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HOA LAC HI-TECH PARK MANAGEMENT BOARD
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SOCIALIST REPUBLIC OF VIETNAM

**“HOA LAC HI-TECH PARK
INFRASTRUCTURE DEVELOPMENT”
SPECIAL ASSISTANCE FOR PROJECT
IMPLEMENTATION (SAPI)**

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Abbreviations

ADB	Asian Development Bank
BEMS	Building Energy Management Systems
CCTV	Closed Circuit Television
CEMS	Cluster Energy Management Systems
EVN	Electricity of Vietnam
ETC	Electronic Toll Collection System
ESCO	Energy Service Company
FEMS	Factory Energy Management Systems
FY	Fiscal Year
FDI	Foreign Direct Investment
HBI	Hi-Tech Business Incubator
HCMC	Ho Chi Minh City
HHTP	Hoa Lac Hi-Tech Park
HHTP-MB	Hoa Lac Hi-Tech Park Management Board
HEMS	Home Energy Management Systems
ID	Identity Document
ICT	Information and Communication Technology
IT	Information Technology
IES	Institute of Energy Science
IC Card	Integrated Circuit Card
ITS	Intelligent Transport Systems
JBIC	Japan Bank for International Cooperation
JETRO	Japan External Trade Organization
JICA	Japan International Cooperation Agency
JPY	Japanese Yen
MOC	Ministry of Construction
METI	Ministry of Economy, Trade and Industry (Japan)
MOF	Ministry of Finance
MOIT	Ministry of Industry and Trade
MONRE	Ministry of Natural Resources and Environmental
MOST	Ministry of Science and Technology
NEDO	New Energy and Industrial Technology Development Organization (Japan)
ODA	Official Development Assistance
PLC	Power Line Communications
PPP	Public Private Partnership
R&D	Research and Development
SME	Small and Medium sized Enterprise
USD	United States Dollars
VAST	Vietnamese Academy of Science and Technology
VND	Vietnamese Dong
WB	World Bank

CHAPTER 1: INTRODUCTION

1.1 Objectives of the Study

The objectives of the Study are as follows;

- Examining the potential of new technology named “Eco-City/Smart-Community” in order to attract investment to “Hoa Lac Hi-tech Park (hereafter, “HHTP”).
- Proposing necessary measures to facilitate attracting private companies to Vietnam.

1.2 Outputs of the Study

The output of the Study is as follows;

- (1) An Eco-City/Smart Community concept plan in HHTP.

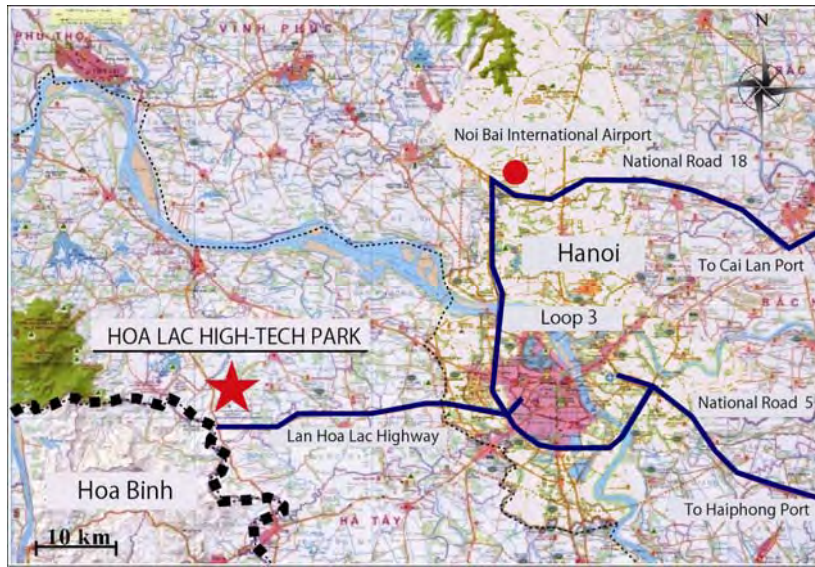
To aim to establish a most advanced urbanized place which is suitable for not only a high-tech industrial park but also a national leading park for research, development, training and education to contribute strengthening international engineering innovations and competitive powers.

- (2) Advice on attracting private sector, HHTP’s marketing strategy and reinforcement of implementation system.

To give an advice on attractive infrastructures to be constructed and preferential treatments of taxation and financial system.

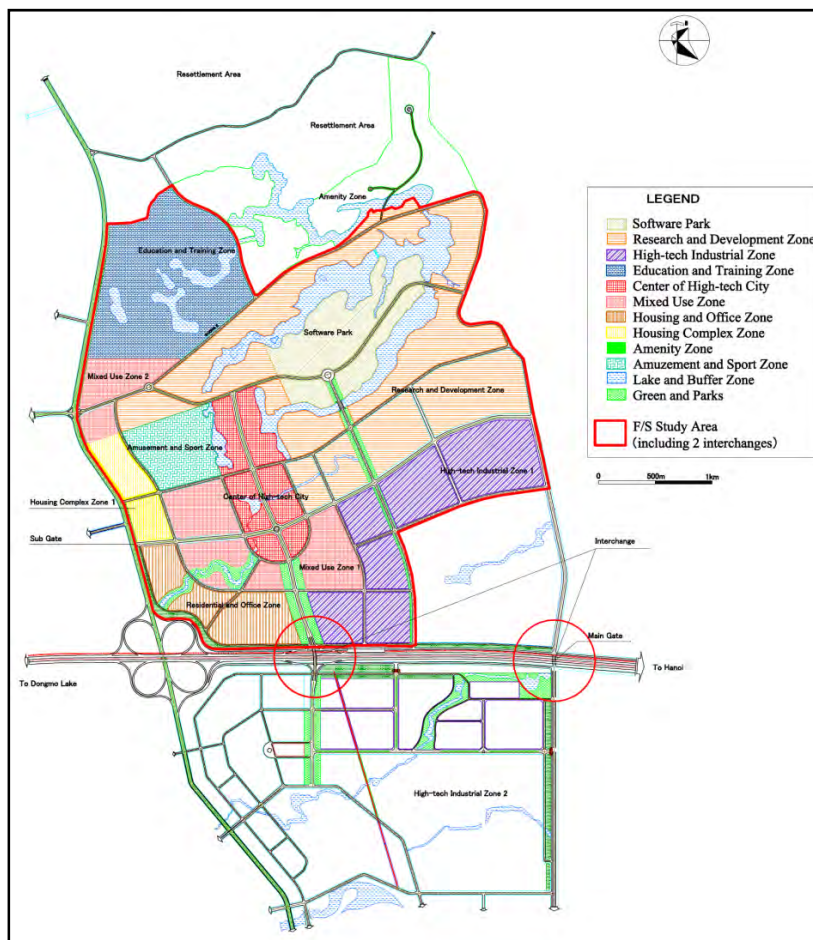
1.3 Study Area

The study area covers the whole area of HHTP (1,586ha) where is approximately 30km distance westwards from Hanoi central area. Location map and study area are shown in Figure 1.3.1, Figure 1.3.2 and Figure 1.3.3.



Source: JICA Study Team

Figure 1.3.1: Location Map of HHTP



Source: JICA Study Team

Figure 1.3.2: Study Area



Source: Master Plan of Hanoi in 2030 with a vision to 2050 (Ministry of Construction and Hanoi City People's Committee)

Figure 1.3.3: The Future Plan of HHTP and Hanoi City

CHAPTER 2: REVIEW AND ANALYSIS OF CURRENT CONDITIONS AND CIRCUMSTANCES

2.1 Policies, Laws and Regulations

2.1.1 Energy Field

In Vietnam, “Degree on Energy Efficiency and Conservation” which is the first law for energy-saving was enacted in 2003. After then, it was prescribed to promote energy-saving and to support to introduce renewable energy technologies in “Energy Law”, 2005. Moreover, “Vietnamese Energy Saving Program” which directs program targeting toward 2015 for energy efficient use and energy loss reduction had been approved by the prime minister in 2006. And recent years, some important laws and policies related to energy has just enacted as follows.

(1) Law on Economical and Efficient Use of Energy

In 2011 “Law on Economical and Efficient Use Energy” was enacted, which includes development and promotion programs of renewable energy. This aims to development of renewable energy technologies and to promote more energy saving. In this law, renewable energy is defined as “Energy resources which can be reused such as hydro, wind, photovoltaic, geothermal and biomass”. Policy targets are set as diffusion of renewable energy equipment and ecological vehicles. Additionally, necessity of support system to promote renewable energy such as tax incentive is also mentioned in the law.

(2) Seventh National Master Plan for Power Development

In 2011 the “National Master Plan for Power Development 2011-2020 with the Vision to 2030” was formulated based on “Energy Law” prescription. In this plan, target goals of renewable energy were set.

(3) Mechanism to Support Development of Wind Power Project

In 2011 “Decision on the Mechanism to Support the Development of Wind Power Project in Vietnam” was enacted, and Feed-in Tariff mechanism has commenced for wind power projects since August in same year. Energy selling price is set as USD cent 7.8 /kWh. Detailed information is as follows.

- Contract period is set for 20 years
- Regarding wind power equipments, tax free for import of raw materials and products which are not produced in Vietnam
- Exemption or reduction of land-use levies
- Feed-in tariff mechanism (USD cent 7.8 /kWh)
- Subsidy to power company from environmental protection fund (VND 207/kWh)

(4) Information on Wind Energy of Vietnam

In “Information on Wind Energy of Vietnam” made by GIZ and MOIT in 2011, the future goal and forecast of renewable energy are mentioned. According to it, the goals, 5% in 2020 and 11% in 2050 as share of renewable energy in total energy supply were set. Following the goals, there are two (2) patterns, base-scenario and high-scenario, for a forecast of individual renewable energy type targeting a year of 2025. A following table for base-scenario shows that power supply in 2025 will be micro-hydro 2,454MW, wind power 493MW, biomass 395.7MW, thermal power 239.1MW, solid waste 97.4MW and so on.

