has been partially completed and remaining was suspended due to land acquisition problem and budget limitation.

5) VN Revised M/P has not examined the necessity of flood protection measures such as a retention pond and an external drainage canal, which is required to protect area downstream of the HHTP form flood disaster.

6) The planning and construction of the technical tunnels were done without considering the installation condition for the accompanied infrastructure, such as water supply pipeline, power cables and telecommunication lines. Therefore, some completed works are necessary to be replaced with sufficient design one.

4.2 PRESENT CONDITION OF INFRASTRUCTURE

4.2.1 Land Reclamation and Landscape

(1) Land Reclamation

Land reclamation was planned in the VN Revised M/P and JICA Updated M/P, and the result is shown in Table 4.2.1. According to VN Revised M/P, in order to remain above the level of the last 100 year flood return period, the ground level is set at more than 11m above the mean sea level (MSL+11m) for industrial use and more than MSL+10m for public/civil use.

Table 4.2.1 Design Ground Level

	VN Revised M/P	JICA Updated M/P
Ground level of the R&D, Education & Training, and High-Tech Industrial Zones	≧MSL+11.0m	≧MSL+10.0m
Ground level of Other Zones	≧MSL+10.0m	≧MSL+10.0m
Ground level of Road	≧MSL+10.0m	≧MSL+8.5m

Source: VN Revised M/P and JICA Updated M/P

(2) Landscape

The HHTP has various scenic attributes, such as lakes, rivers, and low hills. These special features of the scenery are important to create a natural landscape so as to provide comfortable and relaxing environment. The Tan Xa Lake is located at the center of the HHTP and provides very beautiful natural environment. There is also a hill in the northwest part of the HHTP. The current situation of the natural environment around the Tan Xa Lake is shown in Figure 4.2.1.

Considering all these features, it is necessary to preserve and utilize the natural environment. The emphasis is to develop the HHTP with a comfortable and soothing landscape.

In order to standardize landscape, the HHTP-MB has prepared a guideline (draft); "Management regulations on construction and planning for landscape architecture of Hoa Lac high-tech Park", which each tenant and developer should follow.

Source: JICA Study Team

Figure 4.2.1 Tan Xa Lake

4.2.2 Road and Transport System

(1) Development Framework

The plan for the road and transport system consists of the followings:

External Road and Transport System

- Lang-Hoa Lac Expressway (LHLE) by a length of 31 km (Expressway: 3.75m × 6 lanes, Service road: 10.5m × 2, ROW: 140m) from Hanoi to Hoa Lac, and will be constructed by MOT.
- Upgrading of the National Highway 21A (NH21A) between Son Tay and Mieu Mon and is being planned by MOT (Main road: 4 lanes × 2, Service road: 3lanes × 2, ROW: 85m).
- A new urban railway development project for Urban Mass Rapid Transit No.3 (hereafter, UMRT) to link the Bavi tourism area and Hoa Lac with Hanoi and is planned by MOT.

Source: JICA Study Team

Figure 4.2.2 Location Map of HHTP External Road and Transport System

Internal Road and Transport System

- Construction of a road network inside the HHTP to be managed by HHTP-MB.
- Construction of a fly-over and an underpass for crossing the LHLE will be constructed by MOT.
- Internal transport system in the HHTP.

The road network plan inside the HHTP is summarized in Table 4.2.2.

Table 4.2.2 Outline of HHTP Internal Road Development Plan

Type of Road	Stage 1 (2015)			Stage 2 (2020)			Total		
	Length (m)	Width (m)	Area (m^2)	Length (m)	Width (m)	Area (m^2)	Length (m)	Width (m)	Area (m^2)
A Main Axle Road									
Type 1-1	6,097	50	304,850	0	50	0	6,097	50	304,850
Type 2-2	5,096	33	168,168	1,912	33	63,096	7,008	33	231,264
B Regional Road									
Type 3-3	13,371	29	387,759	3,380	29	98,020	16,751	29	485,779
C Internal Road									
Type 4-4	5,375	22	118,250	415	22	9,130	5,790	22	127,380
Type 5-5	3,885	16	62,160	1,110	16	17,760	4,995	16	79,920
Total	33,823		1,041,187	6,817		188,006	40,641		1,229,193

Source: VN Revised M/P

(2) HHTP External Road and Transport System

Comfortable and efficient access is an essential condition to develop the HHTP. For a successful operation, the development of external road and transport system in the HHTP area are become key issue.

1) Lang-Hoa Lac Expressway Project

The LHLE will play an essential role for passenger and freight traffic and will be the main route connecting Hanoi city center and the HHTP. The LHLE project has been developed by an implementing body that consist MOT as Investor, Thang Long PMU as Project Manager, and VINACONEX as Construction Contractor. This project is planned to be completed in June 2010. However, considering the delays in land acquisition of approximately 2km in the vicinity of the HHTP (especially at the cloverleaf intersection site), it is anticipated that the completion of the LHLE project will be delayed to March, 2011 as compared to earlier planned schedule of June 2010. Construction duration of 30 months will be required to complete the cloverleaf intersection.

2) Urban Mass Rapid Transit (UMRT) No.3 Project

The development plan for the UMRT was planned as long term (2016-) project in HAIDEP with an aim to connect Hanoi city center and the HHTP. This will also lead to proper urbanization of western part of Hanoi city. The UMRT track are planned to be incorporated in the LHLE development corridor with a 20 m width. Prior to consideration and operation of rail-base, it has been recommended to introduce step development such as Bus Rapid Transport (BRT) so as to cater initial passenger demand in the HHTP area. This will provide necessary development period for the development of UMRT.

3) Hanoi City Ring Road No.3 Project

Hanoi City Ring Road No.3 (RR3) is located in an urban section of the main route connecting the HHTP to the logistic base of Hai Phuong Port and Kai Lan Port. Development of the RR3 has been implemented to mitigate traffic congestion, and to make freight transport more efficient in the Hanoi Metropolitan Area. Part of the southwest section between the LHLE and NH 5 will be initially constructed as a 4-lane standard expressway. As the yen loan agreement between Japan and Vietnam was exchanged in early 2008, it seems this section will going to be implemented soon in near future.

4) National Highway 21A Project

NH21A is currently operated as a 2-lane paved road. The VN Revised M/P identifies NH21A as a freight route connecting HHTP and Son Tay Port. It is expected that this road will be upgraded to a high standard highway so as to cater heavy vehicles. A widening improvement plan to increase the width to 14 lanes (main road 4 lanes × 2, service road 3

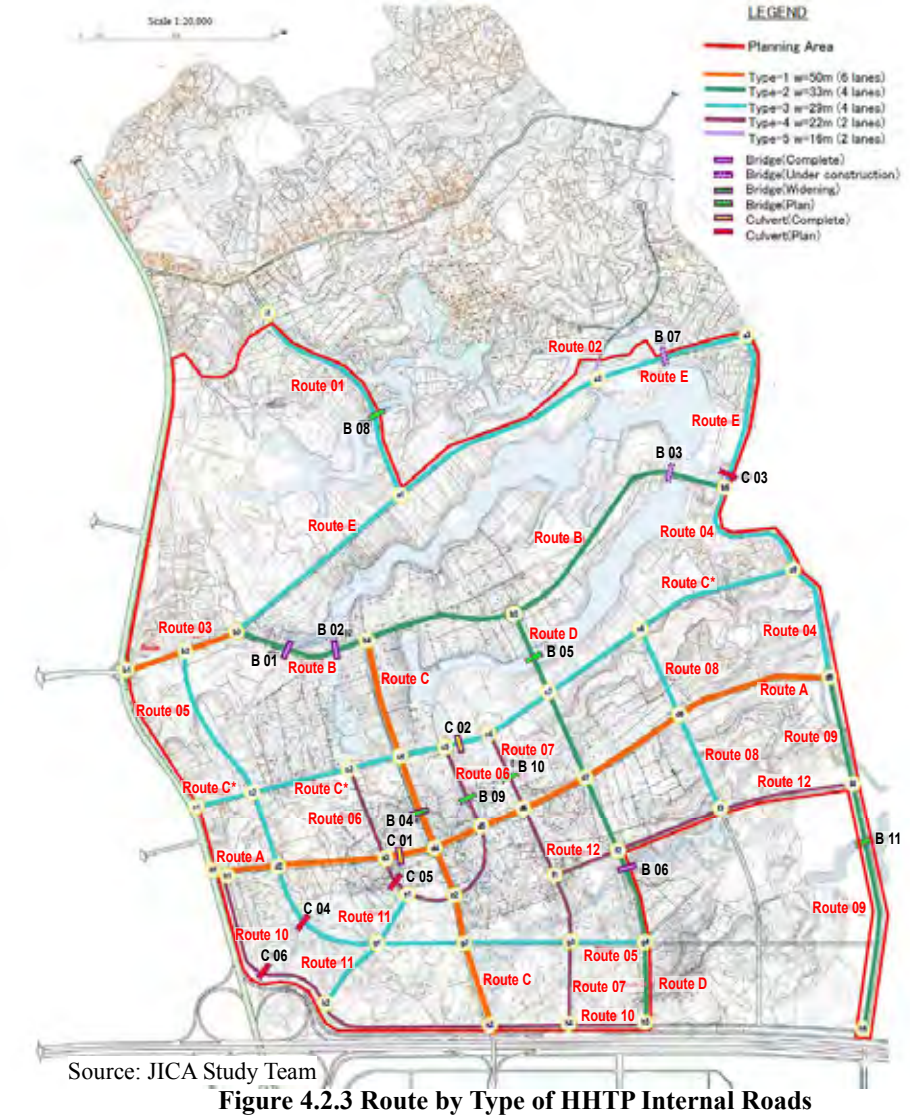
lanes × 2, ROW 85m) is proposed in the VN Revised M/P. It is thus necessary for the HHTP-MB and Ministry of Transportation (MOT) to incorporate the HHTP development plan in the NH21A development plan.

(3) HHTP Internal Road and Transport System

HHTP internal road network plan was planned by the VN Revised M/P and the plan was approved by the Prime Minister. Construction of the internal road has been implemented by the HHTP-M/B. However, for about 60% of planned road neither the implementation budget has been allocated nor they are scheduled for design and construction.

1) HHTP Internal Road

The status of the HHTP internal road development is shown in Figure 4.2.3 and summarized in Table 4.2.3. The roads and bridges that are currently under construction are planned to be completed by the end of 2009. And, the roads and bridges for which detailed design has been completed, as per HHTP PMU, the fund has been assured for their construction. For other roads and bridges, no funds have been assured for detailed design and construction. Financial resources through ODA loans are expected for the design, construction, and the development purpose.



Source: JICA Study Team

Figure 4.2.3 Route by Type of HHTP Internal Roads

2) Fly-Over Bridge and Underpass across LHLE

As for the connection between the HHTP internal road and the LHLE main road, a diamond type interchange with fly-over bridge has been planned by the VN Revised M/P. Additionally, underpass at east of the diamond type interchange has also been planned to connect northern part of the HHTP and Phu Cat area. However, according to design drawings of the LHLE project, the off ramp at outbound lane and on ramp at inbound lane is not planned at the diamond type interchange. Planning coordination between the HHTP-MB and the LHLE project implementing body (MOT and Thang Long PMU) is necessary not only for the development of additional ramp on the diamond type interchange but as well as for the detention and maintenance of the fly-over bridge and the underpass.

Table 4.2.3 Implementation Status of HHTP Internal Roads

No.	Item	Length (m)	Width (m)	Area (m2)
1	Route A	2,395	50	119,750
2	Route C	2,164	33	71,412
3	Route D	1,199	33	39,567
4	Route C*	1,072	29	31,088
5	Route B	1,028	29	29,812
6	Route E	870	29	25,230
Total		8,728		316,859

Source: VN Revised M/P

3) Internal Transport System

Development of the effective and efficient internal transport system is necessary to ensure smooth transport operations within the HHTP area. A circulating bus is proposed as the mode of the internal transport system. Residents of the HHTP and transfer users in the HHTP bus terminal as proposed by the JICA Updated M/P are regarded as main beneficiary of the circulating bus.

4.2.3 Drainage System

The design return period of storm water collection sewer is adopted as three (3) years for the High-Tech Industrial Zone and one (1) year for the other zones. The total length of 44.2km has been estimated for the storm water sewer. This consists of culverts having a length of 40 km (D600mm to D3000mm) and open channels having a length of 4.2km. The material of sewers is a Concrete Hume Pipe. It is planned that thirty (30) box culverts will be constructed at intersections within the HHTP. For the Step-1 of the Stage-1, at present, HHTP-MB has installed the sewers having a length of about 26km in the Hoa Lac area (north of the LHLE). The existing sewers details are shown in Table 4.2.4.

Table 4.2.4 Hoa Lac Area Installed Storm Water Sewer

Name of Road	Diameter of Sewer	Length (m)
Route E	D600, D800 & D1000	5,430
Route B	D600, D800, D1000 & D1500	4,884
Route C	D800	3,834
Route C*	D600, D800 & D2000	4,631
Route A	D600, D800, D1000 & D1250	5,128
Route D	D600 & D800	2,002
Total		25,909

Source: HHTP-MB

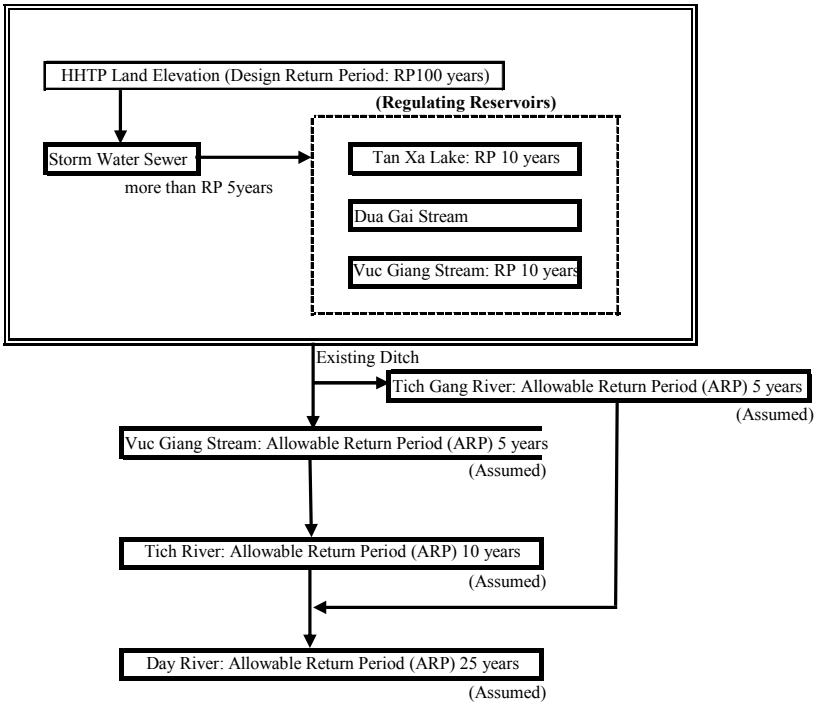
Flood control functions within the HHTP were not mentioned in the VN Revised M/P. However, JICA Updated M/P, addressed this issue and to mitigate flooding within and outside HHTP, JICA Updated M/P estimated that a length of about 35.8km of embankment works will be

required for the Tan Xa Lake, the Dua Gai Stream and the Vuc Giang Stream as a retention function However, the following problems and constraint hinders the feasibility study for the drainage system in the Hoa Lac area (north of LHLE).

i) The design return period of storm water sewer is adopted in the VN Revised M/P to be three (3) years for the High-Tech Industrial Zone and one (1) year for the other zones.
ii) Considering the importance of HHTP, these design return periods of storm water sewer are low. However, the construction of 22 km in length of storm water sewer has already completed along the trunk road.
iii) It is not known exactly that how calculation for the storm water flow and determination of size of culverts were done by HHTP-MB.
iv) Allocation of storm water flow discharged from each zone is not clear.
v) The important issue of flood protection measures for downstream area of HHTP, such as retention pond and external drainage canal is not considered in the VN Revised M/P.
vi) PMU is not capable to implement the HHTP project in coordination with concerned consultative agencies. PMU was not able to grasp the project, progress and design concept of infrastructure for HHTP.

For conducting the feasibility study in the Hoa Lac area (north of LHLE), the following policy and strategy are adopted.

i) Present drainage system in HHTP has been assumed and is mentioned below:



(source: JICA Study Team)

Figure 4.2.4 Outline of Capacities for Drainage System in HHTP

It is supposed that the Tich River and the Day River belong to the National drainage system in Vietnam.

ii) The design return period of storm water sewer in HHTP is proposed to be more than five (5) years.
iii) The allowable return periods of the Tich River and the Day River shall be determined by Vietnamese side, such as MARD, MONRE or MOC.
iv) Increment in discharged storm water after development of HHTP shall be stored and managed within the area of HHTP.
v) Three (3) basins consisting of the Tan Xa Lake, the Dua Gai Stream and the Vuc Giang Stream

in HHTP shall function as the flood protection measures for downstream area of HHTP.

vi) Retention pond or regulating reservoir shall be constructed by the developer of the High-Tech Industrial Zone (VINACONEX/FPT).

vii) It is proposed to have a proper structure for O&M of drainage and sewerage facilities including wastewater treatment plant.

4.2.4 Water Supply System

(1) Current Internal Water Supply System

Current water demand for existing tenants and management facilities is satisfied by the temporary water supply system, which consists of an internal well and individual wells as shown in Figure 4.2.5. The internal well system with total capacity of 3,000m^3/d (consists of 2 wells) is being managed by VIWASEEN until a permanent supply system will be facilitated.

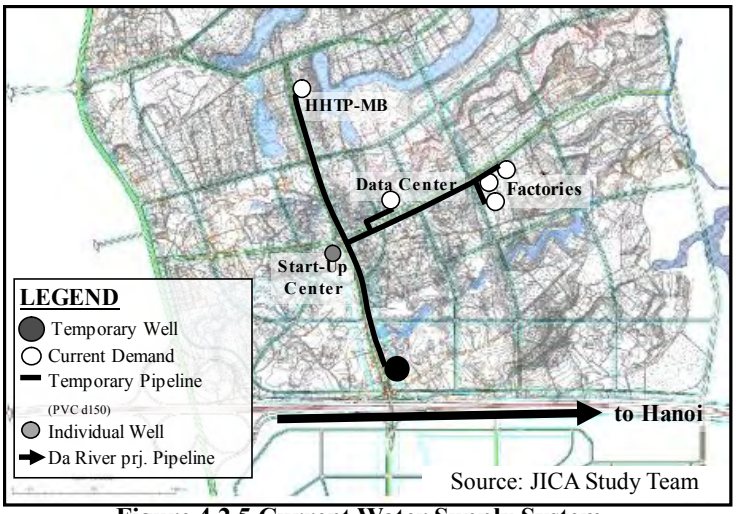


Figure 4.2.5 Current Water Supply System

As for January 2009, only one (1) among two (2) wells is operated to supply Factories, Data Center and HHTP-MB building. Therefore, at least 1,500m^3/d of water can still be supply by current temporary water supply system.

(2) External (Da River) Water Supply System

Temporary water supply system will be replaced by the permanent water supply system supply from Da River Water Supply Project which is owned and operated by VINACONEX. The project outline and development status of the project is summarized below:

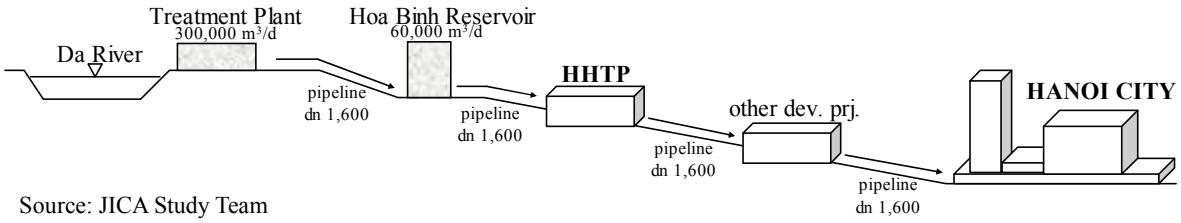


Figure 4.2.6 Outline of Da River Water Supply System

- Current supply capacity: 300,000m^3/d (as for stage-1 of total 2 stages with total capacity of 600,000m^3/d).
- Current supply demand: 100,000m^3/d (as September 2008).
- System reservoir: 60,000m^3/d.
- Water pressure at HHTP: 5-6bar.
- Water quality: meeting the Vietnamese (TCVN) standard.
- Future development plan: expansion for another 300,000 m^3/d is planned for year 2010. However, the actual expansion capacity will be adjusted based on the required supply demand at design work period for the expansion.

Water for the HHTP will be supplied through existing distribution pipeline with a diameter of 1,600mm installed along Lang Hoa Lack Expressway. When the connecting time schedule can meet with the expansion works, water for the HHTP will be supplied through new 1,600mm pipeline which will be installed along LHLE in HHTP side, not in opposite side as current pipeline.

Therefore, HHTP-MB requested to send official letter to VINACONEX PMU for Da River Project on (i) required supply capacity, (ii) connecting pipe diameter and (iii) connecting time. Final decision for the connection will be determined based on the request.

(3) Issues on Water Supply System

From result of examination of the present conditions, the following problems and constraints are identified for planning the water supply system.

- Current water supply system necessary to be demolished during road improvement works.
- Temporary water supply system to supply current demands will be required during the construction work period.
- Determination of operation and management system for the permanent system, which will affect to the design of the system.

4.2.5 Sewerage System

The wastewater volume has been estimated by the VN Revised M/P as shown in Table 4.2.5 below. In the Hoa Lac Area (north of the LHLE), the average wastewater volume of 25,850m^3/day has been estimated. The length of the sewer is about 22km, with the pipe diameter ranging from 200mm to 500mm. Ten (10) relay pumping stations are planned to be constructed in the Hoa Lac Area (north of the LHLE). In the Northern Phu Cat Area (south of the LHLE) the average wastewater volume of 8,000m^3/d has been estimated. The length of the sewer is about 13km, with the pipe diameter ranging from 300mm to 800mm.

Table 4.2.5 Wastewater Volume Forecast

Land Use		VN Revised M/P: Area (ha)			Daily Average Wastewater Yield (m^3/d)		
		Total	Stage 1(2015)	Stage 2(2020)	Total	Stage 1(2015)	Stage 2(2020)
1	Software Park	75.9	44.0	31.9	803	431	372
2	Research & Development	229.0	132.8	96.2	1,393	731	662
3	High-tech Industrial	549.5	226.3	323.2	22,255	9,165	13,090
4	Education & Training	108.0	50.0	58.0	732	306	426
5	Center of High-tech City	50.0	50.0		727	727	0
6	Mixed Use	87.7	48.5	39.2	157	157	0
7	Houses & Offices	42.0	42.0		3,158	3,158	0
8	Housing Complex	26.0	12.4	13.6	4,531	1,904	2,627
9	Amenity	110.0	110.0		7	7	0
10	Amusement	33.5	33.5		51	51	0
11	Infrastructure	115.5	115.5		0	0	0
12	Lake & Buffer	117.0	117.0		0	0	0
13	Greeneries/Trees	42.0	42.0		0	0	0
Total		1,586.0	1,024.0	562.0	33,814	16,637	17,177
In Round Number					33,850	16,650	17,200

Source: VN Revised M/P

Wastewater sewer line having a length of 11 km has been installed in the Step-1 of Stage-1 of the Project, as shown in Table 4.2.6 below. The μPVC pipe has been recommended by the VN Revised M/P, however in actual, the existing concrete pipe were adopted for the construction of wastewater sewer line.

Table 4.2.6 Installed Sewer at Step-1 of Stage-1

Route No. of Road	Diameter (mm) of Sewer	Length (m)
Route B	D200, 300	2,143
Route C	D200, 400	1,691
Route A	D300, 400, 500	5,866
Route D	D300	1,316
Total		11,016

Source: HHTP-MB

The implementation plan for wastewater treatment that is presented in the VN Revised M/P is shown in Table 4.2.7 below.

Table 4.2.7 Wastewater Treatment Plant Implementation Plan in the HHTP

Wastewater Treatment Plant	Hoa Lac Area (m^3/d)	Northern Phu Cat Area (m^3/d)	Total (m^3/d)
Stage 1 (2015)	16,650	0	16,650
- Plant No.1 (under construction)	6,000	0	6,000
- Plant No.1 (Expansion)	10,650	0	10,650
Stage 2 (2020)	9,350	8,000	17,350
- Plant No.1 (Expansion)	9,350	0	9,350
- Plant No.2	0	8,000	8,000
Total	26,000	8,000	34,000

Source: VN Revised M/P

The construction works of wastewater treatment plant having a capacity of 6,000m^3/d was completed in the end of 2008, as shown in Figure 4.2.7. An activated sludge process with neutralization and coagulation sedimentation has been applied to treat wastewater as generated from Step-1 of Stage-1 in the Hoa Lac area. The construction cost was about VND 73 billion. In addition, HHTP-MB has already acquired the land area of 4.2ha that will be required for construction of Wastewater Treatment Plant No.1.

Figure 4.2.7 Implementation Status of Water Treatment Plants

From result of examination of the present conditions in the Hoa Lac area (north of LHLH), the following problems and constraints are identified for planning the sewerage system:

i) The road elevations of all the trunk road constructed or under construction are not suitable for wastewater collection system. In other words constraint is that road elevations cannot be changed.
ii) It is necessary that unit water demand and unit wastewater yield shall be reviewed since consistency between unit demand of water supply and unit wastewater yield is not matching in the VN Revised M/P.
iii) Though the O&M for sewerage facilities including wastewater treatment plant is to be

conducted by HHTP-MB but the O&M system including wastewater fare collection is not planned by the VN Revised M/P.

iv) As per the land leveling plan of the VN Revised M/P in the Hoa Lac area (north of LHLH), though ten (10) of relay pump stations are planned for construction in the Hoa Lac area (north of LHLH) but nothing has been planned for emergency power supply during the electric power failure by the VN Revised M/P.

v) The wastewater collection sewer was installed with length of 11 km and the treatment plant with a capacity of 6,000m^3/d based on daily average wastewater flow.

The sewerage system plan is proposed under the following conditions and strategy:

i) The unit wastewater yield in the Hoa Lac area (north of LHLH) has been modified corresponding to the unit water demand proposed by JICA Study Team.

ii) Ratio of wastewater yield proposed by the VN Revised M/P is to be kept.

iii) The design criteria for the sewerage facilities shall be setup to meet the Vietnamese Standards.

iv) The existing sewer with length of 11km shall be replaced since a flow capacity of the existing sewer is not suitable for the design flow as revised by JICA Study Team.

v) The counter measures for the operation of the relay pump stations during the electric power failure shall be examined.

vi) It is proposed to have a proper structure of the O&M for drainage and sewerage facilities including wastewater treatment plant.

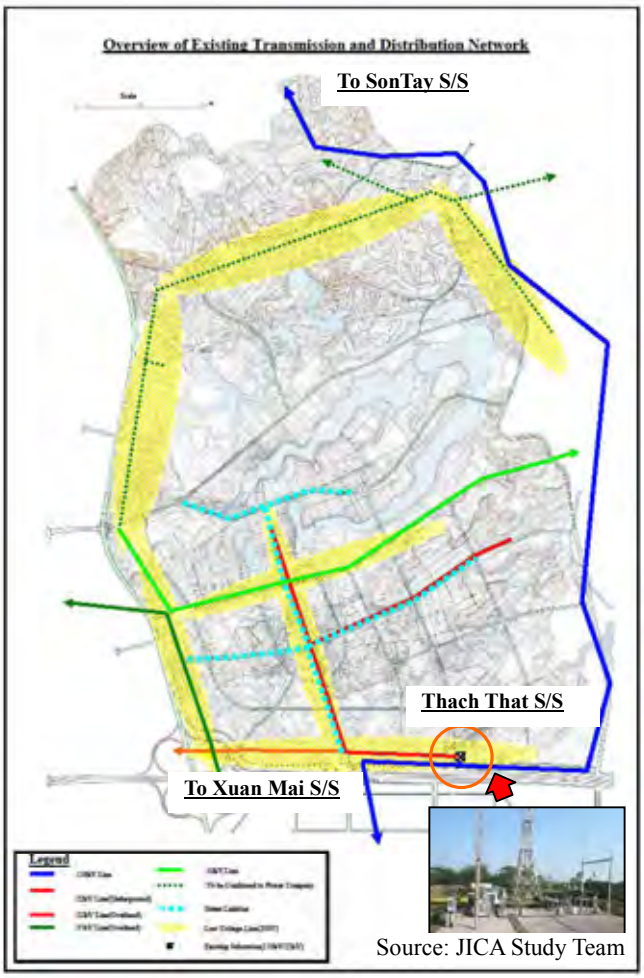
4.2.6 Power Supply System

(1) Internal Area of HHTP

Existing transmission network inside HHTP is shown in the Figure 4.2.8. At present, 2 circuit (cct) of the transmission line between Xuan Mai S/S (substation) and Soy Tay S/S are passing adjacent to HHTP, and 1cct out of the two transmission lines is connected to Thach That S/S (25MVA×1unit). The S/S is supplying power to HHTP. From this S/S, the voltage of 110kV is stepped down to 22kV and is supplied to HHTP through underground cable which is shown in the red line in the figure.

Currently, a 35kV overhead transmission line that is crossing western area of HHTP has been stepped down to 10kV and is supplying power to the neighboring houses as well as to the existing consumers such as factories.

At present, HHTP has constructed 22kV underground supplying facilities. Electric power is supplied to existing tenants and streets light from Thach That S/S (110kV/35kV/22kV, 25MVA×1) through the cables.



Source: JICA Study Team

Figure4.2.8 Overvew of existing network

In November 2008, the demand of Thach That S/S has recorded the peak demand of 5.9MW out of the capacity of 25MVA. However, the recorded demand do includes certain demand that has been consumed outside of HHTP area.

It is reported that the existing electrical facilities inside HHTP is managed by Thach That branch office of Ha Tay Power Company and the power charge of the tenants is collected by the branch office.

(2) External Area of HHTP

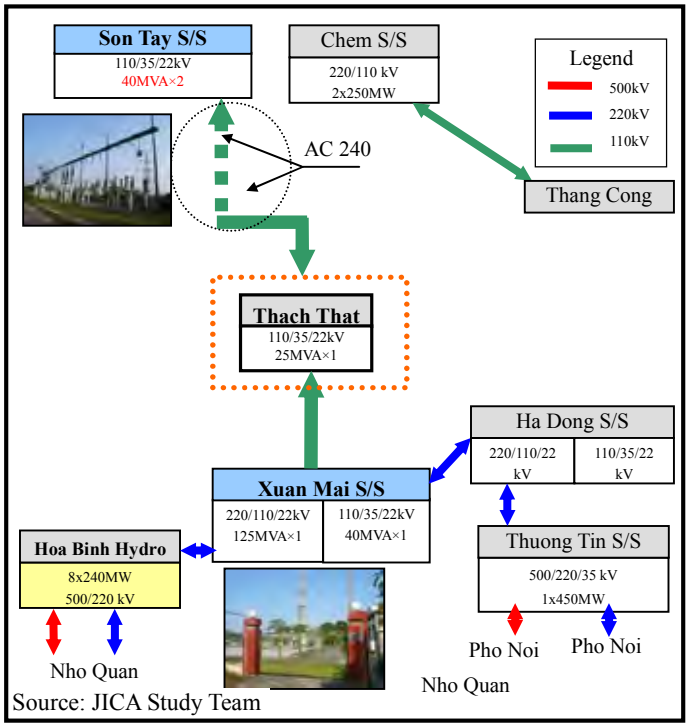
Figure 4.2.9 shows a status of surrounding HHTP as of November, 2008. It is confirmed that 1cct from Xuan Mai S/S is connected to Thach That S/S and supplies electric power to the HHTP.

Meanwhile, Son Tay S/S is connected directly to Xuan Mai S/S without linking it to Thach That S/S. The 1cct and 2cct from Xuan Mai S/S is not connected to the Son Tay S/S, and the line is being operated as a standby use.

Under these circumstances, in case some unfortunate accident occurs in Hoa Binh P/S, then entire area of the present High Tech will be black out.

It is reported that for the time being it is expected that Thach That S/S will supply the power to the existing tenants. Even though as of now the capacity of the Thach That S/S seems to have enough reserve margin but it seems difficult that the S/S will be able to ensure sufficient capacity of power supply in future too. With future development and increased demand, S/S will not be able to cater demand. In addition, in terms of the reliability, the network capacity and the transmission lines need to be reinforced.

Under these circumstances, current issues for the existing facilities can be summarized as follows.



Source: JICA Study Team

Figure4.2.9 Overvew of existing surrounding network

Present Issues
- In case accidents happened in Hoa Binh P/S or Xuan Mai S/S, no electricity could be supplied from Thach That S/S to HHTP.
- It is confirmed that there are old 35kV and 10kV distribution lines in HHTP. These distribution line adopted old standard of the voltage class.
- In order to supply power to the existing tenants and for street lightings、 22kV underground cable has already been installed by the HHTP. As electrical facilities such as underground cable、 distribution panel, and technical tunnels are not well-organized, it is recommended NOT TO USE these facilities for future development.

In the meantime, present issues for the development can be summarized as follows.

Issues for Development
- Electrical facilities are being developed on their own without considering VN revised M/P and JICA M/P. In fact the electrical facilities are constructed in accordance with the increase of tenants, ignoring any planning.
- Thach That S/S does not have capacity enough to cover the demand for future development.
- In spite of the fact that VN Revised M/P was approved by the prime minister, HHTP has not informed Power Supply Plan mentioned in the M/P to the Ministry of Industry and Trade which plans power supply based on the information received from regional government and Vietnamese procedure. In this background, two power supply plans co-exist; one is VN Revised M/P approved by the prime minister, the other is a plan prepared by the Han Tay Province.
- HHTP doesn't have qualified engineer's within their organization to operate and maintain the existing electrical facilities of entire Park. It is deemed indispensable for HHTP to reinforce implementation capacity by supplementing the technical personnel even though other entity such as a power company plans, design and operate the electrical facilities.

Based on the issues mentioned above, electrical facilities to attain reliable supply are planned in the development of HHTP.

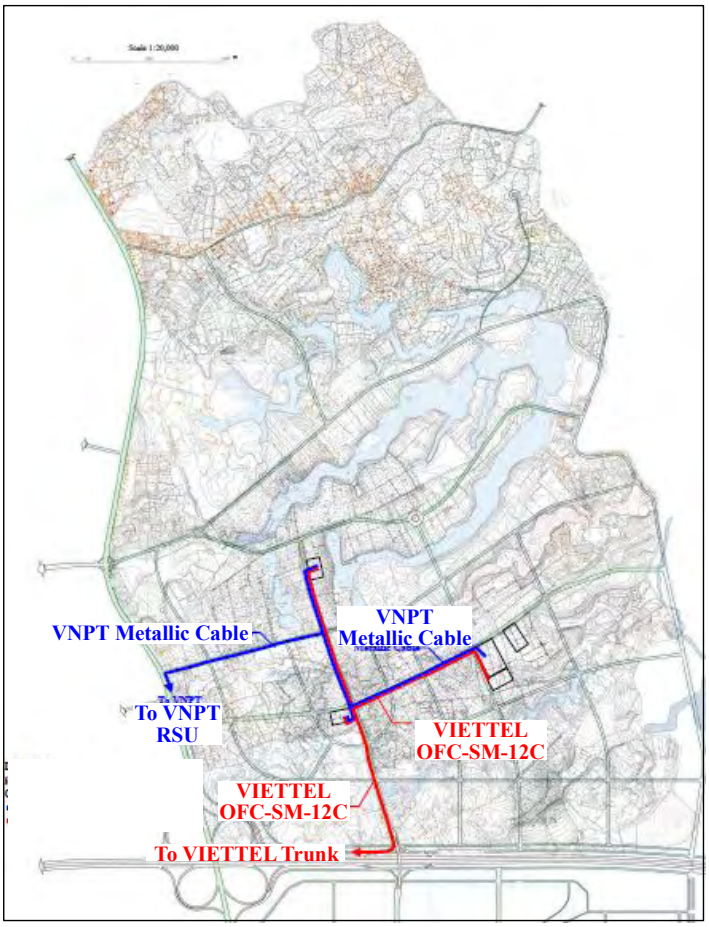
4.2.7 Present Status of Telecommunication Network

(1) Telecommunication Infrastructure within Hoa Lac High-Tech Park

After the introduction of fair competition in the telecommunications sector in 1998, telecommunication carriers and providers licensed by the Ministry of Information and Communications (MIC) provided telecommunication services in Vietnam. The Vietnam Post and Telecommunication Group (VNPT) is a state-owned company under MIC. VNPT is the market leader in the telecommunications sector. VIETTEL Corporation (VIETTEL), under the control of the Ministry of National Defense (MOND), has the next largest market share.

HHTP Management Board (HHTP-MB) has made agreements with VIETTEL and VNPT for comprehensive coordination in developing the information technology infrastructure in the HHTP. Both communication carriers are allowed to construct and install infrastructure such as fiber optic cables, mobile base stations, etc. and to provide telecommunication services to customers.

The telecommunication network in the HHTP has been developed by VNPT and VIETTEL. However, at present only 100 pairs of aerial metallic cables and fiber optic cables are temporarily installed. Figure 4.2.10 below shows the present development status of the telecommunication network in the HHTP.



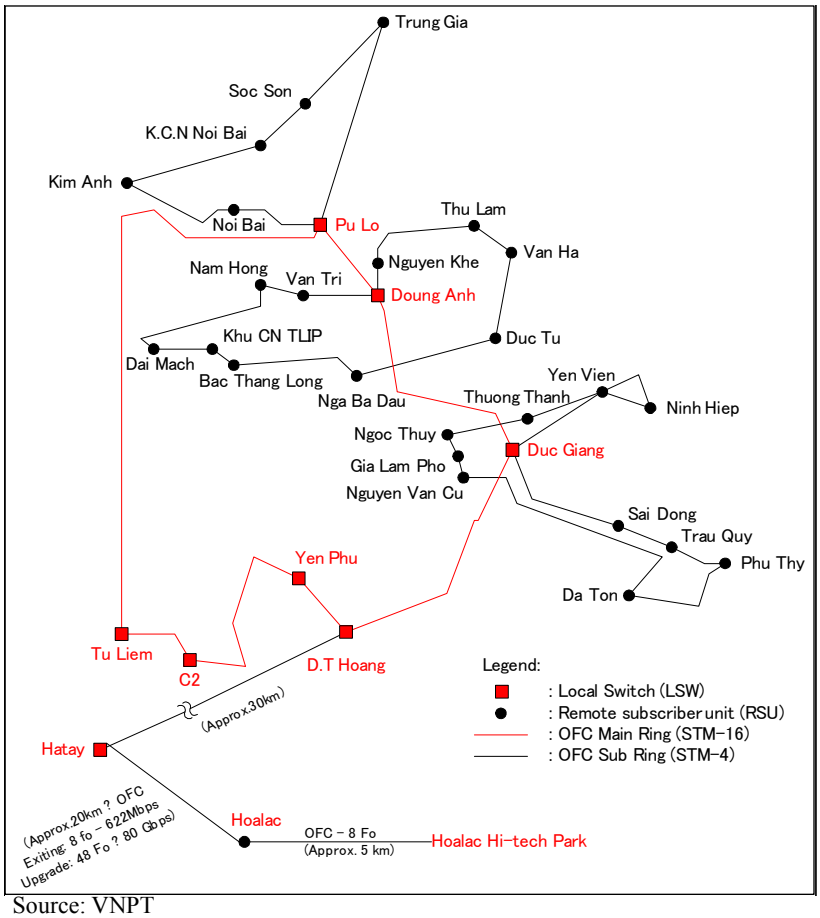
Source: JICA Study Team

Figure 4.2.10 Present Status of the Telecommunication Network in the HHTP

(2) Trunk Telecommunication Network in the Northern Part of Vietnam (Hoa Lac - Hanoi)

The telecommunications carrier trunk network between Hoa Lac and Hanoi is dependent on the Hoa Lac Remote Subscriber Unit (RSU) located outside the HHTP. The Hoa Lac RSU is connected to Hanoi by a main ring network through the Ha Tay Local Switch (LSW). An STM-4 [*1] (622 Mbps) optic fiber network system has been used for the network link between Hoa Lac RSU and Ha Tay LSW. This trunk network link will be expanded to a total capacity of 80Gbps, even though the existing network does not necessarily have high reliability due to its network topology and capacity. VNPT supplied a network diagram for the northern part of Vietnam, as shown in Figure 4.2.11 below. In general, the STM-16 (2.4Gbps) optic fiber network is applied for Hanoi main ring network. In some parts of the network system STM-64 (10Gbps) optic fiber has also been used.

[1] STM: Synchronous Transfer Mode (STM) is one of time division multiplexing (TDM) transmission protocol for transferring multiple digital bits using logical divided channel over the same optic fiber. The hierarchy structure of STM consists of STM-1:155 Mbps (Equivalent to 2,016 voice communications), STM-4: 622Mbps, STM-16: 2.4Gbps and STM-64: 10Gbps.



Source: VNPT

Figure 4.2.11 Network Diagram in the Northern Part of Vietnam

(3) Present Status of International Line

There are two international lines in Vietnam. Both use submarine optic fiber cables. One line connects Danang with Taiwan and Hong Kong, and has a capacity of 565Mbps. The other line connects Vung Tau to other countries. Apart from these existing international communication lines, America & Asia Gateway (AAG) are planned and will be built in 2009. AAG international line will be connected with America and Asian countries by submarine cable with 1Tbps [*2] and the international repeater station will be established at Vung Tau.

(4) Technical trends in telecommunication sector

Regarding the technical trends in telecommunication sector, the latest global standards such as NGN[* 3] (Next Generation Network) and Wi-MAX[* 4] (Worldwide Interoperability for

[2] Tbps: $T=10^{12}$ (bps = bit per second)

[3] NGN: Next Generation Network (NGN) is latest and key telecommunication technologies able to consolidate several transport networks each historically built for a different service such as voice, data, internet, multiple broadcasting, etc. into one core transport network using Internet Protocol. NGN is standardized by ITU-T (International Telecommunication Union - Telecommunication Standardization Sector) and introduction of NGN contribute to reduce the network costs.

[4] Wi-MAX: Wi-MAX (Worldwide Interoperability for Microwave Access) is advanced wireless access technology and standardized by IEEE802.16. Wi-MAX can cover wide-range distance (2–10km) compared with Wi-Fi, provide broadband access tens times as much bit-rate (up to 63Mbps) as current GSM, and have good mobility performance (over 120kmh).

Microwave Access) have already been introduced in Vietnam. VNPT are developing a backbone network system for NGN and is intend to commence the provision of end-user services in 2009. As for Wi-MAX, which is expected as the next generation wireless access system, MIC have issued a trial license to communication carriers and pilot projects have been conducted by the carriers. After the expiration of trial license, the period of license issuance for actual Wi-MAX operation will be determined. This will be done in 2009.

4.2.8 Solid Waste Management

(1) Present Condition of HHTP

1) Domestic waste

According to the VN Revised M/P, total population in the HHTP area is about 7,500 persons and total domestic solid waste generated is 2.25tons/day. During the site inspection and the interview survey, it was found that except for some households along on the main roads such as the Lang-Hoa Lac Expressway (LHLE) and National Route 21A, currently no domestic solid waste collection service exist in the Study Area.

As a result residents throw their waste to their nearby space and often burn their waste in an uncontrolled manner. However, the households along the main roads do segregate and store recyclable materials such as plastics, bottles and cans in their back yards and sells them to junk buyers.

2) Office waste

Currently only 2 offices are in operation in the HHTP area, which are the Hoa Lac Service Center and the HHTP MB office. The waste discharged from these offices is non-hazardous and the amount of the waste from these offices is about 2~3m^3/day. These offices have their own system to clean up their offices and the waste is collected in the dust boxes placed in the offices every day. After collecting waste, they dump their waste by carts to the temporary dumping site located in the Study Area. The temporary dumping site location is about 1km away from the offices. In the temporary dumping site, the dump the waste stored aside the road is burnt in an uncontrolled manner.