Table 2.1.1: Power Supply Forecast of Renewable Energy: Base-Scenario (2009-2025)

No	Type	2009	2010	2011	2012	2013	2014	2015	2020	2025
1	Micro Hydro	1,140	1,166	1,256	1,349	1,476	1,584	1,642	1,988	2,454
2	Biomass	157.7	165.7	207.7	229.7	234.7	247.7	316.2	380.7	395.7
3	Biogass	0	0.5	1	2	3.5	7	8	11	12
4	Photovoltaic	1,654	1,654	1,654	1,654	1,654	1,654	2.65	3.25	3.25
5	Wind Power	9	89.5	89.5	89.5	109.5	109.5	217	443	493
6	Thermal Power	0	0	0	0	18	36	51	214.1	239.1
7	Bio Ethanol	0	0	0	0	0	0	0	0	0
8	Tide Power	0	0	0	0	0	0	0	5	15
9	Solid Waste	7.4	11.9	11.9	15.4	15.9	15.9	20.4	47.4	97.4
Total (MW)		1,315	1,435	1,568	1,687	1,859	2,002	2,257	3,093	3,709

Source: Information on Wind Energy of Vietnam

2.1.2 Environment and Hi-Tech Field

To prevent environmental pollutions, “National Strategy for Environmental Protection 2010” with visions of 2020 was formulated by MONRE in 2003. In 2004 “Vietnam Agenda 21” was formulated to direct a sustainable development strategy including implementation of clean industrial work process. Additionally “Environmental protection Law” was revised in 2005 to add a concept of “renewable energy is one of the important methods for environmental protection” and mechanisms of investment incentives for introduction renewable energy by companies and individuals.

In HHTP, technologies of environmental protection and renewable energy are identified as one of the priority hi-technologies.

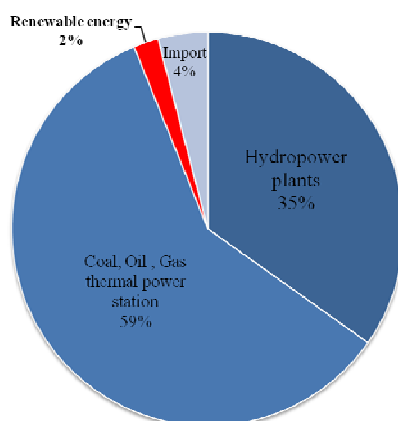
2.2 Socioeconomic Trends

2.2.1 Outline of Socioeconomic Trends

Vietnam has a population of 90.1 million in 2011, and it is expected to increase to 105.4 million in 2030. Regarding GDP of Vietnam, the growth rate in 2010 is 6.8%, and annual average growth rate until 2014 will be 5.9%. The share of GDP year 2010 is 20.6% from primary industry, 41.1% from secondary and 38.3% from tertiary

2.2.2 Current Conditions and Future Forecast of Energy

Currently electric power of Vietnam produced mainly by natural gas and petroleum thermal in the southern areas and hydro and coal thermal in the northern areas. The amount of total electric power production was 15,764MW in 2008 in the whole country. Looking at the breakdown, natural gas, coal thermal, petroleum thermal and diesel supplies the largest share (59%), followed by hydro (35%), and renewable energy supplies only 2% share. According to the most recent data, the electric power production of renewable energy had increased 550MW. But looking at the breakdown, small hydroelectric development and biomass power generation are majority and windy power and solar power only 10MW.



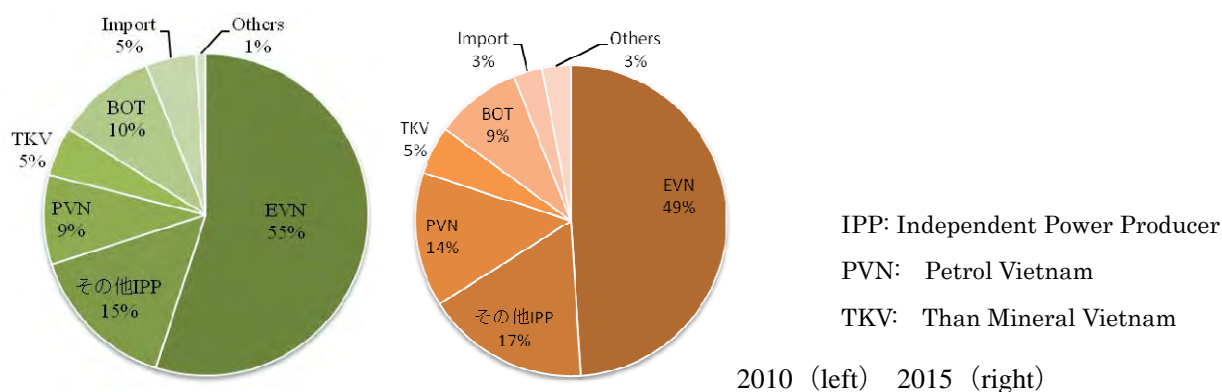
Source: MOIT

Figure 2.2.1: Electricity Generating Capacity in Vietnam (2008)

Current conditions of electric power supply are still not enough. In 2010 black-out has occurs several times in Hanoi and Ho Chi Minh City, including industrial parks to which electric powers should be preferentially supplied. As an example, certain company was forced to get electric outage of 48 hours/week in summer season. It can be said that the reason of black-out is mainly due to shortage of water for hydro power and delay of the implementation of power development.

The latest forecast of electric power demand estimates 329,400 GWh in 2020, with 14% annual demand growth rate due to high economic growth. To cope with such high electricity consumption, electric producing methodologies has been shifting from hydro power to thermal power, and from natural gas

thermal to coal thermal, and finally the half of electric powers will be produced by coal thermal power. On the other hand, introducing renewable energy will be carried forward aggressively to secure more diverse methods and to stable power supply according to the seventh national master plan for power development. Also, as shown in Figure 2.2.2, among all electric power producers, EVN has about 55% share.



Source: JETRO

Figure 2.2.2: Share of Electric Power Producer

2.2.3 Movements for Diffusion of Renewable Energy

Projects of national grid construction and small hydro power development have been conducted since 2009 by ADB fund. Avoided cost tariff mechanism which surplus electricity can be sold to EVN has been established already. And government of Japan exchanged memorandum of the plan which promotes renewable energies and accelerate energy saving with government of Vietnam through JICA in 2009. World Bank also established a climate invest fund for Philippines, Thailand and Vietnam in order to reduce CO2 (climate change gas) emissions.

2.3 Relevant Strategies and Plans Led by Japanese Government

2.3.1 Cases in Japan

In recent years, there has been a sharp increase in initiatives to promote low-carbon cities and environmental load reductions through optimizing the overall energy saving and energy generating functions of cities. Many of these initiatives, however, are still in the trial stage.

Initiative by the Ministry of Economy, Trade and Industry (METI)’s for Next Generation Energy and Social Systems Demonstration Research was given to Yokohama City, Toyota City, Keihanna, and Kitakyushu City. the Keidanren (Japan Business Federation) led Future City Model Project broadened by Fujisawa City (Fujisawa SST) and Kashiwa City (Next Generation Environmental City) have combined diverse and

cutting edge technologies, such as cluster energy management systems (CEMS), including home energy management systems (HEMS), building energy management systems (BEMS) and factory energy management systems (FEMS), as well as the implementation of large-scale renewable energy projects and next generation transit systems. Those initiatives are attempting to realize the vision of the Eco-City/Smart Community, and also represent cases for reference in conjunction with the many actors involved.

2.3.2 Cases in Other Countries

Private sector led initiatives was focused on a specific technology or business field, with very few seen as a comprehensive effort aimed to realize the vision of the Eco-City/Smart Community.

The following table presents several cases in other countries which is conducted by Japanese companies from their participation in these projects.

Table 2.3.1: Cases in Other Countries

City / Project Name	Details
Japan-US Smart Grid Collaborative Demonstration Project Preliminary Survey (NEDO Project) (New Mexico, USA)	Stabilization of renewable energy systems
Smart Community Demonstration Project (NEDO Project) (Lyon, France)	Smart community demonstration including energy-saving buildings, and electric vehicle battery management.
Smart Grid Demonstration Project Preliminary Survey (NEDO Project) (Hawaii, USA)	Preliminary survey on the development of a clean energy society model for remote islands
Smart Community Technology Demonstration Project Preliminary Survey (NEDO Project) (Gongqingcheng, Jiangxi Province, China)	Supporting economic growth and realization of a low carbon city
Neemrana, India	Stable supply of heat, electricity and water to industrial park
Haryana, India	Development of a grand design for a new industrial park
Tianjin Economic-Technological Development Area, China	Development of the Tianjin smart community
Beijing, Dalian, Shanghai, Shenzhen, etc., China	Development of ICT systems for smart houses
Shanghai, China	Development of logistics system featuring smart vehicles
Singapore and others	Global development of smart urban transit systems (electric vehicles, electric buses, recharging system)
Indonesia and others	Smart community development for island nations (photovoltaic power generation systems and storage cells)
Eastern European countries such as Bulgaria and Czech Republic, etc.	Development of smart community with a large-scale renewable energy system (mega solar and wind power plus smart grid)
Masdar City in the UAE, and the Middle East and North Africa regions	Deployment of electric vehicles and development of EV systems in the environmental city of Masdar in the UAE

Source: JICA Study Team

Note: NEDO= New Energy and Industrial Technology Development Organization

2.4 International Trends

Eco-City/Smart Community initiatives led by the government are currently on-going in Europe.

The following table shows international cooperators participating in Eco-City/Smart Community market.

Table 2.4.1: Smart Grid Demonstration Project Examples Outside of Japan

Project (Country/City)	Participating Companies
Smart Grid City (Boulder, Colorado, USA)	Gridpoint, Accenture, IBM, etc.
EDISON Project (Bornholm Island, Denmark)	IBM, Siemens, etc.
Amsterdam Smart City (Amsterdam, The Netherlands)	Accenture, Cisco, IBM, Philips, etc.
Eco business park (Singapore)	Accenture, Siemens, GE, etc.

Source: JICA Study Team

Table 2.4.2: Smart Grid/Smart Meter Related Initiatives

Country/City	Participating Companies	Country/City	Participating Companies
UK	EDF, GE, and others	Malta	IBM and others
Sweden	GE and others	New Delhi, India	Saab-Grintek and others
Finland	Landis and Goodyear	South Korea	South Korea-US joint development (LS Cable, Korea Electric Power Company, Google, IBM, GE and others)
Italy	ENEL, Landis and Goodyear, Oracle, and others		
Australia	Silver Spring		

Source: JICA Study Team

2.5 Confirmation of Needs of Eco-City/Smart Community

2.5.1 Vietnam’s Environmental Challenges

The country of Vietnam faces many environmental challenges, including air pollution in major cities water pollution issue, waste includes hazardous waste and soil pollution problems such as residual pesticides in produce and poor agricultural productivity from the improper or inefficient use of pesticides and chemical fertilizers as well as heightened levels of heavy metals in the soil surrounding industrial areas.

2.5.2 Investment Climate Challenges

In terms of Vietnam’s investment climate, the lack of developed infrastructure has become a major challenge. In particular, electricity demand in Vietnam is expected to grow by 14% per annum, and while progress of new power plants development is not matched with the demand. The targets set out in Vietnam’s 6th National Electricity Master Plan were only reached 55.4% as of the end of 2009.

At present, electricity supply in Vietnam is unable to fulfill demand. This situation has become a bottle-neck for the industrialization of Vietnam.

The roadmap for electricity liberalization stipulated in the Electricity Law that took effect in July 2005 is expected to spur competition in both the wholesale and retail electricity markets, but a wide range of challenges remain regarding the entry of foreign private sector companies, including cumbersome approval and procedural processes as well as low electricity tariffs.

2.5.3 Hoa Lac Hi-Tech Park Challenges

In addition, when recalling that HHTP is an area that includes various city elements including industrial park, where required qualified electricity in order to manufacture products in a stable manner, Therefore, it is recommended for HHTP to have own solution below, while waiting for nationwide improvement:

- Equipment that provides stable quality electricity installed in an industrial park to supply a high quality energy source to multiple factories.
- An industrial park energy management system that collectively and centrally oversees energy management and controls demand from factories.

Table 2.5.1: Smart Grid Technologies can be installed in Industrial Park

	Reduced Carbon Usage	Stabilization of Electricity
Factories	Factory energy management Peak cuts and demand controls Direct and indirect load controls Automated measurements using smart meters Changeover to high efficiency equipment Renewable energy facilities Inverter controls and air conditioning controls Intra-factory information network	Uninterruptible power supply (UPS) Emergency back-up power generator facilities Static Var Compensator (SVC) Step Voltage Regulator (SVR) Electric power capacitor
Industrial Parks	Regional energy management Peak cuts and demand controls Direct and indirect load controls Renewable energy facilities Intra-industrial park information system	Emergency back-up power generator facilities Equipment that provides stable quality electricity Static Var Compensator (SVC) Step Voltage Regulator (SVR) Intra-industrial park automated power distribution system

Source: Fueki, Yutaka and Jimpei Kuwayama(2011), “Fuji Electric’s Efforts Involving Next-generation Energy and Social Systems”, *Fuji Electric Journal*, Vol. 84, No. 3, pp.181-187.

2.6 Clarification of Constraints and Issues

2.6.1 From the Investor’s Perspective

The benefits of the investors at HHTP with Eco-city/Smart community are; (i) the promotion of Corporate Social Responsibility (CSR) activities through eco-friendly management, and (ii) improved productivity performance through energy saving and waste reduction.

However, the Smart Technologies of Eco-City/Smart Community is costly high in the developed countries. Therefore, the investors require the Government support including fiscal incentive. In addition, for HHTP, there are two (2) barriers to implement the Smart Technologies as; (i) less developed basic infrastructure, and (ii) low infrastructure tariff.

In terms of basic infrastructure development, the sustainable sufficient power supply and adequate water supply are required. In case those conditions are realized, the Smart Technologies can give added-value functions and expected to attract more investment to HHTP.

In terms of low infrastructure tariff, especially electricity and water supply, there is little incentive for investors because the installation cost is higher than the savable cost. As a result, the financial support including the fiscal incentive is necessary in the mid-long term to implement Eco-City/Smart Community to prevent the environmental risks.

To eliminate these barriers and reduce environmental loads, especially in the industrialization, the government initiatives are required to lead the private sector and maintain the balanced development environmentally and economically.

2.6.2 From the Supplier’s Perspective

Today, most of the world class companies are taking actions on environmental preservation, in which the Eco-City/Smart Community related technologies are in hot subjects. However, due to the installation cost, in which including the development and research cost, the adaptable technology of value is still limited.

Therefore, most of companies can carry out the marketing and implementing at the countries with developed infrastructure, high economic standard and adequate Government incentives.

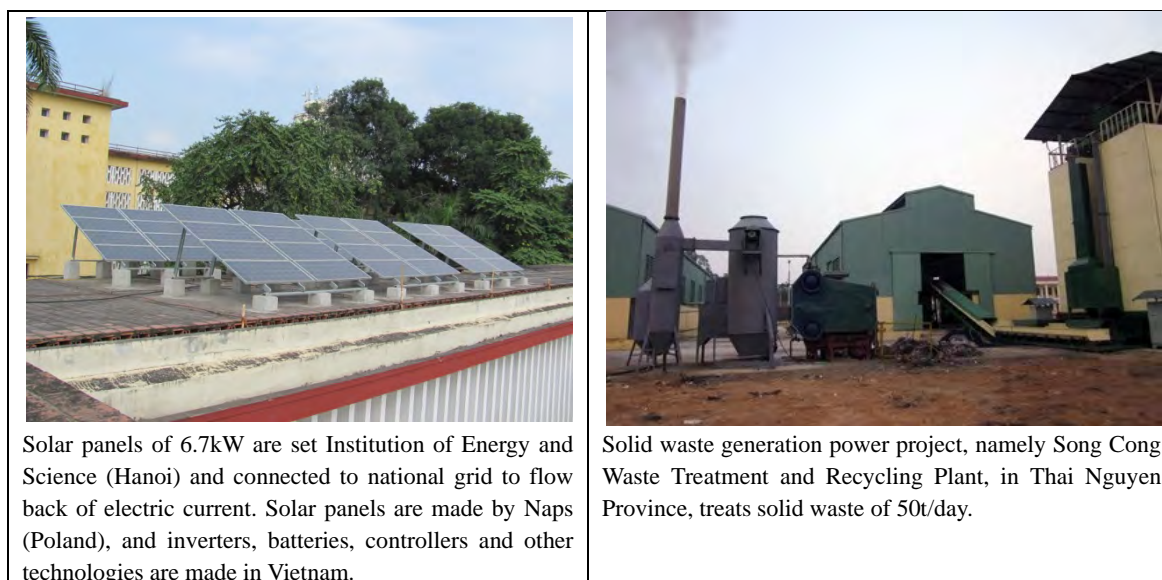
Without any changes on Vietnamese standards, regulation and incentive system, the environmental resources will not be conserved, and then sustainable industrial and economic growths will not be realized.

CHAPTER 3: PROPOSAL OF MEASURES TO APPLY ECO-CITY/SMART-COMMUNITY COMPONENTS

3.1 Examination for Introduction Components

3.1.1 Renewable Energy

Policies and projects of electric power including renewable energy are carried out based on “the Seventh National Master Plan for Power Development” which was approved by the prime minister in 2011. According to renewable energy share data in 2008; biomass power (178MW) as the highest supplies, followed by small hydro (145MW), wind (8MW) and photovoltaic (1MW), although the conditions would much change depend on its locations in the long extended country land. Currently the renewable energy can supply only 2% share of the whole electric power supply. According to the national strategy of the renewable energy, it is obvious that wind power will be expanded to 25% share of the total renewable energy supply in the future. Additionally a feed-in tariff mechanism which commenced since 2011 covers only wind power projects. On the other hand, “Vietnam Renewable Energy Development Project” is also on-going by World Bank loan.