3) Industrial waste

Currently, NOBLE and OETEK in High-tech industrial zone and KIM COUNG in Center of high-tech city are in operation in HHTP. The waste discharged from these enterprises is non-hazardous and the amount of waste discharged from each enterprise is about 1~3m^3/day. The waste is transported and disposed in the temporary dumping site located in the Study Area or transferred to the existing waste management company.

(2) Present Condition of Former Ha Tay Province

There are 3 solid waste management companies in former Ha Tay Province; i) Ha Dong Urban Environment Joint-Stock Company (Ha Dong URENCO), ii) Son Tay Urban Construction and Environment Joint-Stock Company (Son Tay URENCO), and iii) Xuan Mai Urban Environment Company (Xuan Mai URENCO).

In addition, there is a recycling plant in former Ha Tay Province, which is operated by Seraphin Green Environment Technology Joint-Stock Company (Seraphin Company). This plant receives and treats the waste from Ha Dong URENCO and Son Tay URENCO.

On the other hand, Hanoi Urban Environment Company (Hanoi URENCO) is the main solid waste management company in Hanoi City.

Table 4.2.8 shows the list of waste management company and their collection areas. Table 4.2.8 shows the list of waste treatment facilities in Hanoi City and the location of the facilities is shown in Figure 4.2.12.

Table 4.2.8 Collection Areas in Charge for each Solid Waste Management Company

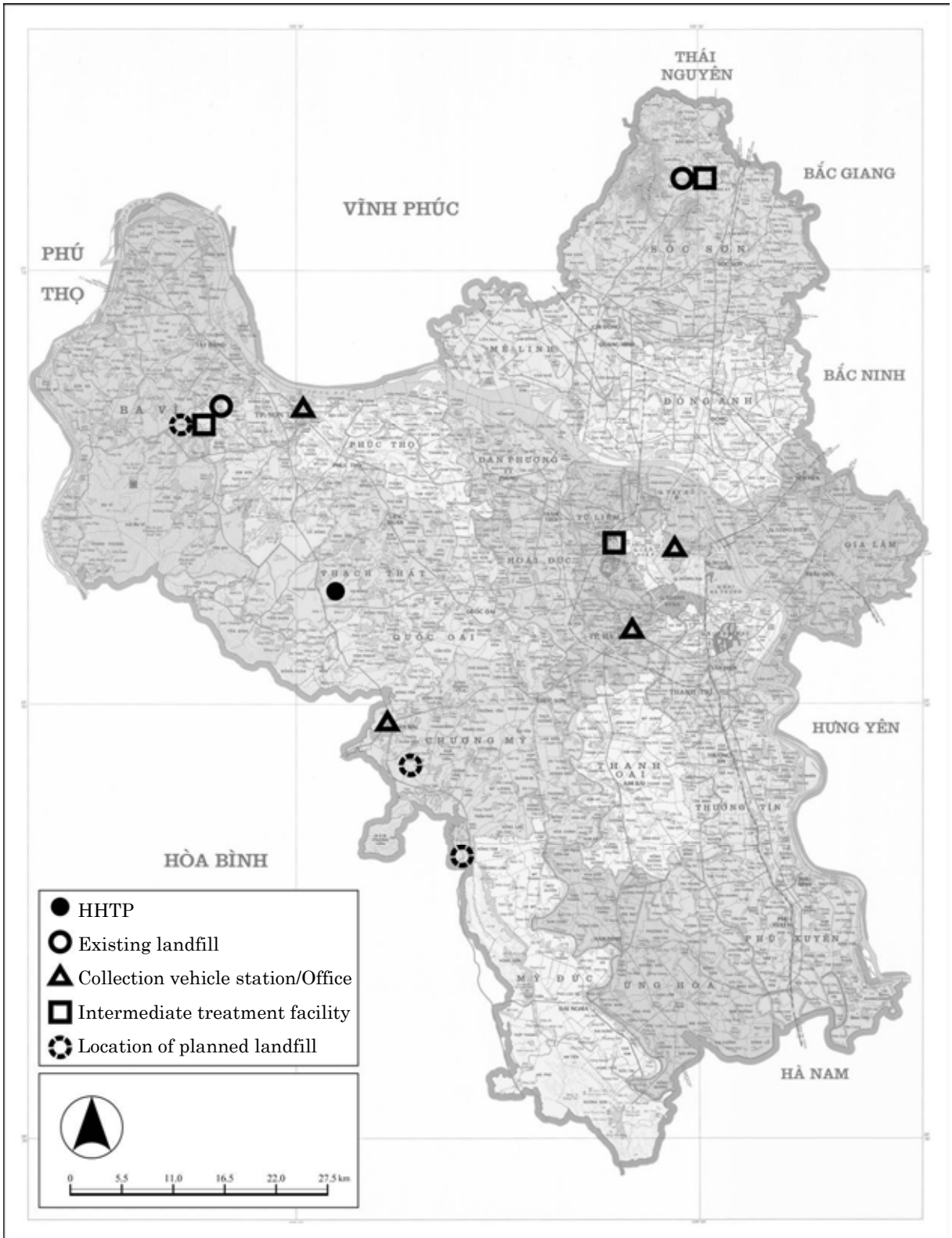
Solid waste management company	Collection area in charge
Ha Dong URENCO	Ha Dong Town, Hoai Duc District and Thanh Oai District.
Son Tay URENCO	Son Tay Town, Ba Vi District, Dan Phuong District and PhucTho District.
Xuan Mai URENCO	Chuong My District (including Xuan My District Town), Quoc Oai District and Thach That District.
Hanoi URENCO	Ba Dinh District, Hoan Kiem District, Dong Da District and Hai Ba Trung District.

Source: JICA Study Team

Table 4.2.9 Waste Treatment Facilities in Hanoi City

Waste treatment facility	Target waste	Location	Operating company
Sanitary landfill	Ordinary waste	Xuan Son, Son Tay	Son Tay URENCO
Recycling plant	Ordinary waste (recyclable waste)	Xuan Son, Son Tay	Seraphin Company
Sanitary landfill	Ordinary waste	Nam Son, Soc Son	Hanoi URENCO
Composting plant	Ordinary waste (organic waste, fecal sludge)	Tay Mo, Tu Liem	Hanoi URENCO
Medical waste incinerator	Medical waste	Tay Mo, Tu Liem	Hanoi URENCO
Hazardous waste treatment facility	Hazardous waste	Nam Son, Soc Son	Hanoi URENCO

Source: JICA Study Team



The Study for Hoa Lac High-Tech Park Feasibility Study in the Socialist Republic of Vietnam

Japan International Coopertion Agency

Figure 4.2.12
Location of Solid Waste Management Facilities in Hanoi City

4.3 REVIEW OF ORGANIZATION FOR PROJECT IMPLEMENTATION

Reliable organizations for project implementation, operation and maintenance are one of the most important factors for successful project. Without such organizations, it is difficult to get trust of a donor of official development assistance, if it is needed.

This section reviews the progress of setting up an organization for project implementation and the roles of the concerned organizations.

4.3.1 Legal Framework of HHTP-MB

In October 2008, the HHTP-MB celebrated the tenth anniversary of Hoa Lac High-tech Park. Decision of HHTP was issued in October 1998, and after that, the HHTP-MB was established on 18 January 2000 by Decision No.10-2000/QD-TTg.

Currently the HHTP-MB has to follow the legal framework stipulated by "*Regulation on the organization and operation of Hoa Lac High-tech Park Management Board*" which is attached to Decision No. 391/QD_BKHCN dated March 22nd, 2007 by Minister of Science and Technology (MOST). In addition, the HHTP-MB drafted its functions and tasks to submit to the Prime Minister. It is expected to be approved in February, 2009.

According to the Article 1 of the regulation attached to Decision No. 391/QD_BKHCN, the HHTP-MB belongs to MOST, functioning as a State management agency dealing with activities in HHTP.

4.3.2 Roles and Authorities of HHTP-MB

With regard to responsibility and authority of the HHTP-MB, the noteworthy points from the above regulation (Decision No. 391/QD_BKHCN) are summarized as follows.

1) Plan management.
   i) Managing the implementation of HHTP Master Plan and detailed plan of functional zones.
   ii) Making five-year plan for developing investment and operation of High-tech Park and annually submitting to Minister of Science and Technology (MOST) and authorized governmental agencies for approval.
   iii) Organizing and guiding the implementation of assigned tasks.
2) Direct investor of projects using the budget for HHTP.
3) Capital investment mobilization, investment and construction management.
   i) Making and implementing plan for investment promotion, mobilizing all resources in order to construct and develop HHTP.
   ii) Making decision on projects and works funded by the State budget as assigned by the Minister of MOST.
   iii) Approving detailed plan for constructing functional zones and appraising infrastructure designs of investment projects in HHTP as assigned by the People's Committee of Ha Tay Province.
   iv) Issuing, amending, and revoking Investment Certifications for investment projects in HHTP and Investment Incentive Certifications for projects as authorized by Ministry of Planning and Investment.

v) Organizing, managing, and developing technical infrastructure system and construction works funded by HHTP budget.

vi) Supervising infrastructure construction and trading of High-Tech Park Development Company according to the approved plan.

vii) Coordinating with domestic and foreign individuals and enterprises in the fields related to HHTP development and construction investment.

viii) Guiding, inspecting and recommending authorized State agencies to deal with violence to the implementation of investment projects in HHTP in accordance with the law.

ix) Preparing procedures and making guidelines for investors to undertake their activities in HHTP.

4) Managing land in HHTP area in accordance with the law.

5) Making plan for science and technology, undertaking scientific research and technology development, coordinating in training and developing human resource for HHTP and high-tech industries; doing research on making high-tech park development policy; supporting organizations and individuals to establish enterprises using high technologies in the starting period.

6) Coordinating with International Cooperation Department and other agencies belonging to MOST and implementing international cooperation plans with the aim at developing HHTP.

7) Submitting regular report to the Minister of MOST about HHTP operation; Reporting to the Prime Minister and other related and authorized agencies about works surpassing the authority of the Minister of MOST in order to accelerate the progress of HHTP construction and development.

4.3.3 Appraisal and Approval of Infrastructure Detailed Plan and Design

(1) Transfer of Appraisal Authority for Basic Design of Main Infrastructure

MOC sent a letter No. 2486/BXD-HDXD dated December 12, 2008 to agree to authorize HHTP-MB to appraise construction works under the appraisal authority of MOC.
After appraising, HHTP-MB has to send result to MOC for information and monitor. As for construction works of common infrastructures in HHTP (1650 ha), new construction material industry project, special scope tall structures, HHTP-MB has to send a report to MOC before issuing appraisal document.
When being authorized, HHTP-MB need to strengthen their professional organization to have adequate capacity to implement appraisal of basic designs of construction works in HHTP.

(2) Transfer of Appraisal Authority for Detailed Plan of Functional Zones

Hanoi People's Committee (HPC) issued Decision No: 2896/QĐ-UBND dated December 26, 2008 for transferring appraisal and approval authority for detailed plans of functional zones and appraisal authority for basic designs of construction works in HHTP.

It is required to have the participation of leaders of Department of Planning and Architecture of HPC in the Appraisal Council. When appraising tasks and detailed plans of functional zones, Appraisal Council and HHTP-MB need to invite related Professional Departments of HPC to get their comments.

The Chairman of HHTP is responsible for strengthening professional organization to have

adequate capacity to implement the authorization of HPC.

4.3.4 Organizational Structure of HHTP-MB

(1) Stipulation on Organizational Structure

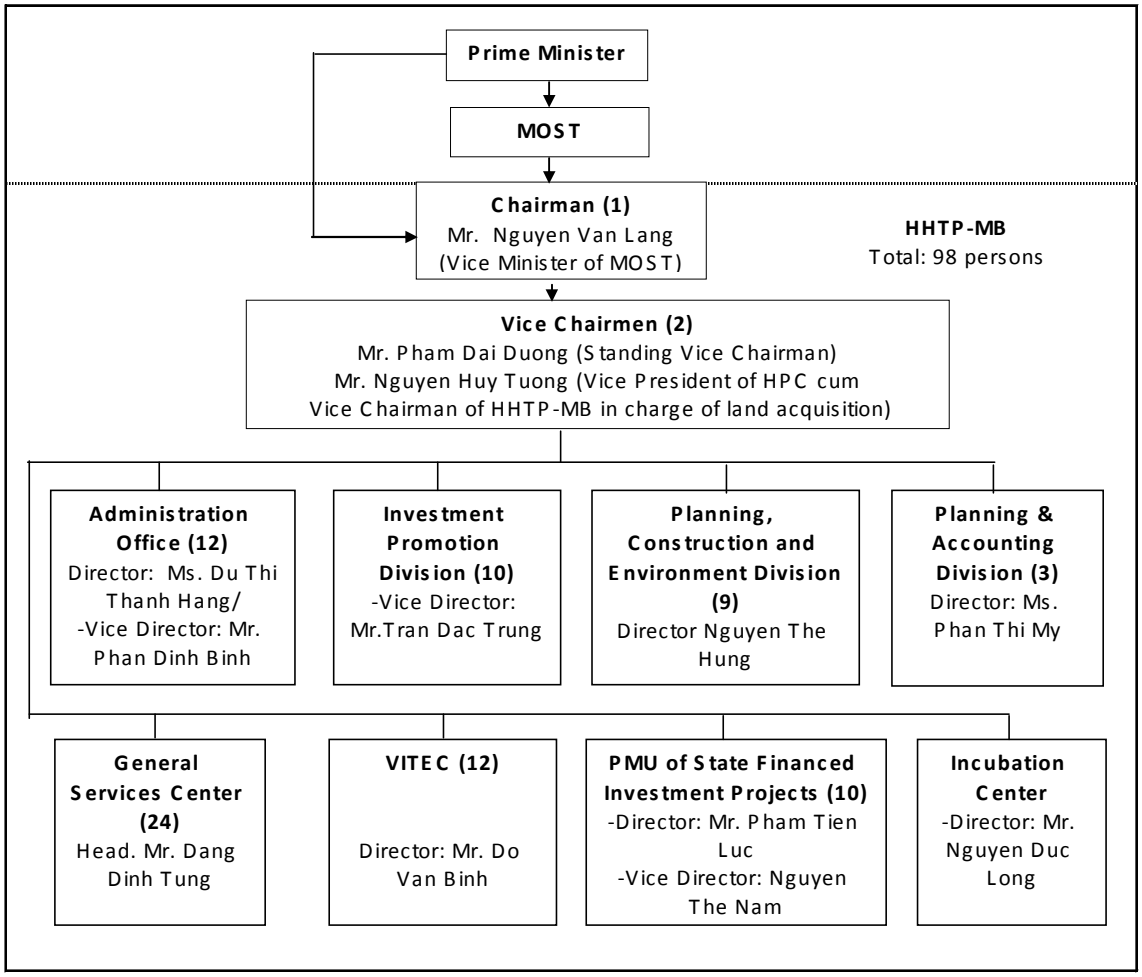
The above regulation (Decision No. 391/QD_BKHCN) stipulates the organizational structure of the HHTP-MB as follows.

1) The HHTP-MB includes: Chairman, Vice Chairmen, State management units, units and belonging enterprises.
2) The Chairman is appointed or dismissed by the Prime Minister according to the recommendation of the Minister of MOST, helping the Minister in HHTP operation. The Chairman of HHTP-MB takes the responsibility to ensure the operation and effect of the board under the management of Minister of MOST and the law.
3) Vice Chairmen are appointed by the Minister of MOST based on the recommendation of the Chairman. Vice Chairmen helps the Chairman operate the management board; takes the responsibility to fulfill assigned tasks under the management of the Chairman and the law.
4) State management units:
   i) Office.
   ii) Planning and Accounting Department.
   iii) Investment Promotion Department.
   iv) Construction, Planning and Environment Department.
5) Units:
   i) Training Center.
   ii) High-tech Business Incubation Center.
   iii) General Service Center.
6) HHTP-MB, including PMU (Project Management Unit) invested by the State budget.
7) Enterprises belonging to the HHTP-MB.

The Chairman takes charge of issuing the regulations on organization and operation of belonging departments.

(2) Current Organizational Structure

The HHTP-MB is headed by the Chairman: Mr. Nguyen Van Lang, and includes 98 persons in total as of August 2008. The organizational structure of the HHTP-MB has been established in accordance with the above regulation, as shown in the following organizational chart.



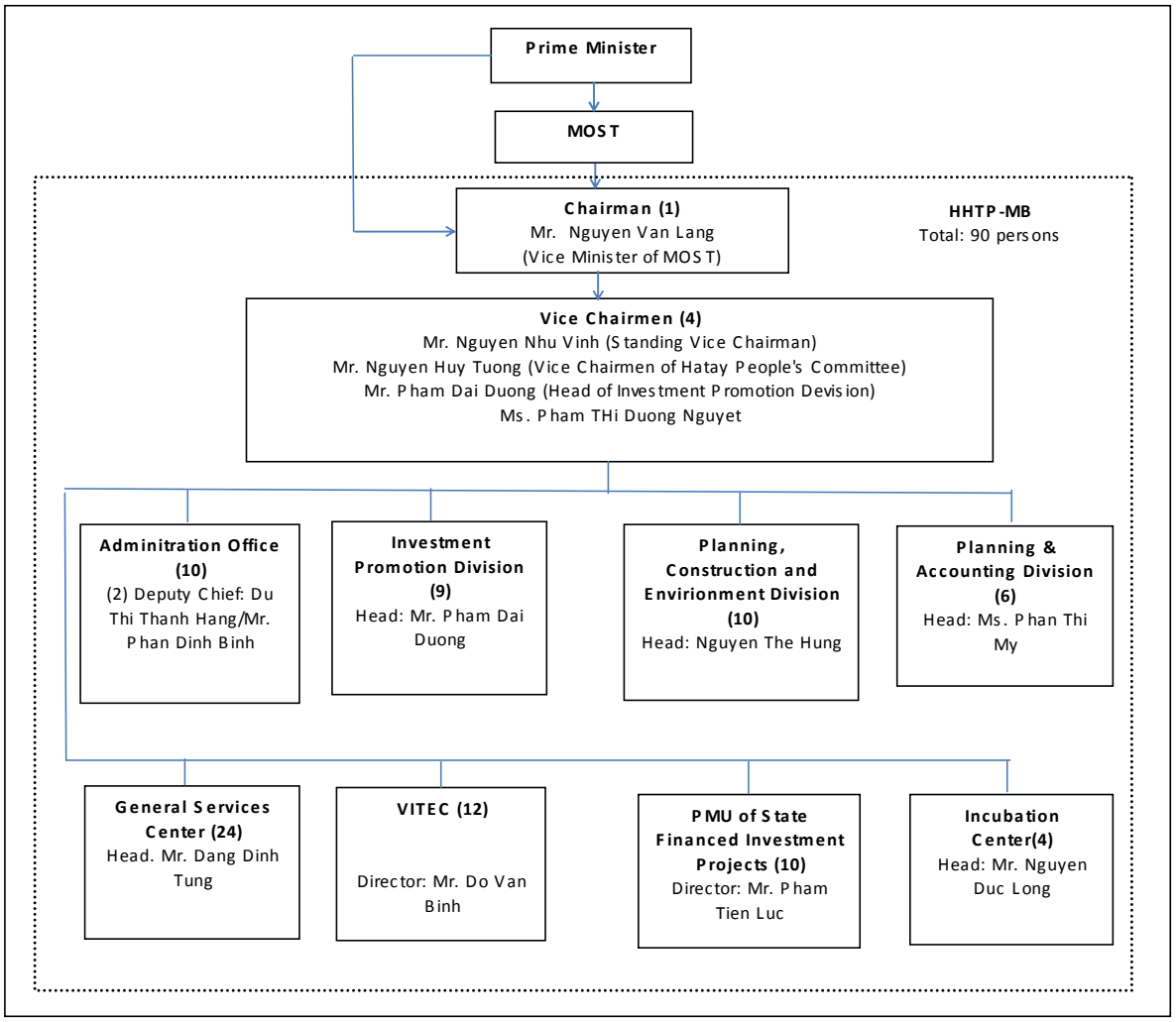
Note: Figures in parentheses denote the number of employees including principal in each function.
Source: HHTP-MB

Figure 4.3.1 Organizational Chart of HHTP-MB (as of August 2008)

The next figure shows the organizational structure as of August 2007. During the past year, there is not an organizational reform, but is a change in staff members as follows.

Vice Chairman: Number of Vice Chairmen was decreased from four to two: Mr. Pham Dai Duong (the Standing Vice Chairman) and Mr. Nguyen Huy Thuong (Vice Chairman in charge of land acquisition).

Staff members: Total number of staff members was increased from 90 to 98. There are large increases in staff members for two divisions: the Incubation Center (increased from 4 to 10) and the PMU for State Financed Investment Projects (increased from 10 to 15).



Note: Figures in parentheses denote the number of employees including principal in each function.
Source: JICA Study Team

Figure 4.3.2 Organizational Chart of HHTP-MB (as of August 2007)

(3) Strengthening of Staff Structure

The HHTP-MB needs to focus on consolidating and strengthening its staff structure based on the Decision on its function and tasks that is expected to be approved by the Prime Minister in February 2009.

4.3.5 Responsible Organizations for Development by Zone

(1) Currently Appointed Developers

HHTP is developed both by the public sector (HHTP-MB) and the private sector (Developers). The HHTP-MB is responsible for development of the basic infrastructure, and some function zones for State institutions. The private sector is responsible for technical infrastructure development for assigned zones.

So far two developers have been appointed. FPT has been appointed for High-tech Industry Zone-1, Software Park Zone-1 (tentative), and FPT University in Education and Training Zone, which are located in the Hoa Lac area. VINACONEX has been appointed for the Northern Phu Cat area. Other developers have not been appointed yet. The table below shows the responsible

organization for development by functional zone.