Source: Institute of Energy Science (Left), Denmark Embassy Website (Right)

Figure 3.1.1: Examples of Introduction of Renewable Energy

Table 3.1.1: Current Conditions of Renewable Energy in Vietnam

No	Technology	Outlooks of the Technology	Current Conditions in Vietnam
1-1	Photovoltaic Power	<ul style="list-style-type: none"> • Photovoltaic power is a technology to convert solar energy into electricity directly by using solar panels. • Initial cost of introducing solar panels is large, but O&M cost relatively is small. Hence demands through the world is getting expand. • It is possible to achieve peak-cut of daytime electricity peak demands. • The largest share of solar panel production is China, followed by Germany and Japan. 	<ul style="list-style-type: none"> • Power generation capacity is 1MW. According to MOIT scenario, it will expand to 3MW capacity by 2025. • A potential of applying this technology is relatively low into Hanoi due to less sunlight hours, that is 1,678 hours per year, in contrast of 2,200-2,500 hours in HCMC according to Institute of Energy and Science data. • Institute of Energy and Science is carrying out a field test project of connection photovoltaic generation power to national grid power.
1-2	Micro and Small Hydro Power	<ul style="list-style-type: none"> • By using not only small rivers and irrigation canals but also tap water and pipes in buildings, water stream generates electricity. • Micro-hydro power plants operate in water supply facilities. Generally the maximum generation capacity is 100kW with drop height of 35m. • Even height less than 2m, it is possible to generate 9kW per one facility. 	<ul style="list-style-type: none"> • Power generation capacity is 145MW. According to MOIT scenario, it will expand to 2454MW capacity by 2025. • Technical potential is supposed to be approximately 4,000MW in the whole Vietnam, and suitable lands for hydro power concentrate on the northern and middle part according to Institute of Energy and Science data. • Vietnam has many results of the projects. Domestic small-to-medium-sized companies are struggling to conduct projects of micro and small hydro power currently.
1-3	Wind Power	<ul style="list-style-type: none"> • Wind power is the most advanced renewable energy through large scaled field tests world-wide. In 2010 wind power generates approximately 2.3% of the whole electric power supply in the world. • It is said that wind power is the most feasible methodology due to its relatively low maintenance cost. • The largest share of wind power generation is China, followed by USA and Germany. Japan has small share. 	<ul style="list-style-type: none"> • Power generation capacity is 8 MW. According to MOIT scenario, it will expand to 493MW capacity by 2025. • Suitable lands for wind power plants are basically along coastal lines of the national land, hence the potential is less than 500kWh/m² in inland areas such as the place of Hoa Lac, according to Institute of Energy and Science data. • Germany boosts strongly to introduce wind power, and GTZ supported MOIT to formulate the plan and to develop legal system. In this background, a feed-in tariff mechanism has commenced. • Large scaled wind power projects has been carried out in Bach Long Island (Hai Phone Province) in 2000 and 2004 and in Tuy Phong (Binh Thuan Province) in 2009-2015.
1-4	Biomass Power	<ul style="list-style-type: none"> • Biomass power generates electricity through drive of a 	<ul style="list-style-type: none"> • Power generation capacity is 178MW. According to MOIT scenario, it will

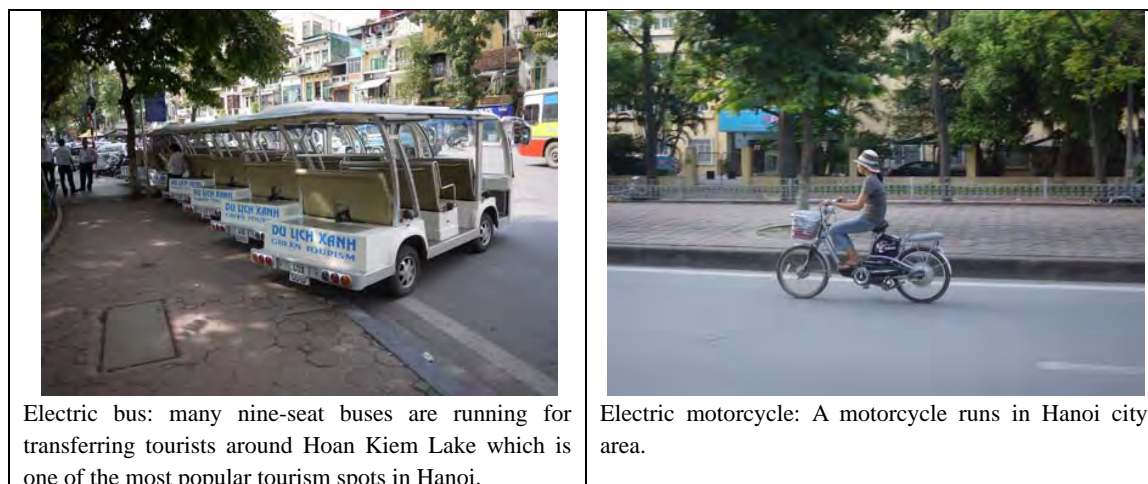
No	Technology	Outlooks of the Technology	Current Conditions in Vietnam
		<p>turbine by means of burning organic materials such as rice straws, rice husks, forestry materials, energy crops, and so on.</p> <ul style="list-style-type: none"> • There are some technologies of converting into electricity. 	<p>expand to 396MW capacity by 2025.</p> <ul style="list-style-type: none"> • Rice straws and husks are suitable materials in the northern and southern delta area, however bagasse are only in the south. Rice husks power generation is estimated to have 1,289 million ton of heat amount in the whole of northern delta area according to the master plan. • METI conducted “Study on the Rice Husk Power Generation Project in Southern Vietnam” in 2009 to study the possibility of rice husk power generation. • Some rice husk power plant is operating. Hoa An industrial park in An Giang Province has a plant whose capacity is 10MW, a area is 18 ha and initial cost is USD 10 million (the investor Dong Thanh Company). Vong Dong commune also in An Giang Province has a plant whose capacity is 10MW and initial cost is USD 15 million (the investor Environment Restructure and Investment Jsc.)
1-5	Waste Power	<ul style="list-style-type: none"> • Waste power is one of the thermal power generation technologies which generate electricity through drive of a turbine by means of burning solid wastes. 	<ul style="list-style-type: none"> • According to MOIT scenario, it will expand to 97MW capacity by 2025. • In Hanoi, it is examined to make a good use of solid waste generating 1,800t/day. Song Cong recycle plant located in Thai Nguyen Province near Hanoi is operating and treating 50t/day of waste. HCMC has a plan of construction 40MW power generation plants by 2015.
1-6	Cogeneration System	<ul style="list-style-type: none"> • Cogeneration system is a system which improves energy efficiency by making good use of heat which occurs when electricity generates. • There are some electricity generation methods such as gas turbine, gas engine, diesel engine and fuel cell. 	<ul style="list-style-type: none"> • In Vietnam, there are some experiences of introducing cogeneration system.
1-7	Smart Grid System	<ul style="list-style-type: none"> • Smart grid is a system which connects dispersed power system to national grid with using smart meters. 	<ul style="list-style-type: none"> • In Vietnam, there is no experience of introducing smart grid system so far.

Source: JICA Study Team

3.1.2 New Transport System

It can be said that “Ecological Vehicles (EV, FC and others)” and transport management system with use of ICT shall be the new transport technologies to achieve less CO² emissions and more smart transport. With the background of cheap electricity fare in Vietnam, basic conditions for electric vehicles seem to be

relatively good. Motorcycle is the most common method of transport especially in big cities. Although electric motorcycle is available with the cost as same as gasoline type, it is still not popular among the citizens because of reliability and marketing promotion. On the other hand, nine-seat electric buses are running in the famous tourism spot.



Electric bus: many nine-seat buses are running for transferring tourists around Hoan Kiem Lake which is one of the most popular tourism spots in Hanoi.

Electric motorcycle: A motorcycle runs in Hanoi city area.

Source: JICA Study Team

Figure 3.1.2: Examples of Introduction of New Transport System

Table 3.1.2: Current Conditions of New Transport System in Vietnam

No	Technology	Outlooks of the Technology	Current Conditions in Vietnam
2-1	Electric buses Fuel Cell Bus	<ul style="list-style-type: none"> Electric buses drives by only electricity power with environmental- friendly. This vehicle contributes zero CO² emission when driving and positive effects on mitigation of environmental pollutions and improvement of boarding conditions. This technology has an issue of battery to storage electricity on board, however the issue seems to overcome though international competitive circumstances. 	<ul style="list-style-type: none"> In Vietnam gasoline vehicle is still popular as same as world trends. Regarding electric bus, small-sized buses has been imported, such as “Eagle (U.S.A)”, “Langqing (China)” and “Lesun (China), for tourism use or large-site private use. Around an area of Hoa Kiem Lake, one of the most popular tourism spots in Hanoi, nine-seat electric buses were introduced from China in 2010. In Vietnam there is no result of domestic production of electric buses so far.
2-2	Electric car	<ul style="list-style-type: none"> Fuel cell bus (FCHV-BUS) has fuel cell to generate electricity. 	<ul style="list-style-type: none"> In Vietnam there is no result of domestic production and selling of electric cars so far.
2-3	Electricity Motorcycle		<ul style="list-style-type: none"> In Vietnam there are many companies which sell electric motorcycles. Although running motorcycles can be seen sometimes in the big cities, it is not popular because of its long time of charging. Many companies, such as “Emot TKP”, “Eco (China)”, “Ymazuki (China)” and “Ngoc Phoung Dong(China)” conduct businesses of motorcycle. Additionally Vietnam company seems to start producing it with use of import parts from China in recent years.

No	Technology	Outlooks of the Technology	Current Conditions in Vietnam
			<ul style="list-style-type: none"> Japanese companies, such as “Yamaha” and “Tera”, sell electric motorcycles produced in China.
2-4	ICT Public Transportation System	<ul style="list-style-type: none"> This system serves useful information such as bus location, waiting time and emergency with use of ICT and GPS technologies and by central control system. Regarding electric bus, information about battery remainder conditions can be controlled at central room. 	<ul style="list-style-type: none"> In Vietnam, there is no experience of introducing ICT public transportation system so far.
2-5	ITS Spot Service	<ul style="list-style-type: none"> An advanced car navigation system and ETC (electronic toll collection) system shall be main technologies of ITS. These technologies would be combined closer with high spec telecommunications to supply all in one spot advanced service. 	<ul style="list-style-type: none"> Car navigation system is not popular yet in Vietnam, although it has started selling in commercial base. Regarding ETC, small scaled trials such as at Can Tho Bridge has started, although large scaled trials has been implemented yet.
2-6	Vehicle Battery	<ul style="list-style-type: none"> This technology aims to make good use of batteries on vehicles when vehicles are in car-parking with connecting national grid or micro grid (V2G or V2H) in order to supply electricity when electric outage and to mitigate over demand of peak time. 	<ul style="list-style-type: none"> Electric buses (15 seats) running in Hue City were imported from China with a cost of VND 300 million. Those batteries are made in U.S.A. 8-12 batteries are needed for one bus.