Table 4.3.1 Responsible Organizations for by Functional Zone

Zone	Hoa Lac Area	Northern Phu Cat Area
Software Park	FPT(tentative)	Not yet appointed
R&D	HHTP-MB	Not Applicable
High-tech Industry	FPT (refer to 'note')	VINACONEX
Education and Training	HHTP-MB (FPT for FPT University and VAST for Hanoi University of Science and Technology)	Not Applicable
Center of High-tech City	Developer (not yet appointed)	Not Applicable
Mixed Use	Developer (not yet appointed)	VINACONEX
Houses and Offices	Developer (not yet appointed)	Not Applicable
Housing Complex	Developer (not yet appointed)	VINACONEX
Amenity	Foxconn Corporation (Taiwan) (tentative)	Not Applicable
Amusement	Developer (not yet appointed)	Not Applicable
Traffic & Infrastructure	HHTP-MB	VINACONEX
Lake & Buffer	HHTP-MB	Not Applicable
Greeneries/Trees	HHTP-MB	VINACONEX

Note: A part of High-tech Industry Zone-1 with 34.5 ha is still managed by VINACONEX who invested there in the Step-1, Stage-1.
Source: JICA Study Team

(2) Appointive Procedure of Developers

The HHTP-MB selects and appoints developers in consultation with MOST. The HHTP-MB needs to prescribe the organizational apparatuses of developers and approve their operation charters in compliance with the Article 14 of the regulation on high-tech parks promulgated together with the Government's Decree No. 99/2003/ND-CP of August 28, 2003. Regarding the case of FPT, it is a special case that the Prime Minister directly appointed FPT as a developer.

(3) Issues Concerning Developers

1) Land transfer from VINACONEX to FPT

A part of land with 34.5ha in the High-tech Industry Zone 1 is still managed by VINACONEX who invested there in the Step-1, Stage-1. If the land is left as it is, it is hard to effectively use the land near this part because this part has irregular shape.

VINACONEX and FPT have negotiated with each other without intervention of the HHTP-MB. However, this issue has been unsettled. Based on the observation of the HHTP-MB, possible reasons for the late settlement are:

- The developers have not reached the final agreement of how they will transfer: totally or partially, or in return whether FPT has to grant any business right to VINACONEX.
- The price of transfer.
- The capacity and experience of FPT.

The HHTP-MB only carries out some administrative actions to speed up their negotiation, because it has no authority to force them.

The GOV is needed to investigate this issue, and grant sufficient authority for the HHTP-MB to force the agreement on this issue.

2) Capacity and Experience of FPT

According to the HHTP-MB, the Prime Minister and the HHTP-MB appreciate that FPT will develop the infrastructure in High-tech Industry Zone-1. However, it is necessary to take into consideration: whether FPT has enough capacity and experience or not; and whether FPT's project for HHTP is feasible or not.

If the HHTP-MB thinks FPT do not have enough capacity and experience, the HHTP-MB needs to induce FPT to improve their project implementation structure by employing experienced persons and/or developing cooperative relations with experienced companies.

The HHTP-MB needs to examine the detailed plan to be prepared by FPT, and to appraise FPT's project for HHTP.

4.3.6 Division of Work between HHTP-MB and Developers

FPT is the only one developer assigned for the study area, except for a part of land still managed by VINACONEX mentioned above. Therefore, it is important to come to an agreement on division of work between the HHTP-MB and FPT at first.

(1) Progress of FPT's Project

FPT has been appointed as the developer of High-tech Industry Zone-1 by Prime Minister. In addition to this appointment, the following two permits are necessary to operate in the HHTP.

- Investment license (for 50 years from the year when license is issued)
- Decision on land use right

The land use right has not transferred to FPT yet, since it is in the process of issuing the two permits now. Schedule of transfer will be clarified only after approving the revised detailed plan for constructing functional zones and appraising infrastructure designs of investment projects.

According to the law, the Hanoi People's Committee (HPC) was in charge of appraising detailed plan and approving investment project. After HHTP-MB and HPC discussed to determine whether HPC can grant authority to HHTP-MB to deal with this issue, appraising detailed plans of functional zones was authorized to HHTP-MB as previously mentioned.

A definite plan of division of work has not been settled yet for technical infrastructure development, investment promotion, operation and maintenance of High-tech Industry Zone-1. The HHTP-MB needs to conclude agreement on this issue with FPT, when approving the detailed plan of FPT.

(2) FPT Hoa Lac High-Tech Park Development Company

FPT Hoa Lac High-Tech Park Development Company (FHHTPDC) was established in 2007. The profile of the company is shown below in line with the document prepared by the Company.

1) Key Functions and Duties upon Agreement between FHHTPDC and HHTP-MB

- FHHTPDC has been assigned the general duties of HHTP-DC and will operate within the limits of Business Law and under the management of governmental authorities, and be responsible for the direct supervision and inspection of HHTP-MB, in accordance with Article 14 of Decree 99/2003/ND-CP.
- The company will cooperate with the HHTP-MB to build up and develop Hoa Lac High-Tech Park.

2) Detailed Responsibilities

- Cooperating with the HHTP-MB to design and manage the master plan.
- Following the assignment or proxy of the HHTP-MB in investing State budgets on construction; developing, utilizing and managing the infrastructure and facilities constructed with State budgets for HHTP.
- Developing the technical infrastructure for specific zones.
- Cooperating with HHTP-MB to make policies on developing HHTP.
- Proposing and coordinating with HHTP-MB the process of approving, issuing, updating or revoking Certificates of Investment in HHTP.
- Receiving land use rights from HHTP-MB according to the development plan.
- Promoting and leasing the land with infrastructures.
- Providing services in the software park.
- Following the assignment or proxy of the HHTP-MB in managing human resources, import-export, security and social safety.
- Coordinating with HHTP-MB in international cooperation and investment promotion in the high-tech park.
- Promoting the investment in functional zones.

(3) Division of Work for Technical Infrastructure and Supporting Facilities Development

The HHTP-MB has the provisional plan of division of work with infrastructure developers as shown in the following table, although the division of work plan has not settled yet. The HHTP-MB needs to discuss this issue with the infrastructure developers to make the mutually agreed plan of work sharing. The following table may be a good start point for the discussion.

Table 4.3.2 HHTP-MB's Provisional Division of Work Plan for Technical Infrastructure

Work		Main Infrastructure		In Functional Zone		Note
		HHTP -MB	Infrastructure Developer	HHTP -MB	Infrastructure Developer	
1	Removal of obstacle	X X		X X		
2	Ground leveling	X X			X X	
3	Installation of water pipes	VIWASEEN			X X	
4	Installation storm water pipes	X X			X X	
5	Installation of wastewater pipes	X X			X X	
6	Electrical work (cable laying)					EVN is responsible
7	Telecommunication work					Now, VNPT and Viettel are selected for investors.

Source: JICA Study Team

The HHTP-MB has plan of building supporting facilities such as ICD (Inland Clearance Depot), warehouse, customs office, and rental factory in High-tech Industry Zone-1. The following table shows the provisional division of work plan of the HHTP-MB.

Table 4.3.3 HHTP-MB's Provisional Division of Work Plan for Supporting Facilities

Works		Provisional Plan of Division of Work
1	Construction of new customs office in the ICD	It will be constructed by Customs Administration under MOF.
2	Construction of ICD and warehouse	It will be constructed by logistic companies that will be selected by tender.
3	Rental factory (conceptual phase)	There are three models of rental factory construction for tenants to choose. i) Developers build the rental factory. ii) The secondary-investors rent land from developers, and build the rental factory. iii)The developer that has land and the secondary investor that has money co-operate with each other (joint venture) to build the rental factory.

Source: JICA Study Team

(4) Investment Promotion

According to the HHTP-MB, till now, FPT has not worked positively yet, because they have received neither detailed plan approval nor land use right. It is required, shortly after receiving them, the investment promotion for the High-tech Industry Zone-1 and Software Park Zone-1 should be carried out in collaboration with the HHTP-MB and FPT. The HHTP-MB is responsible for investment promotion activities for the whole HHTP, while FPT is responsible for those limited to the High-tech Industry Zone-1 and Software Park Zone-1(tentative). The following table shows the provisional division of work plan for investment promotion based on the opinion of the HHTP-MB.

Table 4.3.4 HHTP-MB's Provisional Division of Work Plan for Investment Promotion

Work		Division of Work	
		HHTP-MB	Zone Developer
1	Evaluation/selection and make an agreement with the Zone Developer	X X	-
2	Holding investment seminars	X X	X
3	Development of promotion materials including website and brochure Development of promotion materials for each zone	XX -	X XX
4	Continuous contact with potential investors for R&D and E&T zones Continuous contact with potential investors for other zones	XX -	- XX
5	Issuing investment license	XX	-
6	Set a land rental lease of the zone	-	XX
7	Evaluate and approve land lease fee set by the zone developer	XX	-
8	Contract with the tenant for land lease agreement	-	XX

Note: XX: responsible, X: supportive, -: not responsible
Source: JICA Study Team

Issue: Preparation of Website

1) The HHTP-MB has been preparing promotion materials in consultation with the adviser sent by JETRO. They are preparing website in Vietnamese and English, but have problems with Japanese version due to difficulty in attracting the person who is good at Japanese to work for the HHTP-MB. The adviser recommended that the HHTP-MB should place the first priority on improvement of content of Vietnamese and English versions.

2) It is suggested that the HHTP-MB, in the near future, should make the combined website for entire part of HHTP in collaboration with FPT that is able to prepare Japanese website as well as Vietnamese and English ones. It is recommended, for the time being, to concentrate in improving the content of website in Vietnamese and English as recommended by the adviser.

Issue: Preparation of Brochure

1) The HHTP-MB have already prepared general brochure in three languages: Vietnamese, English, and Japanese with assistance by JETRO for Japanese version. However, in the near future, it is necessary to improve them.
2) At this time, the HHTP-MB may ask the adviser to the chairman of HHTP-MB for assistance in improving brochure. However, considering this issue for a longer period, the HHTP-MB will have a difficulty in attracting the person who is good at Japanese just like the problem in Japanese website development.
3) It is suggested that the HHTP-MB should develop brochure in collaboration with FPT to overcome this difficulty.

Issue: One-stop Service

1) One-stop service means that the investors/customers only have to contact with the providers of one-stop service. The providers will help the investors/customers to deal with all the problems by contacting the related agencies.
2) Till now, one-stop service has not been provided yet to investors for assistance in applying licenses. According to the HHTP-MB, in the near future, developers need to provide one-stop service to investors. The HHTP-MB only manages main works and works with the developers, but not with any individual investors.
3) It is required that the HHTP-MB should call for the developer's implementation system of one-stop service, when they appraise their detailed plan.

4.3.7 Operation and Maintenance Structure

(1) Preliminary Plan of Operation and Maintenance

The HHTP-MB is responsible for development, operation and maintenance of main infrastructure, while a developer is responsible for those of technical infrastructure in each function zone in general.

The HHTP-MB envisages the following operation and operation plan, although the final one has not been decided yet.

Table 4.3.5 HHTP-MB's Preliminary Plan of Operation and Maintenance

Infrastructure		Responsible Organization	
		Along the main roads	Other parts in the zone
1	Water Supply System	VIWASEEN	Developer
2	Storm Water System	HHTP-MB	Developer, HHTP-MB, or environment companies
3	Wastewater System	HHTP-MB (with Waste Water Treatment Plant)	Developer, HHTP-MB, or environment companies
4	Roads	HHTP-MB (Main Roads)	Developer (Minor Roads)
5	Power Supply	EVN	EVN or Developer
6	Telecommunication	Currently VNPT and Viettel; in future, addition of many other investors	
7	Solid Waste Management	URENCO	

Source: JICA Study Team

(2) Water Supply System

The tenants are buying water directly from the water supplier – VIWASEEN, at present. In the future, depending on the water demand, VIWASEEN will supply water from Da River project of VINACONEX to the tenants in HHTP. The operation and maintenance of water supply system is currently done by VIWASEEN for the existing tenants, which are located only in the land lot along the main roads.

There is not a decision on who will undertake construction, operation, and maintenance of the water pipes along the minor roads to be built in the future. According to the HHTP-MB, the developers should take this charge and contact directly with potential providers or contractors to build such water supply system.

(3) Storm Water and Wastewater Systems

A wastewater treatment plant of the phase 1 has been built with a treatment capacity of 6,000m3/day, but not yet put into operation. Main wastewater and storm water pipes have already been constructed along the existing main roads by the HHTP-MB.

It is not decided which organization will be responsible for construction, operation and maintenance of these pipes. In the future, the HHTP-MB, developers, or, environment companies take charge, according to the HHTP-MB.

(4) Roads

Main roads are currently maintained by the HHTP-MB, but in the future one independent company will take charge. This company may be established based on the PMU of State Financed Investment Project of HHTP-MB.

The minor roads will be constructed and maintained by the developers.

(5) Power Supply

Generally speaking in industrial zones in Vietnam, EVN supplies power to developers, and they sell power to their tenants. However in HHTP, till now, EVN installs and sells power directly to tenants, because the developer has not played their role well.

At present, HHTP is using power supplied from the Thach That substation. In the future, the main substation for HHTP will be constructed and maintained by EVN. The transformers for each zone will be constructed and maintained by EVN or developers.

Issue: Blackout

Power supply is not stable and blackout is quite popular in Vietnam. In HHTP, prior notice to tenants is not good enough. It is sometime informed not enough before the blackouts for tenants to deal with, in case of scheduled blackout. Sometime power is not come back on for a long time after the noticed blackout is over. Even in the well-managed industrial parks, blackouts are caused sometime. However, developers of such industrial parks have bargaining power to reduce blackouts and notice the schedule of blackouts well in advance.

In HHTP, till now, EVN sells power directly to tenants. Each tenant is a customer of EVN, but can not have enough strong bargaining power compared with the developers. It is recommended that developer should conclude contract with EVN to have stronger bargaining power for power supply to take care of tenants.

Besides, as a matter of course, it is necessary to take technical solution for stable power supply as much as possible.

(6) Telecommunication

Up to now, VNPT and Viettel decided to invest telecommunication system in HHTP. The HHTP-MB hopes, in addition to these companies, many other telecommunication companies such as G-tel, EVN-Telecom, HT-mobile, and S-fone will invest in HHTP.

After these telecommunication companies start providing services in HHTP, the HHTP-MB, in collaboration with developers, should positively communicate with them in order to ensure satisfactory services to customers.

(7) Solid Waste Management

At present, URENCO - State Limited Urban Environment Company - is in charge of collecting solid waste. In the future, the developers will take this charge.

4.4 PROGRESS OF ATTRACTING INVESTMENT PROJECTS

HHTP is developed to attract industries, education, and research institutions. This chapter describes the progress of attracting investment projects: high-tech industries invested by the private sector; and education and research institutions mainly invested by the State.

4.4.1 State of Investment by Private Enterprises in the Hoa Lac Area

17 enterprises have received investment certificates in the Hoa Lac area. Following table shows a breakdown of the type of industry that those 17 enterprises are involved in. Among these 16 enterprises, three have commenced operation, while eight have started construction work. The other six enterprises have not commenced construction works yet.

In October 2007, two foreign enterprises started operation. These foreign enterprises are a Japanese firm producing electronic and mechanical parts for robots and a Taiwanese firm producing optical fibers. In addition, a Vietnamese communication services company established a database/customer service center.

Among the eight enterprises that are under construction, two are expected to start operation soon. Among the six enterprises that have not yet started construction, five of these (semiconductor, pharmaceuticals, software development, and two internet data centers) decided to invest in 2008 or 2009.

Since there are not many approved enterprises, the typical characteristics of high-tech

enterprises within the HHTP are not obvious yet.

Investment has not proceeded at the expected pace. Although the first and second domestic enterprise decided to invest in October 2001 and June 2002 respectively, the other enterprises were approved after 2005. There were no new approved enterprises in 2003, 2004, or 2006. Among the 17 approved enterprises, 15 projects (88%) were approved after 2005. Of these 15 enterprises, 13 enterprises were approved in 2007, 2008 and 2009. It is clear that investment to HHTP has been increased rapidly since 2007. It looks if that is fruit brought forth by efforts of the GOV since the late 2006.

Except one medical equipment manufacturer, the enterprises approved after 2005 commenced construction work within one year after receiving the investment certificate. In general, construction work for these enterprises commenced smoothly. In contrast, the first and second enterprises to receive certificates (2001 and 2002) are sill under construction, even though more than six years have past since receiving certificates.

Table 4.4.1 Enterprises Approved for Investment in the Hoa Lac Area

(As of January 22, 2009)

Sector	Name of Project and Type of Business	Number of Projects
Manufacturing	NOBLE (Electronic and mechanical parts, IC, optical fiber terminals) OETEK (Optical fibers) TP (Mobile phones, circuit boards for printers) APSS (Parts for solar cells, including silicon) V-CAPS（Packing of semiconductors） HTP (Construction materials) VIKOMED (Medical equipment) FC Technologies (Precision machines) Medlac Pharma (Pharmaceuticals)	9
Software	VIENABANK (Development of banking systems and training) VINAGAME (Software development for electronic games and communication services) Misa (Software development and R&D)	3
Communication services	VITTEL (Communication center) VITTEL-CHT (Data center) KIM COUNG (Data base center for customer service) Vinetworks (Internet Data Center) Vietnam Internet Center	5
Total		17

Source: JICA Study Team

The total investment to date for the 17 approved enterprises total occupied land area is currently 54.56ha. The next table shows the current status and location of each approved enterprise.

Table 4.4.2 Current Status and Location of Approved Enterprises in the Hoa Lac Area

(As of January 22, 2009)

Status	High-tech Industry Zone-1	Center of High-tech City Zone	Mixed Use Zone	Total
Operational	01 NOBLE 02 OETEK		10 KIM CUONG	3 (4.01 ha)
Under construction	03 HPT 05 THUAN PHAT 08 APSS 09 VINAGAME 13 FC Technology	06 VIETTEL 11 VIETTEL-CHT	04 VIETINBANK	8 (24.05 ha)
Not yet constructed	07 VIKOMED 12 V-CAP 15 Medlac Pharma	14 Misa 18 Vietnam Internet Center	16 Vinetworks	6 (26.50 ha)
Total	10 (46.95 ha)	4 (3.40 ha)	3 (4.21 ha)	17 (54.56 ha)

Source: JICA Study Team

4.4.2 State of Investment by Private Enterprises in the Northern Phu Cat Area

The Northern Phu Cat area, which was originally outside the Study Area, was developed solely by VINACONEX. Brief information of this area is provided below for reference.

As of October 2008, there are 13 approved enterprises in the Northern Phu Cat area, as show in the table below. These enterprises were approved by the Ha Tay People's Committee before the Northern Phu Cat area was integrated into the HHTP in May 2008. Since VINACONEX was appointed as one of the executing agencies for the HHTP, it manages development in the Northern Phu Cat area, while the HHTP-MB takes charge of administering the approvals for investment. The approved enterprises include a leading Japanese firm that produces shutters and other firms in the following industries:

- Artificial dressed stone for construction
- Pottery
- Optical fibers
- Pharmaceuticals
- Electronic parts
- Parts for electronic games
- Handicrafts, including chiffon
- Printing
- Software development

The total investment for these 13 enterprises currently amounts to USD 150 million and the total occupied land area is currently 60.4ha. Among the 13 approved enterprises, three have completed construction, while two are under construction. The other eight enterprises have not commenced construction yet.

Table 4.4.3 Investment Project in HHTP (Hoa Lac Area) 1/2

Update: 12-JAN -09

No.	Name of Enterprise	Type of Enterprise	Nationality	Cetificate/Decision of Investment		Field of business activity	Actual Progress of Project	Time-Limit (years)	Functional Area	Sublet Area (h.a)	Progess	Number of Labors until end of period
				Date of Issue	Issued by							
1	Noble Electronics Vietnam Co., Ltd.	100 % FDI	Japan	5-Oct-05	MB	Manufacture electronic components & equipments; intergrated circuits, industrial robots Manufacture, Assemble optical fiber cable terminals	Stage 2: 2 years after getting CI	50	High Tech Industry	3,0	OP	952
2	Oetek Vietnam	100 % FDI	Taiwan	12-Dec-05	MB		1. Lease location, factory: 12/2005 2. Start constructing: 1/2006-4/2006 3. Bring into production: 10/2006	50	High Tech Industry	1,0	OP	92
3	Complex of developing producing new materials & transfering technology in HLHTP	Private	Vietnam	6-Feb-02	MB	Research new material technology, prepare chemical HPT-2 Assemble production line of Foam Light Concrete; Produce Foam Light Concrete	Finish the construction and bring into production: 6/2008	50	High Tech Industry	2,5	UC	
4	Vietinbank	SOE	Vietnam	22-Oct-01	MB	Build center of training & developing bank information technology manpower		50	Central Area	2,2	UC	
5	IMOSO Thuan Phat JSC.	Private	Vietnam	4-Oct-07	MB	Manufacture mobile phone & electronic mainboard	**Stage 1:** 1. Start the construction: Quarter IV/2007 2. Finish the construction: QI/2008 3. Bring the factory into operation: QII/2008 **Stage 2:** Start in 2012	50	High Tech Industry	5,0	UC	
6	Viettel Corporation	SOE	Vietnam	21-Nov-07	MB	Viettel High Tech Center	1. Make, approve Conceptual Design Drawings & investment project, appraise and get Construction Permit: 12/2007-01/2008 2. Make Detailed Design Drawings, Drawing for Construction, Comprehensive Estimation: 2/2008-3/2008 3. Select the Contractor: 9/2008 4. Start & Finish the Construction: 4/2008-4/2010	50	Central Area	1,4	UC	
7	Vietnam -Korea Medicine Co.	Joint-venture	Vietnam-Korea	7-Dec-07	MB	Build Factory which produces High Tech Digital Medical Equipments	**Stage 1:** 2007-2011 1. Complete procedures to grant CI, designs, Construction Permit: Q IV/2007 2. Start the construction: Q I/2008 3. Bring into operation: Q II/2008 **Stage 2:** 2011	50	High Tech Industry	1,0	LC or SL	
8	Thai Duong Hang Chinh Sillicon Vietnam (APSS)	100 % FDI	USA	14-Dec-07	MB	Manufacture new materials in Solar Energy Industry	**Stage 1:** 1. Build factory, offices: 12/2007-5/2008 2. Install machines, equipments: 6/2008-7/2008 3. Bring into production: 8/2008 **Stage 2:** 9/2009 **Stage 3:** 12/2010	50	High Tech Industry	10,0	UC	

Note: Progress: OP= in operation, UC=under construction, SL=signed the land lease contract, LC=just licenced

Table 4.4.4 Investment Project in HHTP (Hoa Lac Area) 2/2

Update: 22-JAN -09

9	Vinagame	Private		11-Jan-08	MB	Center of manufacturing Software & Value-Added Services based on IP-Vinagame	**Stage 1:** 2008-2010 1. Start the construction: Q II/2008 2. Bring into operation: Q IV/ 2008 **Stage 2:** 1/2010	50	High Tech Industry	2,2	UC	
10	Kim Cuong Communication JSC.	Private		14-Mar-08	MB	Database & Customer Service Center	1. Complete procedures to grant CI: Q I/2008 2. Bring into operation: Q I/2008 3. Expand investment: Q IV/2008	50	Service Area	0,065	OP	514
11	Viettel-CHT Company Limited	2-member Co	Vietnam-Taiwan (70% - 30%)	11-Apr-08	MB	Build Viettel Internet Data Center (Viettel-IDC)	1. Complete procedures to grant CI: Q II/2008 2. Complete administrative procedures as regulated: Q II/2008 3. Intall equipments & trial-run: Q II/2008 4. Bring into operation: Q III/2008 5. Expand investment stage 2: 5/2010	30	Central Area	High Tech Viettel Building (1,4)	UC	
12	Vietnam Chipscale Advanced Packaging Services (V-CAPS) Co., Ltd.	1-member Co	Hong Kong	28-Apr-08	MB	Vietnam Advanced Packaging Chipscale	1. Complete procedures for establishing company & getting CI: 2/2008 2. Lease location/ factory or buy factory: 5/2008 3. Ground-breaking Ceremony for the Construction of the factory: 6/2008 4. Install machines, equipments: 3/2009 5. Trial run: 7/2009 8. Bring into production: 1/2010	50	High Tech Industry	20	LC	
13	FC Technologies Company Ltd.	Company Limited	Vietnam	26-Aug-08	MB	Precision Mechanics		50	High Tech Industry	0.75	UC	
14	Misa Company	Company JSC	Vietnam	26-Aug-08	MB	Software Development and R&D		50	Central Zone	1.2	LC	
15	Medlac Pharma Italy Company Ltd	Company Limited	Vietnam-Italy	29-Sep-08	MB	Producing pharmaceutical products		50	High Tech Industry	1.5	LC & SL	
16	Vinetworks	Company JSC	Vietnam	10-Dec-08	MB	Internet Data Center	Starting the construction of the Center in 1/2009 and putting it into operation in Dec 2009	50	Service Zone	2	LC	
17	VINASHIN	SOE	Vietnam	6-Jan-09	MB	Institute for Model ship performance		50	Research and Development Zone	25	LC	
18	Vietnam Network Information Center	SOE	Vietnam	22-Jan-09	MB	Vietnam Internet Center in Hoa Lac Hi-tech Park	Phase I: 2009 - 2010 Phase II: 2012-2013	50	Center Zone	0.8	LC	

Note: Progress: OP= in operation, UC=under construction, SL=signed the land lease contract, LC=just licenced

Table 4.4.5 North Phu-Cat Industrial Park 1/2

Update: 12-JAN -09

No.	Name of project	Business	Planned labor force	Area of leased land (ha)	Year of issue	Progress of the project	Progress	Note
1	Artificial tile factory Investor: VINACONEX CORPORATION	Producing artificial tile stone		3	2002		OP	Project had been invested before the Decision on the establishment of Industrial Park was issued. Land lease contract had been made
2	Expansion project for High-advanced stone plant Investor: High-class Advanced Compound Stone Plant - VICOSTONE (Vinaconex)	Producing high-advanced tile stone	63	4.81	2005	Commencement: 3rd quarter of 2005, Finish: 2006		Land was handed over. On 19/3/2008, issuing decision on increasing invested capital to 299 billion VND and land area by 2.41 ha
3	Project for production of glass fiber pipes Investor: Glass Fiber Jsc. - VIGLAFICC (Vinaconex)	Producing glass fiber pipes		3.7	2004	Commencement: 3rd quarter of 2007, Finish: 1st quarter of 2008	OP	Contract or Agreement for handing over land is not available in saved documents
6	**Electronic production plan: Investor: Kim Dinh Company**	**Producing electronic, and domestic electrical products**	**200**	**5**	**2006/3/8**	**Finish: 4th quarter of 2007**	**SL**	**Land lease contract has been signed (but this contract and agreement on handing over land are not available in saved documents/ data)**
7	**Pharmaceutical production plant Investor: Ha Tay Pharmaceutical Jsc**	**producing pharmaceutical products**	**100**	**7**	**2006/7/4**	**Finish: The 4th quarter of 2007**	**LC**	**Land lease contract has been signed (agreement on handing over land has been made, contract for hiring land is not available in saved documents/ data)**
8	**Project: for producing export handicraft products Investor: Viet Hien Development Corp.**	**Export handicraft products**	**141**	**5**	**2006/7/4**	**Finish: 10/2008**	**SL**	**Land lease contract has been signed; preparing procedure for changing Investment Certification and hiring a land area of 1 ha**

Note: Progress: CP= in operation, UC=under construction, SL=signed the land lease contract; LC=just licensed

Table 4.4.6 North Phu-Cat Industrial Park 2/2

Update: 12-JAN -09

No.	Name of project	Business	Planned labor force	Area of leased land (ha)	Year of issue	Progress of the project	Progress	Note
8	Project for producing export handicraft products Investor: Viet Hien Development Corp.	Export handicraft products	141	5	2006/7/4	Finish: 10/2008	SL	Land lease contract has been signed; preparing procedure for changing Investment Certification and hiring a land area of 1 ha
9	Project for producing export handicraft products, stone sculpture products Investor: Phuc Hung - Construmin Architecture Jsc.	Producing export handicraft products, stone sculpture products	165	2	2006/7/26	Commencement: 4th quarter of 2006, Operation: 4th quarter of 2007	LC	Land lease contract has not been signed
10	Project for investment in export processing Investor: Royal ltd.	Handicraft products	320	1	2006/7/26		LC	Land lease contract has not been signed
11	Project for construction of high-advanced stone processing plant Investor: VINACONEX	Producing and processing stone for interior furniture	249	3+2.41	2006/3/6	From 4th quarter of 2008 to 3rd quarter of 2009	OP	Land was handed over. On 13/3/2008, issuing decision on increasing invested capital to 299 billion VND and land area by 2.41 ha
12	Project for Construction of Data post Center Investor: Inter-province and International Posts Company	Designing and Printing leaflets, ads, and bills, etc.	173	5	2007/10/17	From 1st month to 7th month: Factory construction, from 8th month to 12th month: installing equipment	LC	Land lease contract has not been signed
13	Artificial high-advanced tile stone Plant Investor: VINASTONE and WK-Australia Joint Venture	Producing artificial high-advanced tile stone	256	8.57	2007/10/17	Commencement: 4th quarter of 2007, Finish (construction): 1st quarter of 2009	UC	Implementing investment
14	Pharmaceutical production plant Investor: SOHACO Group	Pharmaceutical products	411	5	2007/11/9	2 years	SL	Land lease contract has been signed (but is not available in saved documents/ data)
15	Project for construction of Pharmaceutical production plant Investor: Vietnam Chemical and Pharmaceutical Jsc.	Pharmaceutical products	300	4.88	2007/11/9	Finish construction: 1st quarter of 2009	SL	Land lease contract has been signed (but is not available in saved documents/ data)
16	Project for producing fireproof doors Investor: VINACONEX and SANWA-HOLDINGS CORP. Joint Venture	Producing fireproof doors	150	2	2008/1/31	1st-7th month: construction and recruitment, from 8th month: production	UC	Land lease contract has not been signed
				65.4				

Note: Progress: OP= in operation, UC=under construction, SL=signed the land lease contract, LC=just licensed

4.4.3 Progress of Attracting Research Institutions

(1) Interview Survey in 1997

The JICA Study Team for the original master plan study conducted interview survey for State research institutions in 1997.

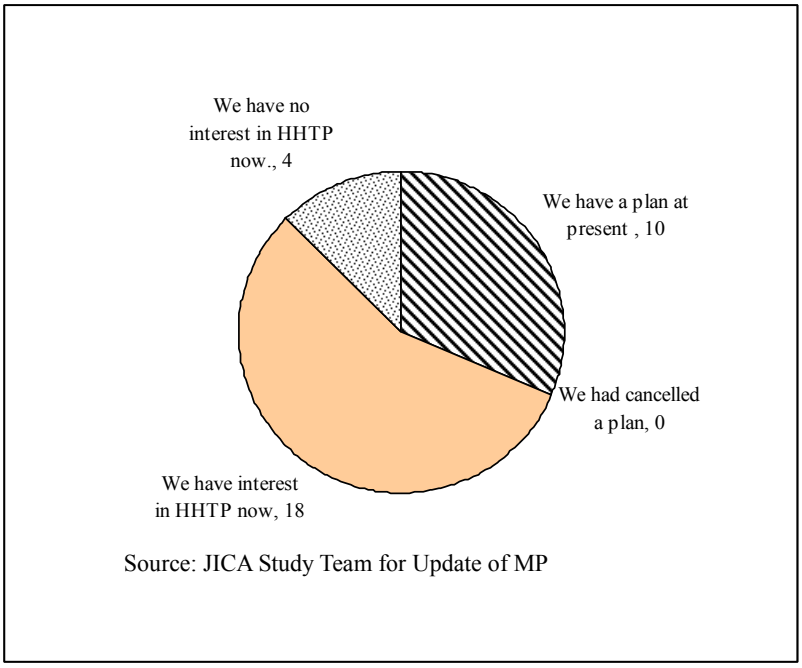
At the time of this interview survey, the research institutions scarcely had interests in relocation to HHTP. Most respondents answered that it seemed very difficult to relocate research institutes to HHTP, because Hoa Lac was too far to commute from Hanoi. They could not imagine development of the High-tech Park and the Lang-Hoa Lac Expressway.

(2) Questionnaire Survey in 2007

The JICA Study Team for update of MP conducted a questionnaire survey in August 2007 with the collaboration of the HHTP-MB. The JICA Study Team received answers from 32 out of 70 State research institutes requested to answer.

Among 32 respondents, 10 respondents had plans of establishing research institutions in HHTP, while 18 had interests in HHTP.

The 10 respondents with establishment plans are assessed, in view of fund raising, approval of land use rights, and employees' agreement for moving to HHTP.



Source: JICA Study Team for Update of MP

Figure 4.4.1 Questionnaire Survey on Research Institutes

As the result of assessment, it is envisaged that the following six institutes have relatively matured establishment plans.

1) Institute of Research and Applied Technology
2) Space Technology Institute
3) Ship Building Science and Technology Institute of VINASHIN
4) National Institute of Hygiene and Epidemiology (NIHE)

5) Vietnam Metrology Institute (VMI)

6) National Center for Testing of Plant Variety, Crop Products, and Fertilizer

This questionnaire survey revealed the research institutes' growing interests in HHTP, compared with interview results in 1997. However, most institutions still had difficulty in fund-raising for establishing R&D facilities in HHTP.

(3) Current State of Attracting Research Institutions

According to the HHTP-MB, a project for establishing research institutes progresses through the following steps:

1) Step-1: A State research institute makes a basic agreement with the HHTP-MB for establishing a research institute in HHTP.

2) Step-2: The HHTP-MB allocates the land for the research institute.

3) Step-3: The State research institute prepares the preliminary plan for building the new facilities, and submits it to the HHTP-MB.

4) Step-4: The State research institute prepares the detailed plan for building the new facilities, and submits it to the HHTP-MB.

5) Step-5: The HHTP-MB issues the decision to approve the detailed plan for building the new facilities.

6) Step-6: The State research institute starts construction.

The following State agencies are promoting establishment of new research institutes.

Table 4.4.7 Status of Establishment of Research Institute

Name of Research Institutes	Regulatory Agency or Ministry	Land (ha)	Step					
			1	2	3	4	5	6
Vietnamese Academy of Science and Technology (VAST)	Prime Minister	26.8	X		X			
Space Technology Institute (STI)	VAST	*(7.2)	X	X	X			
Vietnam Ship-Building Industry Corporation (VINASHIN)	Ministry of Transportation	25.0	X	X	X	X	X	
National Institute of Hygiene and Epidemiology (NIHE)	Ministry of Health	5.8	X	X				
Vietnam Metrology Institute (VMI)	Directorate of Standard & Quality (STAMEQ) of MOST	6.8	X	X	X	X		
High-tech Business Incubator (HBI)	HHTP-MB(HBI)	2.6	X	X	X			
Total		67.0						

Note*: VAST needs 26.8 ha including 7.2 ha that have already been allocated for STI.
Source: HHTP-MB

In addition to the above steps associated with the HHTP-MB, the State research institution needs to take budgetary steps, obtain approval from the regulatory ministries or agencies, introduce advanced technology, request for international assistance, and develop qualified human resources. These activities are vital for establishment of the State research institutes in HHTP. Strong initiatives of the Government are required for carrying out these activities.

(4) Vietnam Academy of Science and Technology

Vietnam Academy of Science and Technology (VAST) exchanged memorandum of understanding with the HHTP-MB on April 14, 2008. The both parties agreed as follows:

A project formation study for HLSC was conducted by JETRO Study Team during the period from August to December 2008. STI has officially announced the initial report of the project for Japanese ODA.

(6) Vietnam Ship-Building Industry Corporation

On January 6, 2009, the HHTP-MB issued Decision No. 05/QD-CNCHL to officially allocate the land of 25ha (including water surface) in R&D Zone to Vietnam Ship-Building Industry Corporation (VINASHIN) Shipbuilding Science and Technology Institute without land use fee. This is the first research institute in HHTP approved by the HHTP-MB. Total investment of the project is estimated at approximately VND 1,500 billion. Investment fund source of the project includes State budget, loan borrowed from Poland, and commercial loan and other sources. The project will be completed in December 2013.

Figure 4.4.2 Shipbuilding Science and Technology Institute

(7) National Institute of Hygiene and Epidemiology

National Institute of Hygiene and Epidemiology (NIHE) has a plan of setting up the International Bio-Medicine Center in HHTP. Allocation of land was requested by NIHE in December 2007. The HHTP-MB consents to allocate the NIHE a land of 5.8ha in the R&D Zone of HHTP.

Besides the project in HHTP, NIHE implemented the project in Hanoi for Improvement of Safety Laboratory by grant assistance of Japan. This project aims at installation of Bio-safety Level 3 (BSL-3) laboratory that can safely and rapidly test a lot of specimen of highly dangerous disease organism like Bird Flu.

(8) Vietnam Metrology Institute

The relocation project of Vietnam Metrology Institute (VMI) aims at establishing, in HHTP, a national leading center of metrology which satisfies the requirements of unified legal metrology in the whole country.

The HHTP-MB allocated a land of 6.8ha to VMI. Then, VMI submitted the detailed plan of construction to the HHTP-MB in October 2008. Approximately USD 13 million will be invested in 2010.

VMI will relocate headquarter including offices and standard metrology laboratories from Cau

1) The HHTP-MB will create favorable conditions for VAST to implement following projects:

   - Project on constructing Hanoi University of Science and Technology. This project is described in the next section for education and training institution.
   - Construction of research and development center, research institutes, laboratories of high-tech industries.

2) Projects of R&D Center, Research Institute, & High-tech Laboratories:

   - Land Area: 20 - 30ha.
   - Total estimated capital: USD 200 million plus VND 1,650 billion (excluding expense for project of Hanoi University of Science and Technology).
   - Research institutes Project of VAST is composed of the following sub-projects.

Table 4.4.8 Research Institute Project of VAST

Sub-Project		Research Institutes to be Located	Land Demand	Expense
1	Headquarter (Administration Area)	Institute of Mathematics Institute of Information Technology (if possible)	2.6 ha	USD50 mill.
2	Hoa Lac Space Center	Institute of Space Technology	7.2 ha	USD 50 mill.
3	Bio-technology Experiment Zone	Mainly for Institute of Bio-technology	4.0 ha	USD 150 mill.
4	Material Technology Development Experiment Zone	Institute of Material Science	2.0 ha	VND 300 bill.
5	Chemical Technology Experiment Zone	Institute of Chemistry	2.0 ha	VND 20 bill.
6	Laboratory for Developing Natural Products for Life	Institute of Natural Products Chemistry	2.0 ha	VND 50 bill.
7	Energy Technology Experiment Zone	Institute of Energy Science	2.0 ha	VND 30-50 bill.
8	Mechatronics and Applied Mechanics Research Zone	Institute of Mechanics	2.0 ha	VND 50 bill.
9	Tropical Engineering Experiment Zone	Institute of Tropical Technology	3.0 ha	VND 60 bill.
Total			26.8 ha	

Source: VAST

(5) Space Technology Institute

Space Technology Institute (STI) that belongs to VAST has already been allocated a land of 7ha for Hoa Lac Space Center (HLSC). HLSC consists of the following areas.

- Headquarter of HLSC
- Space science and technology research area
- Manufacture, assembly and testing area of small satellite
- Space technology application area: ground station and center of data base and satellite image processing
- Space technology State key laboratory
- Center for space technology service and transfer
- Other service; canteen, library, technical service
- Planetarium, space science and technology museum

Giay, Hanoi to HHTP. In the new laboratories, it will install the national metrology standards with the highest accuracy in Vietnam and other highly accurate metrology standards. After relocation project, the current headquarter in Hanoi will become the Standard Center of Industrial Metrology.

New facility of VMI will have enough space for carrying out scientific research, utilizing new metrology methods, applying science and technology to manufacturing and experiment of metrology standards, and developing new metrology fields and large size metrology standards to meet growing demands of socio-economy.

(9) High-tech Business Incubator

1) Current Operation

High-tech Business Incubator (HBI) was established in January 2007 as a part of HHTP. HBI is incubating venture enterprises on the 3rd Floor of Start-up Center in order to invite such enterprises in HHTP.

Priority sectors for incubation are ICT, biotechnology, new materials, and nanotechnology. HBI concentrates in ICT and biotechnology up to 2010. As of February 2009, 10 tenants have been operating: 6 tenants belong to ICT and 4 to biotechnology. There is a limit to the operation period in HHTP: 3 years for ICT, and 5 years for biotechnology.

For the time being, there is a staff of 6 people: director, general training consultant, office service, project development, marketing, and accounting. HBI may have some changes in the staff with more positions such as consultant. If there is any lack of competence in any field, HBI will consult professional outside. This kind of outside pay services is generally called “BDS: Business Development Services”.

Most services are provided by the HBI staff. For professional supports that HBI can’t provide, HBI will ask BDS for consultation. Though the quality of BDS is considered to be quite satisfying, Vietnamese SME (Small and Medium Enterprises) seldom uses this kind of services. HBI is encouraging therefore the Vietnamese SME to make better use of this kind of existing useful services.

Financial support programs for tenants are available at MPI, MOST, MOIT (Ministry of Industry and Trade), SMEDF (Small and Medium Enterprise Development Fund). HBI have arranged these financial support services.

2) New Incubation Center

Only 15 tenants could be accepted with the existing facilities. The HHTP-MB has proposed the construction of a new facility for High-tech Business Incubator to MOST in order to increase accommodation.

The new facility is planned in the R&D Zone with the following condition.

- Land area: 2.6ha
- Total Floor Area: 18,089m^2
- HBI hopes to get over 100 tenants at the new facility after 3 to 5 years.

3) Training of HBI’s Staff

The Director is not satisfied with the staff’s competence. However, as HBI is the very first incubation center in Vietnam, there is no training course for the incubation staff. HBI just follows some international programs of Europe and Germany, and sends their staffs to some conference held by VCCI and MOST. In this context, HBI needs capacity-building

including training courses of consultation and marketing.

4.4.4 Progress of Attracting Education and Training Institutions

(1) FPT University

According to Planning Design of FPT University, the Hoa Lac campus is planned in the Education and Training Zone with a total land area of 30ha. In the land, buildings will be constructed with a total floor area of 307,000m^2. The new campus will accommodate 10,000 students and 1,000 teachers.

Figure 4.4.3 Perspectives & Site of FPT University (9.1ha Plan)

At the first stage, a campus of 9.1ha will be developed with a total floor area of 94,393m^2. It will accommodate up to 1,250 students and 335 teachers. The groundbreaking ceremony of the first phase project was scheduled in September 2008, but it has not held yet as of the end of October 2008.

(2) Hanoi University of Science and Technology

1) General

VAST is planning to establish a new university named Hanoi University of Science and Technology (HUST) in HHTP. HUST is still under the conceptual phase. Planned land area of the campus is approximately 65ha according to the minutes signed by VAST and Ministry of Education and Training.

Planned scale of HUST is as follows:

- Number of students: 6,000 by 2015, and 10,000 by 2020
- Training structure: graduate is 75%, master degree is 15%, postgraduate is 10%
- Number of lecturers: 400 by 2015, and 665 by 2020
- Lecturers structure: domestic is 80%, foreign is 20%
- Total number of staff: 600 by 2015, and 1100 by 2020

2) Character of HUST

HUST is a new type university with the following characters:

- Establishment of HUST aims at creating a lot of professional lecturers and researchers,

who make important contribution in improvement of higher education quality in Vietnam.

- At HUST, strictly selected students are directly taught by leading scientists as well as given instructions in scientific researching. After such education at HUST, the students can get enough competence needed to go on post-graduate school and to get high-quality education.
- Scientific potential of the research institutes could be efficiently utilized at HUST, if HUST and VAST are located together in HHTP. Without fully utilizing the capacity of VAST including over 200 professors or associate professors, over 700 doctors, the most modern laboratories in the country, it is just a waste of human resource and time. It is believed that education by researchers strengthen the linkage between scientific research and education.
- If an existing university is upgraded, there are a lot of obstacles because a full restructuring is needed for the management system, programs, training methods and standardization of lecturers. If a completely new university is established from the beginning, it is difficult to build a lineup of high-level lecturers. VAST has inheritance of the past projects for training talented high-level engineers and bachelors for different universities throughout the country. By effectively utilizing such inheritance, VAST can build a lineup of high-level lecturers without difficulty. This must be an advantage over both upgrading of an existing university and establishment of a new university.
- At present, a lot of families are willing to let their children receive a higher education in a foreign country with a great amount of expense. If the quality of domestic university is not worse than that of international ones at low fee and expense, they are willing to let their children study in the country. Those who are graduated from domestic university usually stay in the country for working. Therefore, establishment of HUST will help to mitigate the brain-drain and foreign currency reserve loss.
- By means of scholarship, the university can select poor but capable students who possibly come from remote areas. Relying on that, the university contributes for the realization of social equality in education and training, at the same time discovers and trains talents throughout the country.