Source: JICA Study Team

3.1.3 Smart Energy Management System

Smart energy management system has a variety of technologies which depend on uses and scales of facilities to be introduced, and combinations of the technologies shall have much variety for BEMS, FEMS, HEMS and CEMS. In Vietnam energy-saving trials are undertaking by introductions of technologies and instruments, however introducing of smart energy management system seems to be not started yet. Currently the smart energy management system can be said to control of facility electricity comprehensively with ICT and to manage electric power supply by use of renewable energy generation power and battery storage.

Table 3.1.3: Current Conditions of Smart Energy Management System in Vietnam

No	Technology	Outlooks of The Technology	Current Conditions in Vietnam
3-1	Building Energy Management System (BEMS)	<ul style="list-style-type: none"> This is advanced energy management system for buildings to reduce energy consumption. 	<ul style="list-style-type: none"> “Building Vietnam Renewable Energy Development Master Plan” was formulated and now under procedure for the prime minister’s approval.
3-2	Factory Energy Management System (FEMS)	<ul style="list-style-type: none"> This is advanced energy management system for factories. 	<ul style="list-style-type: none"> One example of FEMS (energy-saving) is that a beer product factory in Thanh Hoa Province reduces 7,500 tons/year of CO² emissions and achieves energy saving of

			<p>40%.</p> <ul style="list-style-type: none"> • Other examples are “Intel factory (Saigon Hi-tech Park)”, “Canon (Thang Long Industrial Park)”, and “Nissei Vietnam (Hai Duong).”
3-3	Visibility	<ul style="list-style-type: none"> • This system aims to show generation conditions of renewable energy and consumption conditions of energy by mean of large monitor visually and easily. 	<ul style="list-style-type: none"> • A large company “Gelex” sells smart meter with a cost of VND 801,000, but smart meter is not popular yet in Vietnam. Now field tests are conducted by distribution of smart meters to 200 companies.
3-4	Smart Street Light	<ul style="list-style-type: none"> • Current street light would be exchanged to LED which is more efficient energy equipment in order to reduce electricity consumption. • The system aims operative efficiency and optimization by means of remote control of light on-off, illumination level, detection of failure, etc with using PLC or other methods. 	<ul style="list-style-type: none"> • Some advanced projects of street light has started in Vietnam. • One of the domestic leading companies in this field is “Fawoo kidi technology” which is basically LED maker. This company conducts a project which set 28 LED street lights combined with wind power and photovoltaic power in the Sai Gon Hi-tech park, HCMC.
3-5	Community Energy Management System (CEMS)	<ul style="list-style-type: none"> • This is advanced energy management system for community level by expanding technologies of BEMS and FEMS to communities. • District heating and cooling (DHC) which aims energy efficiency for community level has been conducted in many places so far. 	(No information)
3-6	Mega Battery System	<ul style="list-style-type: none"> • This is a control system to storage electricity from renewable energy generations and to use it when electricity supply are short. • It is possible to storage electricity from national grid in mid night when electricity rate is cheaper. 	(No information)

Source: JICA Study Team

3.1.4 Smart Life Technology

It is obvious that a wide spread of mobile phones and smart phones will much contributes to make smarter life for the next generation with ICT technology such as IC card system, smart house system, high security system, ESCO, etc. IC card system can be represented by an advanced technology, namely “non-contact type IC card”. Smart house system also can be represented by some technologies, such as remote control of advanced home electronics and smart meter control with selling and buying electric power. Currently such advanced technologies have not been introduced yet in Vietnam.

Table 3.1.4: Current Conditions of Smart Life Technology in Vietnam

No	Technology	Outlooks of Tech	Current Conditions in Vietnam and Japan Tech
4-1	IC Card System	<ul style="list-style-type: none"> • This is a card system which make a good use of ICT, so called “smart card” or “chip card”. • Non-contact type IC card system is getting popular through the world, such as “FeliCa” from Japan and “MIFARE” from Netherland. 	<ul style="list-style-type: none"> • Viettel, a Vietnam telecom company, produces “Smart card” with identification software in a factory located in Phu Nghia Industrial Park. The card has some functions such as computer security, health care, parking control information identification system. • Khai Minh Tehnology Solution Company, a Vietnam company, distributes card which has access control function to the staffs.
4-2	High Security	<ul style="list-style-type: none"> • Security technology for prevention of crime and disaster. The security are supported by access control, CCTV, sensors, central operation control, etc. 	<ul style="list-style-type: none"> • In Vietnam, “SunTech Co. Ltd.” and “Silver Sea JSC” conduct business of security. They seem to make a setup service of total security system through import of materials. • SECOM Vietnam provides security services mainly for the companies which move in industrial parks.
4-3	Information Security (IP)	<ul style="list-style-type: none"> • Total information security service for protection of IP (Intellectual Property). This includes prevention of PC data disclosure, protection against illegal access to server, setting up data backup system, etc. 	(No information)
4-4	Energy Service Company (ESCO)	<ul style="list-style-type: none"> • This is a kind of business which make a benefit for client through reducing energy cost. • The payout span will be 5 to 20 years. 	<ul style="list-style-type: none"> • In Vietnam, ESCO service has expanded already provided by “Viettech., JSC”, “Tay Ho Star JSC”, “ADI Automation & trading joint stock company” etc. • Japanese companies, Panasonic and NEC conduct a project to advice for reduction of energy consumption from FPT – Telkom data center.
4-5	Smart House (HEMS)	<ul style="list-style-type: none"> • The houses which aim to reduce energy consumptions and CO² emissions by means of advanced energy saving technologies. • There are some methods such as improvement of energy-saving capabilities, introduction of renewable energy, introduction of advanced efficient home electronics, establishment of energy management system for houses (HEMS), etc. • The technology which controls illumination level of each rooms with use of sensors in house is proceeding. 	<ul style="list-style-type: none"> • Among many house-maker companies in Vietnam, some companies, such as “IBS., Jsc” in domestic and “Gamma Hanoi”, “Authorized by Siemens” and “Legrand” in foreign, are aggressive for introducing advanced technologies related to smart houses. • The popular technologies in Vietnam are ICT light control, remote control of home electronics, high security system, LCD control system, etc.
4-6	Wi-Fi Hot Spot	<ul style="list-style-type: none"> • High-speed and large capacity internet service shall be provided 	<ul style="list-style-type: none"> • Vietnam has many kinds of experiences already.

No	Technology	Outlooks of Tech	Current Conditions in Vietnam and Japan Tech
		<p>by Wi-Fi telecommunication technologies in limited areas.</p> <ul style="list-style-type: none"> Utilization service will be member system, contract system, temporally use system or free use system. In the place for public use, free system can be applied. 	

Source: JICA Study Team

3.2 Economical and Financial Analysis

At the moment, it is clear that many of advanced Eco & Smart technologies are not feasible because of the background of cheap electricity fare in Vietnam. On the other hand, it is essential to introduce Eco & Smart technologies step by step with middle and long term visions for securing more stable electric power supply for the future. This will also contribute cost down of these Eco & Smart technologies through enlargement of markets. Introducing the advanced technologies related to renewable energies will cost much higher than that of energy-saving technologies with use of existing electricity because of initial cost and requirement of specific technical operation. Current economical statuses of the Eco & Smart technologies are listed below.

Table 3.2.1: Economical Evaluation of Eco & Smart Technologies

No	Technology	Economical Evaluation
1-1	Photovoltaic Power	<p>Possible by Public Fund The technology has been established by past introducing results through the world. The cost is much less than before. Even small-scale power generation can be possible when it will be introduced by public fund for a showcase model in Vietnam.</p> <hr style="border-top: 1px dashed black;"/> <p><Reference information></p> <ul style="list-style-type: none"> In Vietnam, solar panel normally costs VND 120,000,000 (USD 5,714) per 1kW. Solar panel made in China costs equivalent or less than Vietnamese one, which is about 105,000,000 (USD 5,000). Regarding Japanese products in Vietnam, it costs about USD 12,000 per 1kW which is relatively higher. Sunshine hours in Hanoi is 1,678 hours/year and one in HCMC is 2,200-2,500 hours/year.
1-2	Micro and Small Hydro Power Wind Power	<p>Possible by Public Fund The technology has been established by past introducing result in Vietnam. Small-scale power generation can be possible when it will be introduced by public fund.</p> <hr style="border-top: 1px dashed black;"/> <p><References information></p> <ul style="list-style-type: none"> Cần Đơn project in Bình Phước Province: Generation capacity is 77.6 MW, initial cost is VND 1035.49 billion (USD50 millions). Central project in Khánh Hòa Province: Generation capacity is 28 MW, initial cost is VND 110.73 billion (USD5millions).
1-3	Wind Power	<p>Possible by Public Fund The technology has been established by past introducing result in Vietnam. Small-scale power generation can be possible when it will be introduced by public fund.</p> <hr style="border-top: 1px dashed black;"/>