3) Technical Assistance of ADB

The GOV, through the Prime Minister and Deputy Prime Minister/Minister of Education and Training (MOET), has requested ADB to consider financing the development of four "new-model" research universities in the Northern (Hanoi), Central (Danang), Southern (Ho Chi Minh City), and Mekong River Delta (Can Tho) regions, in collaboration with the World Bank.

A joint Technical Assistance (TA) Fact-Finding (ADB)/Identification (World Bank) Mission was fielded from 2 to 11 April 2008, and finalized the overall conceptual framework, approach, and preparatory TA activities with the Government for the proposed project. It was agreed that ADB will support HUST and Danang University sub-projects, while the World Bank will support two other sub-projects in HCMC and Can Tho.

(3) Vietnam Training and Examination Center

1) Current Operation

VITEC is established in March 2007 by MOST, renamed to Vietnam Training and

Examination Center from the former Vietnam IT Examination and Training Support Center.

Major missions of VITEC are as follows:

- Training and supply of hi-tech personnel.
- Establishment of hi-tech standards, mainly of information technologies (IT).

VITEC has the following functions:

- Continued operation of IT Examination and Training Support Center.
- Establishing Vietnamese IT standards and executing IT examination under the cooperation between Japan and Information Technology Professional Examination Council (ITPEC).
- Technical training of software for organization and for individual.
- Training for HHTP.

2) High-tech Workforce Development Center

Application

VITEC submitted an application for construction of "High-tech Workforce Training Center (HWTC)" in HHTP dated January 11, 2007 to the Chairman of HHTP-MB. According to VITEC, the Chairman has already approved this application.

Objectives

HWTC will be constructed with the objectives of:

- To train high quality human resources according to international standards in high technology.
- To assure to supply high quality labor directly to HHTP and the whole country.
- To create the advantageous environment (both in infrastructure and policy) to attract overseas Vietnamese professional scientists and foreigners to work, do research, teach, and transfer knowledge and technology.
- To co-operate with investors in HHTP to train hi-tech workforce to satisfy their own demands.
- To export high quality human resource.

Target of Education

HWTC will train the following persons by various modes of training such as re-training, supplementary training, advanced training, on-the-job training, and distance training:

- Scientist and managers working in organizations, enterprises inside or outside HHTP.
- Students learning in hi-tech fields in universities.
- Junior College technicians and practical engineers.
- Skillful technical workers.
- Graduates expecting further education (masters, doctors).

Educational Plan

- Stage 1: the total number of trainees will be 1000 people/year.
- Stage 2: After stabilizing, the total number of trainees will increase to 3,000 people/year.

Investment Plan

- Total land area: 5 ha.
- Total construction area: 30,000 m^2.
- Total investment costs: approximately VND 103 billion.

4.4.5 Location of Investment Projects

The following tables show the investment projects which have already received investment certificates or have potentials of receiving investment certificates from the HHTP-MB in Hoa Lac and Northern Phu Cat areas. The next figure shows the location of all the listed investment projects.

Table 4.4.9 Investment Projects in Hoa Lac Area

No.	Investor	Area (ha)	Progress
1	Noble	3.00	OP
2	Oetek	1.00	OP
3	HPT	2.50	UC
4	Vietinbank	2.20	UC
5	IMOSO Thuan Phat	5.00	UC
6	Viettel	1.40	UC
7	Vietnam-Korea Medicine	1.00	LC or SL
8	APSS	10.00	UC
9	Vinagame	2.20	UC
10	Kim Cuong	0.07	OP
11	Viettel - CHT	―	UC
12	V-CAPS	20.00	LC
13	FC Technologies	0.75	UC
14	Misa Company	1.20	LC
15	Medlac Pharma Italy	1.50	LC or SL
16	Vinetworks	2.00	LC
17	VINASHIN	25.00	LC
18	Vietnam Internet Center	0.80	LC
19	VNPT Telecommunication Support Center	2.20	PO
20	NIHE	5.80	PO
21	Space Technology Institute (STI)	9.00	PO
22	VAST (include. STI)	30.00	PO
23	High-tech Business Incubator (HBI)	2.60	PO
24	FPT University	30.00	PO
25	Hanoi University of Science and Technology	60.00	PO
26	Department of Financial Informatics & Statics - Misnistry of Finance	2.00	PO
27	Foxconn Corporation	110.00	PO
28	Foxconn Corporation	22.80	PO
29	Vietnam Metrology Institute (VMI)	6.80	PO
MB1	HHTP-MB Office	1.30	OP
MB2	Hoa Lac Service Center	1.20	OP
MB3	HHTP-MB Office (Future Expansion)	5.00	PO
Total		368.32	

Note: OP= in operation, UC=under construction, SL=signed the land lease contract, LC=just licensed, PO=potential
Source: HHTP-MB

Table 4.4.10 Investment Projects in Northern Phu Cat Area

No.	Name of project	Area (ha)	Progress
P-1	Artificial tile factory Investor: VINACONEX CORPORATION	3.00	OP
P-2	Expansion project for High-advanced stone plant Investor: High-class Advanced Compound Stone Plant - VICOSTONE (Vinaconex)	4.81	
P-3	Project for production of glass fibre pipes Investor: Glass Fibre Jsc. - VIGLAFICO (Vinaconex)	3.70	OP
P-6	Electronic prodution plant Investor: Kim Dinh Company	5.00	SL
P-7	Pharmaceutical production plant Investor: Ha Tay Pharmaceutical Sjc.	7.00	LC
P-8	Project for producing export handicraft products Investor: Viet Hien Development Corp.	5.00	SL
P-9	Project for producing export handicraft products, stone scrulpture products Investor: Phuc Hung - Constrexim Architecture Jsc.	2.00	LC
P-10	Project for investment in export processing Investor: Royal ltd.	1.00	LC
P-11	Project for construction of high-advanced stone processing plant Investor: VINACONEX	5.41	OP
P-12	Project for Construction of Datapost Center Investor: Inter-province and International Posts Company	3.00	LC
P-13	Artificial high-advanced tile stone Plant Investor: VINASTONE and WK-Australia Joint Venture	8.57	UC
P-14	Pharmaceutical production plant Investor: SOHACO Group	5.00	SL
P-15	Project for construction of Pharmaceutical production plant Investor: Vietnam Chemical and Pharmaceutical Jsc.	4.88	SL
P-16	Project for producing fireproof doors Investor: VINACONEX and SANWA-HOLDINGS CORP. Joint Venture	2.00	UC
		60.37	

Note: Progress: OP= in operation, UC=under construction, SL=signed the land lease contract, LC=just licenced
Source: HHTP-MB

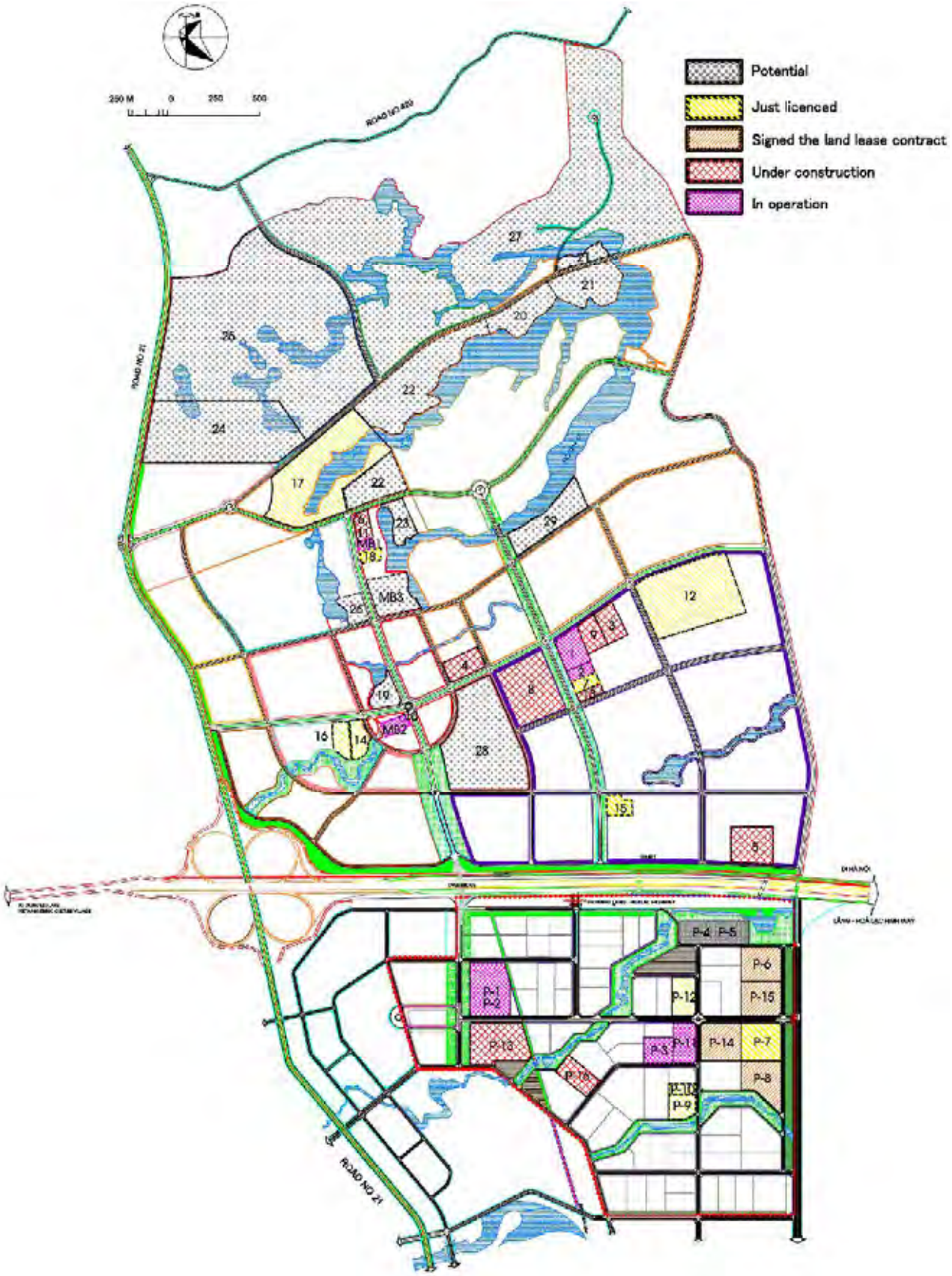


Figure 4.4.4 Location of Investment Projects

4.5 STATUS OF IMPLEMENTING MEASURES

JICA Update M/P was recommended 39 projects in order to promote the successful implementation of the HHTP development project. This chapter reviews the progress of those projects briefly; and shows the status of preferential treatment to investors and progress of creating synergy effects.

4.5.1 Review of Progress in Projects Recommended by JICA Updated M/P

Progress of 39 projects were recommended by JICA Updated M/P are summarized in the next table.

Table 4.5.1 Progress of Recommended Projects

Strategy		Projects		Responsible Organization	Finding of Progress
A	Land acquisition and infrastructure	A1	Land acquisition and resettlement	Local Authority	Completed 826.5 ha (52% of the total area) ; Hoa Lac Area 595.5 ha + Northern Phu Cat Area 231 ha, as of January 2009. The 1st resettlement area (7.8 ha) was finished in 2005. The 2nd resettlement area (36.4 ha) is expected to be completed in 2nd quarter of 2009.
		A2	Development of common infrastructure and R&D zone	HHTP-MB	Main roads are in process of construction.
		A3	Development of functional zones other than R&D zone	HHTP-DC	Detailed plan of FPT's development project is in process of approval.
		A4	Development of power supply without blackout	EVN / HHTP-MB	
		A5	Development of High-speed Telecommunication / internet system	MPT	VNPT and Viettel decided investment to HHTP.
		A6	Development of Missing Part of RR-3	MOT	
B	Government Initiatives	B1	Strengthening of the HHTP-MB by positioning directly under the Prime Minister	GOV	
		B2	Attraction of State research institutes at the government initiative	GOV/ HHTP-MB	For the past year, VAST started discussion with the HHTP-MB to relocate their research institutes. It seems to be an indication of the Government initiatives, because VAST is a large scientific research agency directly under the Prime Minister.
C	Project Organization	C1	Completion of the organizational structure	HHTP-MB/ HHTP-DC	Organization of the HHTP-MB was slightly changed for the past year. HHTP-MB should focus on strengthening its staff structure based on Prime Minister's Decision to be issued in February 2009.
		C2	Capacity-building of the HHTP-MB	HHTP-MB	Advisor from JETRO finished the capacity-building of investment promotion division at the end of December 2008.

Strategy		Projects		Responsible Organization	Finding of Progress
D	Provision of Human Resource	D1	Provision of employment service	HHTP-MB	VITEC is responsible for the employment service, though it has not created a mechanism to provide the service yet.
E	Provision of Urban Function	E1	Provision of demand responsive housing and high-quality living environment	HHTP-DC/ Investors	
		E2	Development of urban amenity core	HHTP-DC/ Investors	
		E3	Establishment of autonomous urban function	HHTP-MB/ HPC	
F	Attraction of R&D Function	F1	Formulation of establishment / relocation plans for individual State research institutes	GOV/research institutes/ HHTP-MB	Land has been allocated for four State research agencies. VAST has made a basic plan of relocation plan. HHTP-MB issued Decision for land use to VINASHIN in January 2009.
		F2	Development of financing plans for individual State research institutes' establishment /relocation	GOV/MPI/ research institutes/ HHTP-MB	VINASHIN has already obtained a financial support from Poland. Other research institutes still have difficulty in fund-raising.
		F3	Provision of mechanism for motivating of S&T staff	GOV/MOST/ MPI	
G	Attraction of High-tech Industrial Function	G1	Provision of tax incentives	MPI/MOF/HHTP-MB	HHTP-MB is discussing special rate of corporate income tax.
		G2	Improvement of one-stop services and custom clearance	HHTP-DC/ HHTP-MB/ MOF	There is not a progress for this issue, because the developer has not started operation yet in the Hoa Lac area. Customs office was opened in HHTP in October 1, 2008.
		G3	Provision of testing and analysis services	HHTP-MB/ HHTP-DC	VMI has submitted a detailed plan of construction to HHTP-MB. It can provide testing and analysis service by means of highly accurate standards, after relocation project is completed.
		G4	Provision of rental factories for SME	HHTP-MB/ HHTP-DC	HHTP-MB has some idea, but they have not settled yet.
		G5	Formulation of the well-thought-out marketing plan	HHTP-DC	The developer has not started operation yet in the Hoa Lac area. With support from JETRO, marketing handbook was prepared.
		G6	Marketing activities in line with the marketing plan	HHTP-DC	There is not a progress for this issue, because the developer has not started operation yet in the Hoa Lac area.
		G7	Continuation of incubation services in HHTP	HHTP-MB	HBI is providing incubation service to 10 tenants in the start-up center of HHTP.
H	Attraction of Education and Training Function	H1	Request for government initiatives in relocation of VNU as scheduled	GOV/MOC/VNU	The investor was changed from VNU to MOC in September 2008 by the Prime Minister's Decision.
		H2	Establishment of Institute of Technology in HHTP	VAST	VAST is planning to establish Hanoi University of Science and Technology in HHTP.

Strategy		Projects		Responsible Organization	Finding of Progress
		H3	Establishment of Vocational Training School in HHTP	HHTP-MB	VITEC is planning to establish High-tech Workforce Training Center in HHTP.
		H4	Establishment of Technical Training Center in HHTP	HHTP-MB	
		H5	Relocation of FPT University	FPT University / HHTP-MB	HHTP-MB has expected FPT University would likely launch the first stage of construction in 2009.
		H6	Establishment of the educational institute of management of technology	VAST	If Hanoi University of Science and Technology is established, it likely has a potential of educating management of technology in the future.
		H7	Training of various experts to apply the fruits of S&T to economic activities	VAST	If Hanoi University of Science and Technology is established, it likely has a potential of being responsible for this training in the future.
		H8	Establishment of the IT school in HHTP	HHTP-MB	VITEC is planning to establish High-tech Workforce Training Center in HHTP.
		H9	Establishment of Hanoi University of Science & Technology (Additional)	VAST	VAST is planning to establish Hanoi University of Science & Technology aiming at creating a lot of professional lecturers and researchers. The GOV, through the Prime Minister, has requested ADB to consider financing the development of four universities including this.
J	Popularization Function of Science and Technology	J1	Construction of Science Museum in HHTP	GOV/ MOST / HHTP-MB	
		J2	Organizing various events in HHTP for enhancing the nation's understanding and interests in S&T and raising name recognition of HHTP	MOST/ Others	
		J3	Sending S&T information from HHTP to enhance the nation's understanding and interests in S&T and raising name recognition of HHTP	MOST/ Others	
K	Generation of Synergy Effect	K1	Enhancement of Information Exchanges	MOST/R&D Education/ Industry	
		K2	Promotion of Cooperative R&D	MOST/R&D Education/ Industry	
		K3	Promotion of Personnel Exchanges	HHTP-MB/ R&D / Education/ Industry	
		K4	Provision of Financial Supports	Industry	

Source: JICA Study Team

4.5.2 Status of Preferential Treatment to Investors

(1) Corporate Income Tax Incentives

Revised Law on Corporate Income Tax

Vietnamese corporate income tax (CIT) system was drastically changed by taking effect of the Law on CIT (No. 14-2008-QH12) on January 1, 2009. This new law replaced the previous Law on CIT (No. 09-2003-QH11). According to the investment law, the standard rate of corporate income tax (CIT) was reduced from the previous rate: 28% to 25% from January 1, 2009 by this new law.

Corporate Income Tax Incentives for HHTP

Investors to HHTP can enjoy incentives including preferential CIT rate, exemption and reduction of CIT under the new Law. Following table shows articles and clauses of the new Law that relate to tax incentives for the enterprises in HHTP.

Table 4.5.2 Corporate Income Tax Incentives Related to HHTP

(Abstract of Corporate Income Tax Law 14-2008-QH12)

Article 13 Incentives being preferential tax rates 1. The tax rate of ten (10) per cent shall apply for fifteen (15) years to newly established enterprises from investment projects in areas with specially difficult socio-economic conditions, in economic zones and in high-tech zones; and to newly established enterprises from investment projects in the sectors of high technology, scientific research and technological development, investment in development of specially important infrastructure facilities of the State, and production of software products. 6. The duration of the preferential tax rates stipulated in this article shall be calculated from the first year in which the enterprises has turnover.
Article 14 Incentives being duration of tax exemption and reduction 1. The following enterprises shall be exempted from corporate income tax for a maximum period of four (4) years and shall be entitled to a fifty (50) per cent reduction of the amount of corporate income tax payable for a maximum period of nine (9) subsequent years: Newly established enterprises from investment projects in areas with specially difficult socio-economic conditions, in economic zones and in high-tech zones; newly established enterprises from investment projects in the sectors of high-tech, scientific research and technological development, investment in development of specially important infrastructure facilities of the State, and production of software products; and newly established enterprises operating in the sectors of education and training, occupational training, health care, culture, sport and the environment. 3. The duration of tax exemption and reduction stipulated in this article shall be calculated from the first year in which the enterprise has taxable income; if an enterprise does not have taxable income in the first three years as from the first in which it has turnover, then the duration of tax exemption and reduction shall be calculated from the fourth year.
Article 19 Effectiveness 1. This law shall be of full force and effect as from 1 January 2009. 2. This law shall replace Law on Corporate Income Tax 09-2003-QH11. 3. Enterprises currently entitled to corporate income tax incentives pursuant to the Law on Corporate Income tax 09-2003-QH11 shall continue to be entitled to such incentives for the residual term in accordance with Law 09-2003-QH11; if the level of incentives including preferential tax rates and duration of tax exemption and reduction is less than the level of incentives pursuant to this law, then the tax incentives stipulated in this Law shall apply for the residual term.

Source: Allens Arthur Robinson-Vietnam Laws Online Database

The preferential rate of CIT for HHTP is 10% for 15 years from the first year in which the enterprise has turnover. CIT is exempted for 4 years from the first year in which the enterprise has taxable income and CIT rate (10%) is reduced by 50%, namely 5% CIT rate, for 9 subsequent years.

Newly established enterprises from investment projects in HHTP can enjoy these CIT incentives, regardless of type of business: therefore, every enterprise newly established enterprises from investment projects in HHTP including not only high-tech manufacturer and

software development, but also logistics, commercial, housing, service, golf course etc.

Enterprises currently entitled to corporate income tax incentives pursuant to the Law on CIT 09-2003-QH11 shall continue to be entitled to such incentives for the residual term in accordance with Law 09-2003-QH11.

Comparison with CIT Incentives for Industrial Park

Under the new Law on CIT, incentives are not given to newly established enterprises from investment projects in industrial parks unless these projects are in the sectors specified in the Law. Therefore, newly established enterprises from investment projects in HHTP can enjoy much better conditions of CIT compared with those in industrial parks.

Meanwhile, newly established enterprises from investment projects in the sectors of high technology, scientific research and technological development, and production of software products can enjoy the same CIT incentives as in HHTP. GOV encourages investment to the sectors of high technology, scientific research and technological development, and production of software products as well as to the areas with especially difficult socio-economic conditions, to economic zones and to high-tech zones including HHTP.

Efforts to Special CIT Incentives for HHTP

The Law on CIT (No. 14-2008-QH12) gives good CIT incentives not only to newly established enterprises from investment projects in HHTP, but also to those in the following places and sectors.