No	Technology	Economical Evaluation
		<p><References information></p> <ul style="list-style-type: none"> • Wind power generation farm in Binh Thuan Province has 20 turbines, a capacity of 1.5MW and an initial cost of VND 820,000,000,000 (USD39 millions). • Feed-in tariff mechanism has launched only for wind power generation. Electricity selling rate from users is set at USD 7.8/kWh.
1-4	Biomass Power	<p>Less Possibility by Public Fund</p> <p>Collection methods of rice straws or husks have not been established and the cost for collection is unclear, although technology seems to be no problem.</p> <p>-----</p> <p><References information></p> <ul style="list-style-type: none"> • Currently biomass power generation project are on-proposal in Vietnam. Among those project, Ha An industrial park project and Vong Dong Commune project, both are in An Giang Province, has started with about 10MW power supply by rice husk.
1-5	Waste Power	<p>Less Possibility by Public Fund</p> <p>Collection methods of solid waste to pick up similar made materials from a variety of wastes has not been established, therefore the cost for collection is unclear.</p> <p>-----</p> <p><References information></p> <ul style="list-style-type: none"> • HCMC has a plan of construction of waste power generation plant which can treats 50t wastes per day with a initial cost of USD 3-4,000,000. It is expected to reduce waste collection cost of VND300,000,000 (USD14,200) per month.
1-6	Cogeneration System	<p>Possible by Public Fund</p> <p>In case of when power plant is introduced, cogeneration system would be more efficient because not only electricity but also heat can be used. On the other hand, fuel cell method is suitable for small scale, not for large scale at the moment.</p>
1-7	Smart Grid System	<p>Less Possibility by Public Fund</p> <p>Infrastructures for duplex electric supply network are not established and feed-in tariff mechanism has just started at the moment, therefore this might be less possible as a public model project.</p>
2-1	Electric Bus Fuel Cell Bus	<p>Possible by Public Fund</p> <p>The cost of electric bus is much higher than gasoline type And appeal effects are expected much as a showcase model because buses can always run through the city areas.</p> <p>-----</p> <p><References information></p> <ul style="list-style-type: none"> • Many nine-seat buses are running for transferring tourists around Hoan Kiem Lake which is one of the most popular tourism spots in Hanoi. The cost is USD 11,000-14,000 .
2-2	Electric Car	<p>Possible by Public Fund</p> <p>The cost of electric car is much higher than gasoline one, however the technology seems to be no problem even thought introducing results is still less on the commercial basis. As a showcase model by public fund, introduction can be possible.</p>
2-3	Electric Motorcycle	<p>Feasible by private fund</p> <p>The cost of electric motorcycle is nearly same as gasoline type, however, still inferior to that of gasoline. Subsidy or other support mechanism will contribute for diffusion more.</p> <p>-----</p> <p><References information></p> <ul style="list-style-type: none"> • In Vietnam, motorcycle produced by Chinese maker costs VND 10,000,000 (USD 476). One seat motorcycle made in Vietnam, namely light motorcycle, costs VND 7,000,000 (USD 333). • Terra motors, a Japanese maker, sells electric motorcycle in Japan with a cost of JPY 118,700 (USD1521) . On the other hand, the similar spec motorcycle are supplied with a cost of USD 300. The company intend to start operating a factory in an industrial park near HCMC from 2012. • Costs of gasoline motorcycle are VND 10,000,000 (USD 476) made in China and VND 12,000,000 (USD571) in Japan. In comparison with normal gasoline motorcycle, cost is equivalent.

No	Technology	Economical Evaluation
2-4	ICT Public Transportation System	Possible by Public Fund At the moment, ICT control system is not necessary because many electricity vehicles will not be used in the site in the near future. The technology seems to be no problem, hence introducing the system will be suitable for aiming efficient control.
2-5	ITS Spot Service	Less Possibility by Public Fund Diffusion of car navigation system and ETC is prior condition to introduce this system. It is necessary to cooperate with neighboring areas and transportations for this system more effective.
2-6	Vehicle Battery	Less Feasible by private fund Diffusion of electricity vehicles is prior condition to introduce this technology. Additionally the cost of battery is very high at the moment.
3-1	Building Energy Management System (BEMS)	Feasible by private fund Basically introducing the technology will be feasible because this aims to reduce current electricity cost by use of energy-saving technologies and home electronics.
3-2	Factory Energy Management System (FEMS)	Feasible by private fund Basically introducing the technology will be feasible because this aims to reduce current electricity cost by use of energy-saving technologies and electronics.
3-3	Visibility	Possible by Public Fund It is expected that visibility leads some effects such as energy saving and conscious mind improving. Moreover it is expected to appeal effect for the person who visit and look the introduced place. It is suitable for public use as a showcase model.
3-4	Smart Street Light	Feasible by Private Fund Introducing the technology will be feasible because this aims to reduce current electricity cost by change existing specs of street light. But it is noted that electricity fare is cheap in Vietnam and this system should be introduced for ready construction, not for replacement of current system.
3-5	Community Energy Management System (CEMS)	Less Feasible by Private Fund It is necessary to manage energy in large scale and to accumulate many technologies such as battery system, BEMS, FEMS etc. Therefore it is not feasible in short term.
3-6	Mega Battery System	Less Feasible by Private Fund The cost of battery is very high and electricity rate is still cheap.
4-1	IC Card System	Possible by Public Fund It will cost additionally more than the existing system. It is possible to introduce step by step for public use as a showcase model. It is obvious that the persons who use this system feel comfortable much and will be able to do without it.
4-2	High Security	Possible by Public Fund It will cost additionally more than the existing system. It is possible to introduce step by step for public use especially at the place in where security should be improved more.
4-3	Information Security (IS)	Possible by Public Fund It will cost additionally more than the existing system. It is possible to introduce step by step for public use with consideration of security condition.
4-4	Energy Service Company (ESCO)	Feasible by Private Fund This technology aims energy saving, therefore it shall be feasible. It is noted that electricity rate is still cheap
4-5	Smart House (HEMS)	Less Feasible by Private Fund Introducing the technology will be feasible because this aims to reduce current electricity cost by use of energy-saving technologies and home electronics. However the initial cost will be much higher and electricity rate is cheap. Additionally reduction of electricity cost is not expected so much because of its small scale unit for introduction.

No	Technology	Economical Evaluation
		It can be said that it is not feasible in short term.
4-6	Wi-Fi Hot Spot	Possible by Public Fund It will cost more than the existing system, however it would be convenient and useful to introduce the technology into the place where many people visit and use such as incubate center as a public model project.

Source: JICA Study Team

3.3 Constraints and Issues for Introducing Eco & Smart Technologies

Based on the previous discussion, constraints and issues for introducing Eco & Smart technologies will be expected as follows. To accelerate introducing Eco & Smart technologies into Vietnam, it is required to cope with current circumstances in terms of both technical and legal aspects.

- Electricity Rate: The largest issues when introducing Eco & Smart technologies must be cheap electricity fare of Vietnam. Benefits from introduction of Eco & Smart technologies in Vietnam would be much smaller than that in other countries because expected reduction of electric cost is also small, which cost is about 5 cent/kWh, by means of the advanced technologies.
- Competitive Power: Initial costs of introducing advanced technologies will be higher than one of existing technologies. The higher level technologies might be higher cost. To reduce the initial costs, system of subsidies and tax benefits are necessary in short term.
- Electric Supply Network: It would be one of the constraints that duplex electric network infrastructure is under insufficient condition for connecting national grid system and local dispersed power system (renewable energy generation). Required components have not been established such as legal framework of trading market for selling electricity by renewable energy, O&M control system and provider services. On the other hand, feed-in tariff mechanism which launched from 2011 only for wind power generation could work as one of the triggers in order to solve the constraints.
- Telecommunication Infrastructure: Comprehensive control system between users and power plants is necessary to establish smarter energy management system; therefore establishing more stable telecommunication infrastructure would be needed. Currently the maximum speed for telecommunication, about 2Mbps, is much slower for central operation of the whole park energy management, normally 100Mbps for required level.
- Stability of Electric Demand and Supply: Generating power from renewable energies such as photovoltaic power and wind power is unstable because of influences by climate and weather. Therefore some constraints, such as generation of surplus electricity, increase of electric voltage, change of frequency, will occur.
- Information Security: Securing information security will become one of constraints because establishment of new network might be needed with introduction of ICT. It is required to cope with disclosure of information, illegal access to server properly.
- O&M: Operation and Maintenance will also become one of constraints with introduction of Eco & Smart technologies. Depends on technologies to be introduced, specific methods might be required for O&M; therefore technical transfer must be conducted. In addition, own O&M organization will be also necessary by means of establishment of O&M firm or outsourcing.

3.4 Financial Consideration

3.4.1 Major Financing Entities

(1) Vietnamese Government

In its Decision of the Regulation on pilot investment in the public-private partnership (“PPP”) approved in November 2010 (No.71/2010/QD-TTg), the Vietnamese Government defines various aspects of PPP projects including target sectors, state participation portion, procedures, and roles of related ministries. According to the Regulation, target sectors for PPP projects include “water supply system” and “power plants,” which our proposal recommends HHTTP to introduce as Eco & Smart Technologies. State capital including in a form of the government guarantee may be used up to 30% of the total investment costs of a PPP project. However, based on our discussion with the Ministry of Planning and Investment, which is responsible for this Regulation, legal and institutional framework for promoting PPP projects are going to be discussed in detail among the related ministries hereafter.

As for government subsidies, there is currently no subsidy applicable to Eco-City / Smart Community projects, according to HHTTP-MB. However, more financial support from the government should be introduced to promote private sector involvement in this field.

(2) The Vietnam Development Bank (VDB)

VDB, as one of the policy based financial institution in Vietnam, has been providing loans to projects, which are not fully funded only by private banks, with long term and low interest rate. In its Decree on the State Investment Credit and Export Credit approved in August 2011 (No.75/2011/ND-CP), there is a list of projects entitled to investment credit loans by VDB, and the list includes such projects as below.

- Projects of investment in infrastructure in hi-tech parks.
- Projects of investment in the building of wastewater and garbage treatment works in hi-tech parks.
- Projects of investment in the building of clean water supply works for industry and daily life.
- Projects of investment in the building of hydroelectric power plants using energy sources: wind, solar, geothermal, bio energy and other renewable resources.

This indicates that some of Eco-City/Smart Community components in our proposal such as renewable energy projects and inverter water supply system could possibly be regarded as eligible projects. VDB may provide funds up to 40 – 50% of total project costs, and its loan term is 12 years at the longest.

According to VDB, in order to attract overseas funds to large infrastructure projects in Vietnam, they currently have two-step loan scheme, in which non-Vietnamese banks provide loans to VDB and VDB re-lend the funds to target projects¹. In this scheme, non-Vietnamese banks bear credit risk of VDB only and do not take project risk, which is covered by VDB. Two-step loans should be considered as a tool for promoting foreign banks’ participation in infrastructure related fields.