- Places of areas with difficulties on socio-economic conditions, in economic zones and in high-tech zones.
- Sectors of high technology, scientific research and technological development, investment in development of important infrastructure facilities of the State, and production of software products.

Therefore, the special incentive only for HHTP has been discussed by order of the Prime Minister in order to differentiate HHTP from others. This discussion is made with a participation of MPI (as the key Ministry), MOF, MOST, and HHTP-MB. This is an indication of the Government initiatives. If an attractive incentive is decided, HHTP can enjoy a good location advantage even over SHTP.

(2) Personal Income Tax

Vietnamese personal income tax (PIT) system was also drastically changed by taking effect of the Law on PIT (No. 04-2007-QH12) on January 1, 2009.

Following table shows tariffs applied for income from business, salary or wage for resident who is present in Vietnam for 183 days or more in a calendar year or 12 consecutive months counting from the first date of their presence in Vietnam.

Table 4.5.3 Personal Income Tax for Resident

No.	Total Income per Year (Million VND)	Total Income per Month (Million VND)	Tax Rate (%)
1	Less than 60	Less than 5	5
2	From 60 To 120	From 5 To 10	10
3	From 120 To 216	From 10 To 18	15
4	From 216 To 384	From 18 To 32	20
5	From 384 To 624	From 32 To 52	25
6	From 624 To 960	From 52 To 80	30
7	More Than 960	More Than 80	35

Source: Law on Personal Income Tax

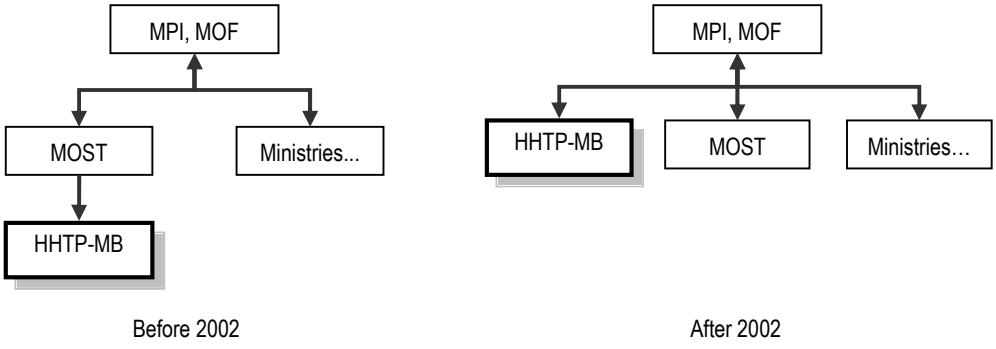
Tax rate of PIT for non-resident is 20%. Taxable income from salary or wage of a non-resident is a total of salary or wage received by a non-resident for a job performance in Vietnam, regardless of income payers.

4.6 EXISTING FINANCIAL CONDITIONS

4.6.1 Financing of HHTP development

(1) Financial source of HHTP development and management

Basic infrastructure development and management cost is financed by the government budget, which is managed by the HHTP-MB. Till 2001, as HHTP-MB was structured under MOST, the budgets were allocated by the MOST. Since 2001 onwards, after the Government Decision (No. 98/2001), the HHTP-MB in terms of budget allocation system came to the same level as of other ministries. As a result, the budget for HHTP development was directly requested by HHTP-MB to MPI and MOF. Finally, the budget without any other channel was directly allocated by MPI and MOF to the HHTP-MB. Following figure shows the budget allocation system for the HHTP-MB.



Source: HHTP-MB

Figure 4.6.1 Budget System for the HHTP-MB

The government budget was allocated for HHTP development including infrastructure development and land acquisition, administration (the HHTP-MB operation), and support for science and research (mostly Start-Up Center). The MPI provided budget for infrastructure development such as road, wastewater treatment plant, and land acquisition, and The MOF provided budget for administration of the HHTP-MB and science and technology support (mainly used for Start-up Center operation).

In 2008, the budget was increased exceedingly, particularly for the construction work. The VND 300 billion (60% of construction cost or JPY 1.9 billion) were allocated for land acquisition and the rest were allocated for construction of road and wastewater treatment plant. The HHTP-MB budget for the last 10 years is summarized in the table below.

Table 4.6.1 Budget for HHTP Development

(million VND)

Year	Total	Budget		
		MOF	MOF	MPI
		Science and Research (Start Up Center)	Administration (HHPT-MB)	Infrastructure Development
1997	1,000			1,000
1998	2,500			2,500
1999	4,400			4,400
2000	17,154	9,697		7,457
2001	24,581	4,681		19,900
2002	18,020	1,640	1,680	14,700
2003	48,030	1,720	2,326	43,984
2004	97,160	2,060	2,500	92,600
2005	106,430	2,200	4,230	100,000
2006	107,190	2,550	4,640	100,000
2007	198,180	2,930	5,250	190,000
2008	506,280	3,030	5,250	498,000
Total	**1,130,925**	**30,508**	**25,876**	**1,074,541**

Source: HHTP-MB

(2) Revenue form HHTP operation

As there no revenue was generated from HHTP operation, the HHTP operation cost is covered solely under the government budget. Considering the development of limited infrastructure and low O&M cost, the charges for land lease and O&M of the facilities and infrastructure were collected neither from the developer nor from tenants. In addition, there was no regulation and contract between HHTP-MB and developers in which financial condition such as land lease, O&M, cost recovery of HHTP development and other conditions were specified.

4.6.2 Activities of the Developers (FPT and VINACONEX)

Basic demarcation of HHTP development is that the HHTP-MB will develop the main infrastructure while the developer will develop the technical infrastructure in the specific areas or zones. The activities of the developers are summarized below.

(1) Activity of FPT

1) License (permit) to operate in HHTP

FPT has the authorization from the Prime Minister to develop HHTP. FPT plans to develop High-Tech Industrial Zone (260ha), Software Park (12ha for own use), and Education and Training Zone (30ha for FPT University). However, in order to operate in the HHTP in addition to the authorization, two other permits are necessary as shown below.

- "Investment License" which authorizes the development plan based on the proposal submitted by FPT to the HHTP-MB. This is given by HHTP-MB.
- "Decision on right to use land", which authorizes to use the land. This is also given by the HHTP-MB.

FPT based on VN Revised M/P has submitted detailed development plan to the HHTP-MB and expects the license to be issued in 2009. The license period will be 50

years from the issuance date.

2) Fees to be collected by tenants

Three (3) types of fees are planned to be charged from the tenant. Since contract with the HHTP-MB is still under discussion and after finalization, the fees will be revised in accordance with the terms of contract with the HHTP-MB. The planned three fees are as follows:

i) Land with infrastructure fee (land lease)

- This fee is considered as "land lease" and will be charged to tenants for the utilization of land and to cover the incurred development cost.
- Fee range will be USD 0.8 - 1.0/m^2/year x 50 years.
- Payment can be done at one time or can be paid in installments.

ii) Infrastructure management fee (O&M fee)

- This fee will be to cover O&M of facilities and infrastructure that has been developed within the zone developed by FPT. The fee will also cover the O&M of the public facilities and infrastructure developed by the HHTP-MB (Please note that O&M cost might be paid to the HHTP-MB and is under consideration by the HHTP-MB).
- Fee will be USD 0.2/m^2/year and have to be paid annually.

iii) Raw land use fee

- This fee will be paid to the local authority (Hanoi city) for operating business in the land. FPT after collecting the fee from tenants will pay to the local authority.
- Fee will be VND 1,415/m^2/year.

The plan for fee collection mechanism is shown in the figure below. Since there is no contract between the HHTP-MB and FTP, currently no fee has been paid to the HHTP-MB under the present management system.

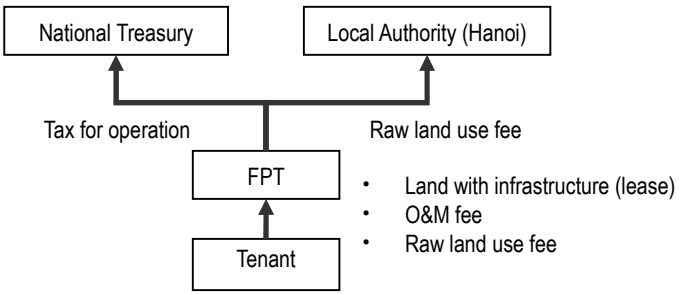


Figure 4.6.2 Financial Situation for HHTP Operation

(2) Activity of VINACONEX

VINACONEX is another authorized developer for HHTP. In addition to the development of a part of High-Tech Industrial Zone (34.6ha) in the Hoa Lac area and VINACONEX will also develop the Northern Phu Cat area and some areas in Hoa Lac area that has been integrated in HHTP after the VN Revised M/P. As since 2002, VINACONEX already been developing the North Phu Cat as "industrial estate", VINACONEX need to revise their plan so as to match and integrate with the concept the HHTP development plan.

1) Activity with the HHTP-MB

Revised plan has been prepared with the HHT-MB, but no official approval has been yet issued. VINACONEX is not paying any fees to the HHTP-MB.

2) Activity with tenants

As of August 2008, thirteen (13) investors have the license to invest in HHTP North Phu Cat. Three types of fees were charged to tenants, that is land with infrastructure (land lease), O&M fee, and raw land use fee. The lease period is of 50 years. After the integration of North Phu Cat into HHTP, the fee needs to be revised. With an objective to promote investment and provide incentive, fee may be reduced.

4.6.3 HHTP-MB Plan for Financial Scheme for HHTP Management

As mentioned in the above section, there is no regulation regarding cost recovery for HHTP development and O&M cost. However, the discussion has started between HHTP-MB and the MOF to establish a cost recovery mechanism. Discussion are on to finalize that what percentage of the development cost (state budget and ODA) should be recovered from operation and how much to be charged for the O&M.

The HHTP-MB, together with MOF is examining the details of cost recovery strategy and to establish proper level of land lease and O&M cost. Three types of revenue are expected from HHTP operation, that are i) tax, ii) land lease, and iii) O&M for which developer and tenant is obligated.

HHTP-MB holds only expense account that has been allocated by MOF and MPI for HHTP development. In other words, HHTP-MB does not hold any income account which is primary requirement for collecting money. Thus, it is under consideration to assign responsibility to HHTP-MB or any other agency for collecting fee. However, if HHTP-MB is assigned than HHTP-MB has to open the income account so as to receive the fee directly.

The idea for cost recovery proposed by the HHTP-MB is summarized below.

i) Tax

There is no special tax for operation in HHTP. Tax is determined by the tax law, and major charged taxes are VAT (Value Added Tax) and CIT (Corporate Income Tax). These taxes have to be paid by developer and tenants directly to National Treasurer. However, HHTP-MB is considering of using a part of the tax for cost recovery for HHTP development.

ii) Land lease (infrastructure use fee)

Land lease is charged for activities in HHTP and will be determined by the cost of land development. The HHTP-MB is considering the land lease to be used for cost recovery.

iii) O&M fee

After completion of HHTP development when more infrastructures facilities have to be managed by the HHTP-MB, then HHTP-MB will charge O&M cost from developer and tenants. This is under consideration. The O&M fee will be paid directly to the HHTP-MB by developer and tenants.

Following table summarizes strategy of revenue that is expected from HHTP operation.

Table 4.6.2 Strategy of Revenue (plan by the HHTP-MB)

Types of revenue	Paid to	Paid by	Explanation
Tax	National Treasury	• Developer and tenant will pay directly to National Treasury.	• Tax law is applied: VAT, corporate tax, export/import tax and other related tax. • Part of the tax can be used for cost recovery.
Land lease (infrastructure use fee)	HHTP-MB or concerned agency	• Developer is responsible to pay for himself and for tenants. • Tenants will pay directly to HHTP-MB for R&D, Education & Training, and Center for High-Tech City.	• This fee will be considered under state budget. Some portion of the land lease fee will be kept by the government. • Determined by the price of land for each zone. • As an incentive, lease for R&D and Education & Training Zone should be low. • For private use (industry area), lease should be set high. • Lease to be paid for cost recovery.
O&M fee	HHTP-MB	• Developer and tenant will pay directly to HHT-MB.	• O&M for public space and sewerage. • O&M for lake and buffer.

Source: Information provided by HHTP-MB

Following figure shows the collection mechanism of land lease and O&M cost. In order to simplify the process for collection, the HHTP-MB is considering that the developer should collects the land lease fees from the tenants and pay to the HHTP-MB or other assigned agency.

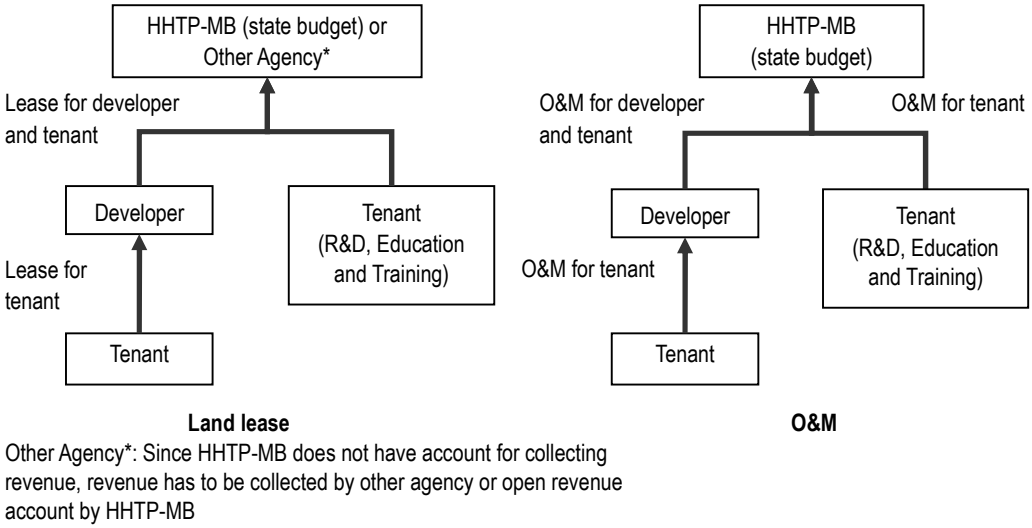


Figure 4.6.3 Revenue Collection Mechanism

4.6.4 Issues for Financial Condition

Issues for HHTP operation regarding financial condition as identified are as follows.

i) Strategy for cost recovery has not been prepared.
   - Since HHTP is a "Prime Minister" project, some cost should be covered by the government budget and some cost should be covered by tenants. What percentage of development cost has to be recovered should be decided by the government.

- The strategy of Incentives might be considered for the Cost Recovery. As incentives (cost) might come from the government budget, incentive measures need to be considered.
- Fees to be charged has to be determined (mainly land lease and O&M).

ii) Contract between the HHTP-MB and developer has not been prepared.
- Fee will be USD 0.2/m^2/year and have to be paid annually.
- Contract between the HHTP-MB and developer should be clarified, particularly financial condition (lease, O&M, raw land).
- Since developer already has contract with tenant, contract between the HHTP-MB and developer affects the contract condition with tenants.
- Prepare regulation for HHTP management clearly showing the responsibility of the HHTP-MB and the developer. In addition, it should also highlight the fees to be charged.

4.7 NATURAL CONDITION SURVEY

4.7.1 Topographic and River Survey

The works of topographic and river survey was conducted during 6th September to 24th December 2008. The result of the survey is summarized below;

(1) Scope of Works

Topographic survey covered the area of National Road No.21 and the entire development area of Hoa Lac Area of about 1,268ha. The survey was conducted in the following way:
- Installation of Temporary Benchmarks Class 1 (80 locations)
- Plane-table Survey
- Profile Leveling
- Cross-section Surveying
- Mapping with scale of 1/500

To understand and analyze the present condition of water bodies and rivers in the surrounding HHTP, the following river survey works were carried:
- Profile leveling
- Riverbed amount for the Dua Gai stream – Vuc Gaing stream – confluence of the Tich River (about 10km)
- Overflow open cannel from the Tan Xa Weir (about 500m)
- Open canal from irrigation gate of the Tan Xa Lake (about 500m)
- River crossing at the bridge construction schedule position (10 places)
- Tan Xa Lake crossing (10 places) and Open cannel with Tan Xa Weir (2 places)

(2) Topographic and River Survey

Three quarters of the area is made up of low hill (like upturned plate) with the high level varying from E.L.2.30 to E.L.25.13m above the mean sea level. The slope angle of the topography is about 5 - 15 degrees. A part of the Tan Xa Lake is the centre of the area. The gradient of the terrain slopes from east to west with an average elevation of 13.20m.

There are varieties of plants fairly distributed in the surveyed area. Plants are on the hills, in the industrial areas plants, along the Dua Gai, Vuc Giang streams and in surrounding areas of the Tan Xa lake. In addition, the surveyed area including the residential area has many kinds of fruit trees too.

Residential area is distributed mainly along the national road of RH21, the provincial road of

PH84 and the Lang - Hoa Lac Express. The numbers of houses/buildings in the residential area were counted and were approximately 2,500. It was found that the some of the infrastructure facilities, such as roads (road No.A, road No.B, Road No.C, Road No.D), water supply, and telecommunication along the roads were constructed by HHTP-MB. There were also some licensed construction units that are authorized to build in the area.

Landscape of the area is embellished with the Tan Xa lake. The lake is relatively large and can be considered as a major identity or landmark for the entire area. Area of the lake is about 90ha, and has a deep water squid average of 5.5m.

On analyzing the regional drainage system of rivers, the Dua Gai stream flows from West to East and the Vuc Giang stream emerges from the East. It is recognized that three small streams inflows from the West to the Hoa Lac area through RH21. Flow of the Vuc Giang stream reaches at the Tich river, that is one of tributaries of the Day river systems emerged from the East. During the dry season (from November to April year later) the water level in the river system is often very shallow. The Dua Gai and Vuc Giang streams have almost no water flows during the dry season. These streams have a very low longitudinal gradient, less than 1‰. The Dua Gai and Vuc Giang streams shall be improved to meet required flow capacity. The rainy water often flows out very quickly from the streams. In general, the survey area has terrain, landscape relatively suitable to develop an industrial zone and the high-tech park.

On the basis of analysis and the surveyed results of the topographic and river survey, the infrastructure for the Hoa Lac area will be planned and designed.

(3) Inventory Survey for the Existing Underground Facilities

The result is summarized in Table 4.7.1.

Table 4.7.1 Inventory Survey

No.	Underground facilities	Unit	Quantity	Depth to surface (m)
1	*Road No. A*			
1.1	Water supply system			
	+ Water supply system grade I	m	2449.31x2	1.8m
	+ Water supply system grade II	m	2449.31x2	1.8m
1.2	Sewage system			
	+ Life Sewage system of zone D500	m	2449.31x2	2.4m
	+ Rain-water Sewage system of zone D500	m	2449.31x2	2.4m
	+ All Rain-water Sewage system D800	m	2449.31x2	2.4m
1.3	Underground electric cable 22kv	m	2449.31x2	0.9m
1.4	Optical capble	m	2449.31x2	0.9m
2	*Road No. B*			
2.1	Water supply system			
	+ Water supply system D150	m	2103x2	0.9m
2.2	Sewage system			
	+ Sewage pipeline D200	m	2103x2	0.9m
	+ Combined drainge pipeline D800	m	2103x2	2.4m
2.3	Underground electric cable 22kv	m	2103x2	0.9m
2.4	Optical capble	m	2103x2	0.9m
3	*Road No. D*			
3.1	Tunnel 2000x2030	m	1400.66x2	0.22m
4	*Road No. E*			
4.1	Sewage pipeline D800	m	740.3	2.4m

Source: JICA Study Team

(4) Survey for the Existing Houses and Buildings

The result is summarized in Table 4.7.2.

Table 4.7.2 Number of Exiting Houses and Buildings

Name of area	Status and Number of house and building	Total
Tan Xa commune		755
	Number of brick houses: 430	
	Number of one floor concrete houses: 49	
	Number of two floor concrete houses: 39	
	Number of three floor concrete houses: 2	
	Number of brick houses: 235	
Ha Bang commune		1,663
	Number of brick houses: 1558	
	Number of one floor concrete houses: 78	
	Number of two floor concrete houses: 27	
Thach Hoa commune		33
	Number of three floor concrete housese: 24	
	Number of the four-storey concrete houses: 9	
	Billet of army	
Binh Yen: commune		76
	Number of brick houses: 74	
	Number of two floor concrete houses: 2	

Source: JICA Study Team

4.7.2 Geological Survey

Geological survey was conducted in the Hoa Lac area from 14th September to 14th November 2008. Results of survey works are described in the following sub-sections:

(1) Scope of Works

Following surveys were conducted for "Feasibility Study on Hoa Lac High-Tech Park" in Vietnam. For the surveys, the following two types of investigations with specific specifications were carried out.

- Type A: Investigation used for the main part of the plan for heavy structure
- Type B: Investigation used by stability examination for fill and light structure

The work covers the following items and volumes, covering the on-site investigations and laboratory tests:

Table 4.7.3 Survey Item for the Geological Survey

Item	Work Volume	
	Type A	Type B
	8 places	13 places
1. On-site Investigations		
(1)Core Boring	Depth of 50 meters on Average	Depth of 30 meters on Average
(2)Standard Penetration Test (SPT)	Each 2m in each bore hole	Each 2m in each bore hole
(3)In-situ permeability test	One place in each bore hole	One place in each bore hole
2. Laboratory Tests	Density of soil particles Moisture content test Grain size analysis Wet density test Permeability test Unconfined compression test	Density of soil particles Moisture content test Grain size analysis Wet density test Permeability test Consolidation test California Bearing Ratio(CBR)

Note: Number of core boring work conducted at the site is 21 boreholes (BH1 to BH21) in total.