(3) Multi-lateral Development Banks (MDBs)

All of the three MDBs we interviewed regard environmental and renewable energy related projects as their target area. Project entities could get equity investments or loans with long term and low interest rate from these organizations. The following points should be considered to receive the most appropriate funding from MDBs depending on nature of projects and project entities.

a. World Bank

Borrowers of the World Bank need to be sovereign entities, i.e., central government, local governments or governmental agencies, etc. Generally, government guarantee is required when a borrower is not a central government. Hence, when HHTP-MB needs financing to implement proposed Eco-City/Smart Community components, guarantee by the Vietnamese government should be necessary.

In our discussion with the World Bank, Local Development Investment Funds (LDIFs) was referred to as potential financing entity for Eco-City/Smart-Community components. LDIFs are financing agencies established by local governments to meet the long-term financing needs of municipal infrastructure investment, and currently there are 27 LDIFs nationwide including that of Hanoi. In 2009, the World Bank exchanged the financing agreement with the Vietnamese government to extend credit line of USD 190 million for their future projects.

b. ADB

As for the ADB, both sovereign and non-sovereign entities, i.e., private companies can be borrowers depending on nature of a project. Maximum loan amount as percentage of total project costs is about 80% for a sovereign project and 25% for a non-sovereign project. For the latter, co-financing with local banks or JBIC is required, and USD 30-50 million is regarded as rough minimum loan amount. According to the ADB, although there is not any project being

¹ Currently, possibility of two-step loan scheme in the highway project between Hanoi and Hai Phong is examined among foreign banks and VDB. Investment insurance to foreign banks by NEXI (Nippon Export and Investment Insurance) is also considered in this project.

financed or examined in Vietnam in the field of Eco-City/Smart-Community, they have recently been very active in the field of renewable energy, especially mega solar projects in India.

c. IFC

IFC regards industrial parks as one of the most important area of its infrastructure finance. Recipients of IFC fund are private companies. IFC may provide equity investments, loans and both. Maximum funding amount is 25% of total project costs and 20% of total chartered capital in the form of equity investment.

d. Clean Technology Fund (CTF)

CTF is a part of Climate Investment Funds, which is a multi-national fund established by the World Bank for the purpose of supporting developing countries' activities against climate change. Mission of CTF is to promote investments to initiate a shift towards clean technologies in developing countries. In Vietnam, mobilizing USD 250 million funds of CTF, the World Bank, the ADB and IFC will provide financing in the field of “Industrial Energy Efficiency”, “Urban Transport Enhancement”, “Smart Grid Technology”, and “Clean Energy Financing Facility.” Aside from CTF, financing of the three MDBs will amount to USD 1,040 million in these fields according to the latest plan.

(4) JICA

In addition to its ODA loans, JICA has started “Private Sector Investment Finance” as a means to support projects implemented by private enterprises in developing countries through equity participation and loan financing. Target area of the program includes infrastructure, poverty reduction, and climate change, etc. Some of projects in our proposal such as renewable energy or energy management system could possibly be regarded eligible in this program, depending on nature of a project. In case of loan financing, maximum amount is 70% of total project costs, longest term is 20 years, and loans are disbursed in Japanese yen with fixed interest rate.

(5) Local banks in Vietnam

Among the Vietnamese local banks, BIDV and Vietcombank, two of four state-owned commercial banks (SOCB), have some experiences in financing industrial parks and infrastructure projects. Vietinbank, another SOCB which JICA Study Team did not visit, is also regarded as being active in infrastructure finance. In our discussion with the two SOCBs, both banks emphasized importance of explicit and long-term commitment and support from the government in their project appraisal. As for project finance, generally speaking, Vietnamese banks do not have experience and know-how in this field. Both banks commented that generally it is very difficult for Vietnamese local banks to provide long-term financing to

large-scale projects, because their funding sources are mainly short-term deposits, and asset liability management is one of major issues local banks need to improve.

(6) New Energy and Industrial Technology Development Organization (NEDO)

NEDO provides financial support, mainly through subsidy, for international projects in the field of smart community, in which superior technologies of Japanese companies are utilized. Projects which NEDO is participating include “Smart Community Demonstration Project” in New Mexico, USA, “Heat Storage System for Air Conditioning” in Thailand, “Biomass Power System” in Cambodia, etc. Such Eco & Smart technologies as photovoltaic power could be possibly regarded as eligible projects for NEDO’s financial support, depending on nature of a project.

(7) Innovation Network Corporation of Japan (INCJ)

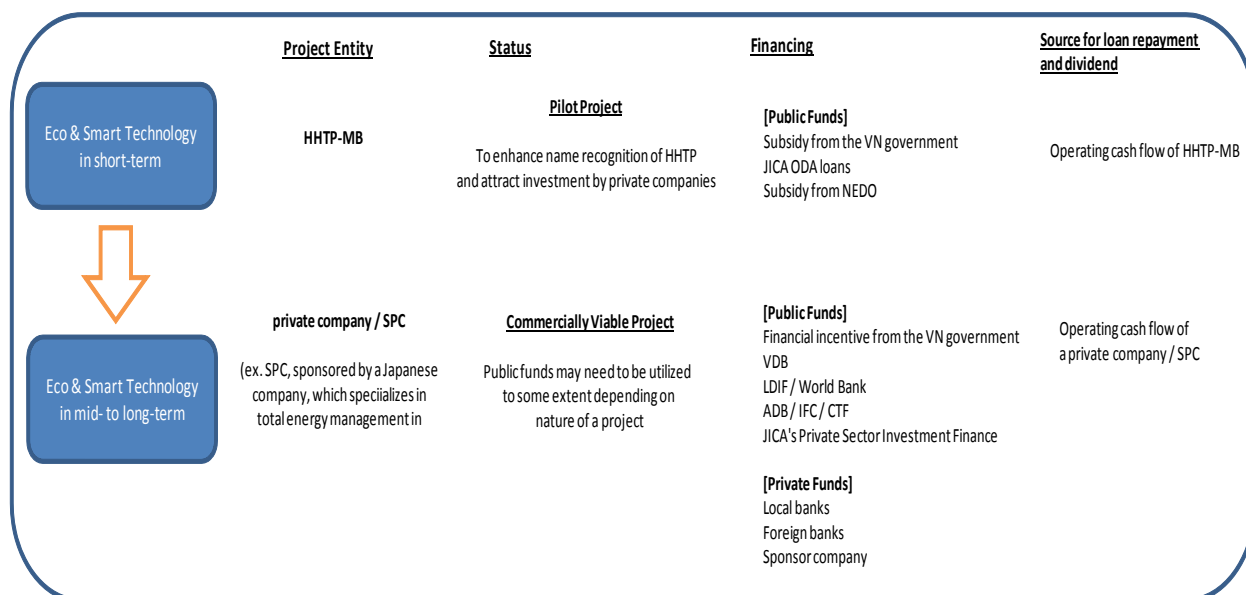
The INCJ, a public-private partnership aimed at promoting innovation and enhancing the value of business in Japan, has been making equity investments in various areas including environment and energy, infrastructure such as water supply. According to the INCJ, projects such as demonstration experiment that are not commercially viable are not their investment targets. Some of important criteria in their investment decision include involvement of a Japanese company as key player in a project, explicit exit strategy and its term up to 7-10 years.

3.4.2 Effective Financing from Public and/or Private Organizations Finance

JICA Study Team recommends that introduction of Eco & Smart technologies should be considered based on time frame, i.e., those for short-term and those for mid- to long-term. As for most of technologies being introduced in short-term, HHTP-MB is supposed to be a project entity. It is expected that HHTP will show up as The Top Runner of Eco & Smart technology, but it will be difficult for such project to generate sufficient profits that cover initial capital expenditures. Therefore, short-term projects by HTP-MB should be financed mainly by public funds including subsidies and long-term ODA loans with low interest rates.

As for mid- to long-term technologies, a project entity will be Japanese enterprise or tenant company who has advanced technology in each field of Eco-City/Smart Community components. Supposing that there will be further progress of technology and decrease of initial costs to introduce Eco & Smart components in the future, mid- to long-term projects could become more commercially viable, especially when public funds will be utilized to a certain extent. Since profitability of project will be different from one component to another, the best mixture of public and private funds should be examined thoroughly when a project will be planned in more detail at a later stage. Public funds including those from the Vietnamese government, VDB, MDBs and JICA ODA loans, will contribute not only to improving profitability of a

project due to their nature of long-term and low interest rates, but also to enhancing status and importance of a project. Hence, public funds should be utilized to a maximum extent in order to attract private funds. A project with sufficient profitability will be possibly financed by private funds only, for example, in a form of project finance. However, capacity building of Vietnamese local banks will be necessary in the field of project finance.

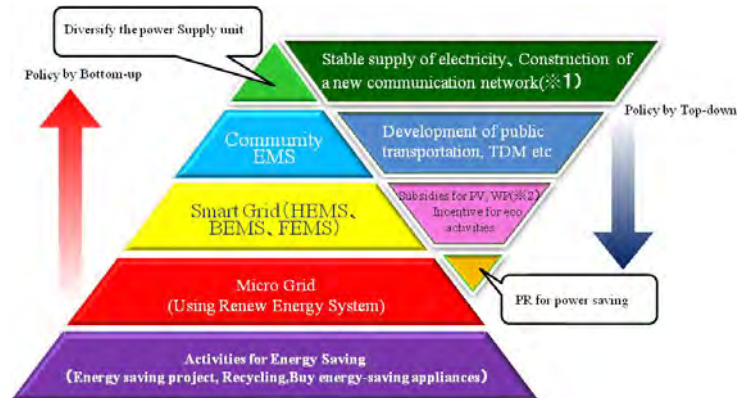


Source: JICA Study Team

Figure 3.4.1: Usage of Public/Private Funds for Eco & Smart for HHTP

3.5 Issues on the Implementation of Eco-City/Smart Community to the Big Cities

When introduced technologies in local level apply to big cities such as Hanoi and HCMC, policies to be taken should cover the whole city areas. It is required to establish legal system which will required certain period to be draft-up and approved. Therefore urban infrastructures such as public transport, legal systems and policies shall be established in middle and long term. On the other hand, regarding individual buildings and facilities, legal systems and policies shall be faster and depend on the cost performance of the adopting technology.