(2) Sub-surface Soil Condition

From result of soil investigation of 21 boreholes, the soil strata of the Hoa Lac area are classified into 12 layers as mentioned below:

a) Layer 1: Cultivated Soil

b) Layer 1b: Road building soil: Stiff, reddish brown, yellowish grey silty Clay mixed grits-gravels

c) Layer 2: Firm, yellowish brown silty Clay (Resistance Capacity: R0=1.15kg/cm_2 and Deformation module: E0= 80.0 kg/cm^2)

d) Layer 3: Stiff to very stiff, yellowish-reddish brown silty Clay mixed laterite grits-gravels (R0=1.00 and E0= 65.0)

e) Layer 4: Soft, brightish grey, pinkish brown silty Clay (R0=1.25 and E0= 95.0)

f) Layer 5: Firm to stiff, reddish brown, yellowish-brightish grey silty Clay mixed grits (R0=1.30 and E0= 75.0)

g) Layer 6: Very Stiff, yellowish-brightish grey silty Clay mixed grits (R0=1.60 and E0= 120.0)

h) Layer 7: Firm, brownish-yellowish grey silty Clay (R0=1.10 and E0= 50.0)

i) Layer 8: Hard, blackish grey silty Clay mixed macadams-grits (R0=1.70 and E0= 150.0)

j) Layer 9: Very strongly weathered greenish-brightish grey sand-gravelstone (R0=273 and E0= 216)

k) Layer 10: Soft, brightish-blackish grey silty Clay (R0=0.85 and E0= 23.0)

l) Layer 11: Very strongly weathered brightish-whitish grey limestone (R0=847 and E0= 710)

The cultivated soil of Layer 1 is found at the ground surface in boreholes: BH2, BH4, BH13, BH15 and BH16 with an average layer thickness of 2.6m. The thickness of cultivated soil varies from 1.0m (BH4, BH21) to 3.3m (BH13). The composition of this layer is not homogeneous and the cultivated soil consists of silty clay and mixed grits-gravels. Soil is reddish brown, yellowish grey in color and stiff consistency. It is recommended that cultivated soil shall be scraped away when reclaiming land.

(3) Summary of Geological Survey

Through the results obtained from the geotechnical investigation, the soil of the layers: 6, 8, 9 and 11 are found with high bearing capacity, and their thickness is large. These layers are suitable to bear heavy load. In other words, these layers are suitable for laying the foundation for heavy industries or high rise buildings.

Such analysis and findings will be very useful as prior to build any structures or foundation at any location, it is very important to consider the result of the geological survey.

4.8 PRESENT SOCIAL AND ENVIRONMENTAL CONDITION

4.8.1 Introduction

Knowledge of the social and environmental conditions of project site and its surrounding area is essential for understanding the quality of the present environment and to assess project impact for the EIA.

Since some data of environment conditions were not available, the following field surveys were conducted under the Study. As for social conditions, it was grasped by interview to the agencies concerned and the resettlement survey under the Study.

a) Water quality (surface water, ground water)

b) Air quality

c) Noise

d) Soil and sediment

e) Flora and fauna

f) Social condition (interview survey)

Surveys for environmental parameters i.e. water, air, noise, soil, sediment, flora and fauna were conducted in two seasons (October in rainy season, December in dray season) to observe fluctuation by seasons.

The JICA Study Team has supported holding stakeholders meetings by HHTP-MB as one of efforts of project for public consultation in the course of project preparation. The result of stakeholders meetings is stated in this section as well.

4.8.2 Social and Environmental Consideration Survey

(1) Water Quality Survey

Parameters of analysis of surface water as well as ground water were chosen referring relevant environmental standard in Vietnam. Standard of wastewater of industry was also taken into account since it is probable that high-tech industries are going to be established in the HHTP.

The analytical parameters of surface water and ground water are shown in Table 4.8.1 and Table 4.8.3. The sampling points for the surface water and ground water quality testing are listed in Table 4.8.2 and Table 4.8.4.

The result of survey of surface water indicated that the surface water in the Study Area is slightly polluted by the presence of high concentration of $NH4^{+}$-N (ammonium nitrogen) and biological index (Total Coliform). It is assumed that factors such as discharge of untreated domestic wastewater, the wastewater from handicraft activities of nearby households, discharge from companies could deteriorate water quality.

Table 4.8.1 Analytical Parameters of Surface Water

Parameters	Applied standards
Temperature, pH, BOD5, COD, TSS, arsenic, mercury, lead, cadmium, hexavalant chromium, trivalent chromium, copper, zinc, nickel, manganese, iron, tin, cyanide, phenol, mineral oil, animal oil, vegetable oil, residual chlorine, PCBs, organic phosphorous, organo-chloride compounds, ammonium nitrogen, total nitrogen, total phosphorous, total coliform, total alpha ray strength, total beta ray strength, nitrate, nitrite, DDT	TCVN 5942-1995 (column B): Standards for surface water

Source: JICA Study Team
NOTE: BOD5 = 5-day Biological Oxygen Demand, COD = Chemical Oxygen Demand, TSS = Total Suspended Solids

Table 4.8.2 Sampling Points for Surface Water

Code	Name
W1	Tan Xa Lake1
W2	Tan Xa Lake2
W3	Tan Xa Lake3
W4	Trung Lu Lake (outlet of the HHTP)
W5	Stream inlet to the HHTP
W6	Stream inlet to the HHTP- Km 16 + 500, Son Tay - Xuan Mai
W9	Trung Lu lake
W10	Tich River

Source: JICA Study Team

The result of the ground water survey indicated that most of parameters satisfied standard values shown in TCVN 5944- 1995. During the rainy season, the value of Coliform at W8 was 800 times higher than the standard. In addition, during the dry season, the Coliform index at W8, W11, W12 was 4 to 6.6 times higher than the standard. In general, the underground water in the area is relatively pure and can be used for domestic water supply after heat treatment, such as boiling.

Table 4.8.3 Analytical Parameters of Ground Water

Parameters	Applied standards
Temperature, pH, odor, color, Turbidity, hardness (CaCO3), TSS, arsenic, lead, cadmium, hexavalant chromium, trivalent chromium, copper, zinc, manganese, iron, cyanide, phenol, chlorine, sulfide, sulfur, fluoride, ammonium nitrogen, nitrate, nitrite, total coliform, Fecal coliform	TCVN 5944-2005 Standards for ground water

Source: JICA Study Team

Table 4.8.4 Sampling Point of Ground Water

Code	Name
W0	Supply water taken at the Start-up Center of the HHTP
W7	Underground water taken from a bore well with depth 40m
W8	Dug well water sample with depth less than 15 m
W11	Dug well water sample with depth less than 15 m on the Eastern side of the HHTP area
W12	Bore well with depth 40m m on the Eastern side of the HHTP area

Source: JICA Study Team

(2) Air Quality Survey

The parameters of the air quality survey are shown in Table 4.8.5. The sampling points for air quality are listed in Table 4.8.6.

The results of the survey showed that the air quality surrounding the Study Area is polluted by dust, which might be caused by traffic. The values relating to dust, specifically TSP (Total Suspended Particulates) and PM_{10} (Particulate Matter smaller than 10 μm), observed along National Road 21 and LHEE exceeded the limit specified by TCVN 5937-2005. It is also supposed that, because construction works is being done in and around the HHTP area, these construction activities may be deteriorating the air quality, especially the concentration of particles in the ambient air. On the other hand, the values of SO_2 (sulfur dioxide), CO (carbon monoxide) and NO_2 (nitrous oxide) did not indicate seriously polluted conditions. It was observed that the air quality in the rainy season was generally better than that in the dry season.

Table 4.8.5 Survey Parameters of the Air Quality Survey

Parameters	Applied standards
SO_2, CO, NO_2, TSP, PM_{10}	TCVN5937-2005: Standards for ambient air

Source: JICA Study Team

Table 4.8.6 Sampling Point of Air Quality and Noise

Code	Name
AN1	Km28, Lang-Hoa Lac high way-Hamlet 2,Thach Hoa commune
AN2	Km 29+500-Lang Hoa Lac Highway, Hamlet 5-Thach Hoa commune
AN3	National No 21 (to Xuan Mai)
AN4	National No 21 (to Son Tay). Hamlet 8, Thach Hoa commune
AN5	Residential area
AN6	Education zone
AN7	Resettlement area
AN8	Opposite the HHTP area, Hamlet 9-Thach Hoa commune.
AN9	Start-up center of the HHTP

Source: JICA Study Team

(3) Noise Survey

The survey item for noise measurement is shown in Table 4.8.7. Sampling points for noise are listed in Table 4.8.6.

The survey results showed that the noise level, quantified by L_{Aeq} (noise level equivalent, "A" weighted), at AN1, AN2, AN3 and AN4 is almost as high as the standard for manufacturing areas, which allows relatively loose value (e.g. 75dB(A) for 6:00-18:00, 70dB(A) for 18:00-22:00, 50dB(A) for 22:00-6:00) among four areas defined in TCVN5949-1998. The result at AN5 indicated that this location was subject to the affect of traffic, similar to the four points along National Road 21 and LHLE. At other points, namely AN6, AN7, AN8 and AN9, these were recognized as residential areas in terms of the noise environment according to the relevant TCVN.

Table 4.8.7 Survey Item for the Noise Survey

Items	Applied standards
Noise level (L_{Aeq})	TCVN5949-1998: Standards for ambient noise

Source: JICA Study Team

(4) Soil and Sediment Survey

The parameters for the soil and sediment survey are shown in Table 4.8.8. Sampling points for soil and sediment are listed in Table 4.8.9. The environmental standard for sediment has not been stipulated in Vietnam.

The result of soil analysis in the rainy season during November 2008 revealed the existence of soil contaminated with copper and arsenic. In the dry season, the number of sampling points was increased by 4 locations to check the broad extent of the contamination area. The result of survey in the dry season indicated that concentrations of copper were relatively high, as the value of copper for three of the four samples exceeded the standard for agricultural land.

Considering the land use in the survey site, it is assumed that source of these contaminations might come from natural origins.

The concentrations of iron and manganese were rather high compared to values in TCVN 5949-1998, while there is no standard for sediment in Vietnam. It is supposed that heavy metals from upper river source could accumulate in sediments of Tan Xa Lake and Tich River.

Table 4.8.8 Analytical Parameters for Soil and Sediment

Parameters	Applied standards
pH_{KCl}, arsenic, mercury, lead, cadmium, copper, zinc, total organo-chrorinated pesticide*	TCVN 7209-2002: Standards for soil

Note: 1. TCVN 7209 is not applicable for sediment.
2. * for sediment survey only
Source: JICA Study Team

Table 4.8.9 Sampling Points for Soil and Sediment

Survey	Code	Name
Soil	G1	Near Tan Xa Lake1
	G2	Near Tan Xa Lake2
	G3	Near Trung Lu Lake1
	G4	Near Pump station1
	G5	Near Pump station2
	G6	Near Trung Lu Lake2
	G7	Hamlet 8, Thach Hoa Commune
Sediment	S1	Tan Xa Lake
	S2	Tich River

Source: JICA Study Team

(5) Flora and Fauna Survey

The output of this survey is an inventory of flora and fauna, since there were no available data for these aspects specific to the Study Area.

Two methods were mainly adopted for the survey. One was a field trip, which included investigation at the site and interviews with local people. The other was a literature study which utilized information available in existing documents.

As a result of flora, 286 species were listed. The summary of the result of survey of fauna is illustrated in Table 4.8.10. Threatened species whose existences were observed and implied in the survey are shown in Table 4.8.11. While existences of some species were only implied by interview to local people, conservation of the threatened species should be considered in the project implementation.

Table 4.8.10 Summary of Fauna in the Study Area

Classification	Planted forest area	Agricultural area	Residential area	Aquatic habitat	Total
Mammalia	11	6	13	0	30
Aves	50	43	41	18	152
Reptilia	16	11	12	3	42
Amphibia	1	8	7	7	23
Fish	0	0	0	45	45
Total	78	68	73	28	292

Source: JICA Study Team

Table 4.8.11 Threatened Species in the Study Area

No	Scientific name	Reference				Remarks
		ND32/2006	SDVN/2007	IUCN 2008	CITES 2008	
Plant						
1.	*Erythrofleum fordii Oliv*	IIA				Observed
Aves						
2.	*Otus bakkamoena*				II	Observed
3.	*Glaucidium cuculoides*				II	Observed
4.	*Milvus migrans*				II	Observed
5.	*Spilornis cheela*	IIB			II	Observed
Reptilia						
6.	*Elaphe radiata*	IIB	VU			Observed
7.	*Ptyas korros*		EN		II	Observed

No	Scientific name	Reference				Remarks
		ND32/2006	SDVN/2007	IUCN 2008	CITES 2008	
8.	*Ptyas mucosus*	IIB	EN			Observed
9.	*Bungarus fasciatus*	IIB	EN		II	Interview
10.	*Bungarus multicinctus*	IIB			II	Interview
11.	*Naja naja*		EN		II	Observed
12.	*Pyxidea mouhoti*			VU	II	Interview
Fish						
13	*Elopichthys bambusa*		VU			Interview
Total		6	6	1	9	

Note: Criteria of threaten species
1. ND32/2006: Governmental Decree No 32/2006/ND-CP:
   IIA/IIB: Limit of exploitation and use
2. SDVN/2007: Red Data Book of Vietnam 2007: EN: Endangered; VU: Vulnerable
3. IUCN2007: Red list 2008: VU: Vulnerable
4. CITES2008: the Convention on International Trade in Endangered Species of Wild Fauna and Flora: Appendix II lists species that are not necessarily now threatened with extinction but that may become so unless trade is closely controlled.

Source: JICA Study Team

(6) Social Condition of the Study Area

The following information was collected from local authorities and through an interview survey to local residents.

a) Number of households to be resettled and compensated.

b) Characteristics of local households, such as family structure, livelihood and property.

c) Preference for the HHTP project.

In the interview survey, the sampling number was set to three (3) communes located in the Study Area, as shown in Table 4.8.12. Considering the number of households to be resettled, it was intended that more than 20% of households to be resettled should be interviewed in the survey.

Table 4.8.12 Number of Samples for the Interview Survey

Commune	Number of Sample (household)
Tach Hoa	250
Tan Xa	100
Ha Bang	100
Total	450

Source: JICA Study Team

A summary of the surveys is shown in the following tables. Around 19 thousands people reside in the three communes that were sampled, i.e. Thach Hoa Commune, Tan Xa Commune and Ha Bang Commune. All households interviewed in the survey own their own houses. All households earn their living by farming. Many households raise animals or fish, as well as crops. Electricity is available for all households. They use electricity for lighting, but use coal, wood or gas for cooking. They rely on well water for domestic use.

Table 4.8.13 Population of Communes located in the Study Area

Item	Unit	Thach Hoa	Tan Xa	Ha Bang	Total
Population	Person	8,714	4,200	5,896	18,810
Household	Household	2,522	1,119	1,304	4,945
Household size	People/household	3.4	3.7	4.5	3.8

Source: People's committee of communes

Table 4.8.14 Summary of Information from the Interview Survey

Questions		Unit	Thach Hoa	Tan Xa	Ha Bang	Total
Number of Sample		Household	250	100	100	450
House ownership	Self owned	Household	250	100	100	450
Type of house	Single detached 1-storey	Household	205	85	81	371
	Single detached 2-storey	Household	40	11	17	68
	Shanty	Household	5	4	2	11
Average income from crops		Million VND/year	9.67	19.6	25.8	18.4
Average income from raising livestock/fish		Million VND/year	22.87	30.8	17.1	23.6
Average expenditure		Million VND/year	18.7	18.3	20.6	19.2
Land ownership	Total	Sq. meter	3,052	2,523	2,084	2,553
	Acquired by the project	Sq. meter	2,816	2,365	1,765	2,315

Source: Interview survey by JICA Study Team

Table 4.8.15 Number of Households for Resettlement and Compensation

Commune	Households to be resettled		Household to be compensated	
	Study Area	HHTP area	Study Area	HHTP area
Thach Hoa	933	1,134	959	1,097
Tan Xa	129	413	540	1,029
Ha Bang	0	0	0	0
Binh Yen	138	138	215	215
Phu Cat	0	37	0	59
Total	1,200	1,722	1,714	2,400

Source: PMU of Industrial and small scale industrial group and development and investment, Hanoi City

4.8.3 Land Acquisition and Resettlement

(1) Project for Land Acquisition and Resettlement

After land acquisition and resettlement was undertaken in Step-1 of Stage-1 of the Project by HHTP-MB, responsibility for land acquisition was taken over by the PMU of industrial and small scale group, Hanoi City, which now includes the former Ha Tay Province, took over responsibility for development and investment. The PMU has been implementing land acquisition for 1,080ha out of the 1,586ha approved by the VN Revised MP for the HHTP project. Table 4.8.16 shows the condition of land acquisition of the HHTP project.

Table 4.8.16 Progress of Land Acquisition for the HHTP

Executing body	Necessary area (ha)	Acquired are (ha)	Remarks
HHTP-MB (step1 of stage1)	200	200: completed	Achieved in 2003-2004
PMU (step1 of stage2)	600	395.5	204.5 ha remains
PMU (step2 of stage2)	468	0	Targeted to be completed by 2010 Under survey of ownership etc.
VINACONEX	318	231	Phu Cat area (out of the study area)
Total	1,586	842.5	53% of area has been acquired

Source: HHTP-MB

The conditions of development in resettlement areas for two (2) land acquisition projects are given in Table 4.8.17. A total of sixty (60) ha for the resettlement area is planed to be developed by June 2010.

Table 4.8.17 Preparation of the Resettlement Area

Land acquisition project	Resettlement area (ha)	Progress of preparations
600 ha (step1 of stage2)	36	Area has been cleared. Plan of construction of infrastructure has been approved. All preparation will be complete by June 2009
480 ha (step2 of stage2)	24	Planed to be complete by June 2010
Total	60	-

Source: PMU of Industrial and small scale industrial group and development and investment, Hanoi City

(2) Compensation for Land Acquisition

After Ha Tay Province was merged into Hanoi City, the procedure regulated by Hanoi City has been applied to land acquisition and resettlement in the HHTP project. This came into effect in January, 2009.

Hanoi City, and formerly Ha Tay Province as well, issues decisions from time to time to announce the value of compensation for land and property acquired or cleared the government projects. These values are decided by the type of property, land use, etc. Based on these decisions, the organization responsible for land acquisition investigates the conditions of local people in the target area and calculates the amount of compensation that will be paid to the people.

The value of compensation for a specific project is to be announced to affected local people, and they can check the investigation. Compensation will be done after receiving the consent of the affected people.

(3) Compensation for Resettlement

After development of the resettlement area, the local residents who had the right to be compensated and resettled to the prepared area were confirmed. Local households who have the right receive monetary compensation need to build their house, even after allocation of land for resettlement.

While detail conditions of local households will be confirmed after preparation of the resettlement area, exact numbers of household to be resettled cannot be officially mentioned. It is suggested that the Vietnamese counterparts prepare a practical land acquisition and resettlement plan that land acquisition and resettlement is not delayed. This will enable sufficient consultation with the affected people as well.

4.8.4 Assistance for Public Consultation

(1) Stakeholder Meetings

HHTP-MB has held stakeholder meeting three (3) times during the Study. An outline of the meetings is shown in Table 4.8.18. The first meeting was held in November 2008 for introduction of the HHTP project, as well as the Study. Representatives of four (4) communes in the HHTP project area (excluding Phu Cat area) attended the meeting and gave their comments. The second meeting was held for explanation of the progress of Study in December 2008. In February 2009, developments of infrastructure studied in the Study and conceived environmental impact were explained in the third meeting.

Table 4.8.18 Stakeholder Meetings

	1st	2nd	3rd
Date	November 14, 2008	December 5, 2008	February 6, 2009
Purpose	Explanation of the HHTP project and social and environmental consideration survey	Explanation of progress of study and social and environmental consideration survey	Explanation of result of F/S study and social and environmental consideration
Attendances	Representatives of communes and concerned authorities HHTP-MB, JICA Study Team	Representatives of communes and concerned authorities HHTP-MB, JICA Study Team	Representatives of communes, residents, concerned authorities HHTP-MB, JICA Study Team
Venue	Start-up center of the HHTP	Start-up center of the HHTP	Start-up center of the HHTP

Source: JICA Study Team

(2) Discussion in the Stakeholder Meetings

In the meetings, attendants freely discussed issues relating to the HHTP project. The comments from communes in the first meeting in November 2008 are shown in Table 4.8.19.

In the third meeting, attendants showed concerns about impact from wastewater treatment plant which was explained as one of infrastructures, and job opportunities which was expected to be provided by the HHTP development. Regarding impacts from the wastewater treatment plant, HHTP-MB promised appropriate operation of the plant with compliance with the relevant laws and regulations. It was also considering provision of work opportunities and vocational training to mitigate the issue raised by local people.

Table 4.8.19 Opinions of Communes from the 1st Stakeholder Meeting

Representative of Tan Xa Commune	
1.	What is the Amenity Zone? And, what is it for?
2.	The issues of any substance, whether organic, inorganic, botanical, or microbial, that is used to destroy insects, must receive special attention; otherwise, the local residents will be adversely affected.
Representative of Ha Bang commune	
3.	Over 90% of the farmers here are seriously affected in terms of job opportunities.
4.	Local residents, in view of resettlement, wish to be given new accommodation, which should be equal to or better than the old one.
5.	Decision No.621, Ha Bang must deliver 40 ha in the cemetery area with approximately 5,000 graves for the project. This work actually encountered many difficulties due to the faith of local residents who want to bury their deceased relatives in high-land area.
Representative of Thach Hoa Commune	
6.	The problem of local residents losing jobs must also be resolved.
7.	Within a few years, the price of everything has increased considerably. However, there is no change in the compensation price.
8.	Regarding the social-environmental issues, the sampling locations for the environment survey should be equally distributed, expanding to muddy areas. It is recommended that inter-regional views should be taken into consideration in the environmental survey.
9.	It is suggested to promulgate the regulations on environment management, explicitly referring responsibilities for individuals, organizations causing pollution. For instance, LISOHAKA Company discharged untreated solid waste, causing serious pollution.
Representative of Binh Yen Commune	
10.	Criteria for resettlement needed to adjust in order to satisfy with the current conditions. From 1998 to the present (10 years), the number of households has undergone great change. Previously, there was one household, now two or three households have been built.
11.	As regulated, families whose land is acquired by 30% will be entitled with a substitution land which can be used for service activities. However, those families encountered many difficulties in asking for legal documents to receive this land. Up to now, no households here have been provided with the service land. At present, the Government has decided no longer to provide the service land for the satisfied local residents but to increase the compensation price, causing displeasure for them.