Source: JICA Study Team

Figure 3.5.1: Relationship between Public and Private in Eco & Smart Policies

Issues on the implementation of Eco-City/Smart Community introductions are listed below;

- In a case of introduction of Eco & Smart technologies into urban infrastructure of Hanoi and HCMC, this should follow the latest policies' directions such as the national master plan, and related development plan.
- For introduction of renewable energy technologies, large initial cost will be needed. To make it more feasible, it is necessary to support by subsidy system and feed-in tariff.
- For introduction of advanced technologies, required cost will be much higher than ordinary type. To introduce such technologies, it is required support for some incentive to make a balance for financial and environmental consideration.

To solve the issues described above, determination of legal system listed below is recommended.

1. Feed-in Tariff Mechanism for Renewable Energy

The system of obligation to buy electric generated by renewable energy should be enlarged to all renewable energy. Both of feed-in tariff and avoided cost tariff has been basically enacted.

2. Subsidy and Grant System for Eco & Smart Technology

Subsidy and grant system for Eco & Smart technologies should be established. In short term, subsidies for setting renewable energy plant (such as photovoltaic power panels), purchasing ecological vehicle (such as electric car and hybrid car), or introducing individual Eco & Smart technologies will be useful. Additionally support system such as supplying factory site to companies which have Eco & Smart tech production, R&D support by providing public facilities and infrastructures, promotion support with use of public network will be also examined. Reduction of fixed assets tax or income tax might be possible.

3. Tax Benefit System for Eco & Smart Technology

System of tax benefit should be established when introduction of Eco & Smart technologies. It will be useful to apply systems such as making advantageous interest rate for finance loan (such

as eco-house), giving “eco-point” which can be used for purchase of other products (such as home electronic devices).

4. Financial Assistance for Eco & Smart Tech

Financial assistance for Eco & Smart technologies should be established. Specifically; (i) utilization of long-term and low-interest-rate financial loan through VDB (Vietnam Development Bank) for introducing cost of renewable energy and constructing cost of waste water treatment facility, and (ii) promotion of financial assistance by two steps loan of international financial institution through VDB.

CHAPTER 4: STUDY ON INTRODUCTION OF ECO-CITY/SMART COMMUNITY CONCEPT PLAN FOR HHTP

4.1 Eco-City/Smart Community Concept Plan for HHTP

4.1.1 Concept Plan

Since Vietnam has attracted attention as “China Plus One”, from end of 1990s for 15 years, factories from Japan has been operating in Vietnam. Even though industrialization has contributed to rapid economic growth, less developed infrastructure, which is supposed to support industry activity, had been raised as a problem, and Japanese government has supported development of industrial estate in a northern part of Vietnam through Yen Loan. HHTP is designed to develop not only high tech industry but also to develop Hanoi Institute of Technology, FPT University, national R&D institutions such as National Health and Epidemiologic Institute, education/training center, and expected to function as a center of science industry in Vietnam. Eco-city/smart community concept for the HHTP is proposed below.

The Most Advanced National HUB for Science and Industry

- ***The Top Runner of Eco & Smart Technology***
- ***The Broadcasting Station of Eco & Smart Life***

HHTP should play a role of cultivating top-level human resources which contribute international engineering innovations and competitions as a most advanced national HUB for science and industry. In the near future, it must be required to make “state of art” environment at HHTP, therefore everybody willing to work, research, study and stay in.

For this purpose, two concepts are set as “The Top Runner of Eco & Smart Technology” and “The Broadcasting Station of Eco & Smart Life” in order to create comfortable, advanced and attractive place for work, research, study and living.

For the Top Runner of Eco & Smart Technology

HHTP will be the top runner of Eco & Smart technologies. Under the close cooperation among hi-tech companies, research organizations and educational organizations in HHTP, the most advanced technologies

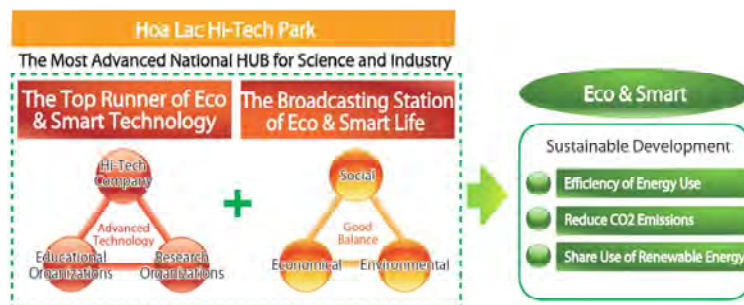
will innovate consistently and spread out to nation-wide as the most advanced national HUB which prides the top level not only in the nation but also among Asian region and world-wide.

For achievement of advanced technological researches and project implementation, it should be pushed ahead by high-tech companies, research organizations and educational organizations in HHTP, and it would expect to accelerate new business ventures.

The Broadcasting Station of Eco & Smart Life

HHTP will be a town whose dwellers can enjoy comfortable and longing life style. People who work, research, study and live here can be served not only the most advanced Eco & Smart technologies but also the top level services of health, security and education. The life style with rich green and water townscape in HHTP will be broadcasted to nation-wide.

For achievement of advanced life-style technologies should be imported for workers and dwellers with good balance among social, environmental and economical aspects, and with sustainability and comforts considerations. In addition, broadcasting of Eco & Smart life would contribute to attract engineers and researchers to HHTP from not only nation-wide but also world-wide more and more with good cyclical processes for the future.



Source: JICA Study Team

Figure 4.1.1: Concept Image of Eco & Smart for HHTP

4.1.2 Future Visions of Eco & Smart Technology for HHTP

For Stable Electric Power Supply through Renewable Energy

Electric power supply will be more stable through introducing renewable energy generations for HHTP as dispersed power system. A new system, namely feed-in tariff or avoided cost tariff, which electricity generated by renewable energy system can be sold back to national-grid will be established. Photovoltaic power or other innovated renewable energy technologies will be introduced to secure stable electric power supply especially in the periods when lack of electric power supply is concerned through a year, probably from April to June. Smart grid system will be established by local dispersed power system and duplex electric supply network system.

For Emission-Free Park with Electricity or Fuel Cell Vehicles

Under a transportation concept of “Emission-Free Park” (free from CO² and air pollutions), only ecological vehicles such as electricity or fuel cell vehicles will be basically permitted entering the park, except cargo trucks and heavy machines. Workers, researchers and students will commute and move in the park by electric buses. A public vehicle operation computing system which can manage bus locations, waiting time display, battery remaining conditions will be established with a central operation system. ITS technologies will be introduced especially for the park area and relevant transportation areas as a pilot project, and advanced transport services will be provided with making good use of car navigation and ETC technologies.

For Smart Energy Management in the Whole HHTP

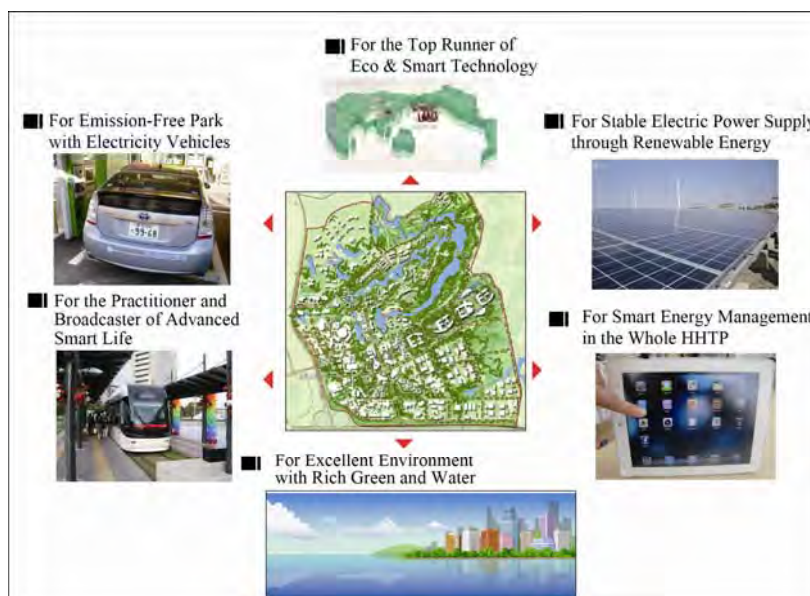
Hi-tech companies, research organizations and educational organizations will introduce a wide variety of energy-saving technologies and also control energy use efficiently with ICT and energy management system (BEMS and FEMS). Surplus energy generated by renewable energy system will be charged in mega battery storage to be used when electric power supply being short. Additionally, synergistic effects will be produced more and more by means of cooperation among the high-tech companies and the organizations in HHTP through information exchange, joint venture, and other aggressive trials.

For the Practitioner and Broadcaster of Advanced Smart Life

The worker, researcher and students will be proud of being in HHTP; hence they want to be a practitioner and broadcaster of the advanced smart life with higher Eco & Smart mind. All concerned people will hold a non-contact type IC card (smart card/chip card) which has multi functions such as employee ID, student ID, access control, commuter pass, cyber-money and electronic payment system. This card will much contribute that concerned people spend comfortable and smart time for life, study, work with securing of high security and safety society. Intellectual properties of companies, universities and research organizations will be well-protected by applying information security technologies. Information magazines or e-mail newsletters related to Eco & Smart life will be issued and utilized useful to get newly and advanced information for the concerned. To make communications with stress-free in the park, high speed and large capacity telecommunication service will be established by making Wi-Fi free spots. People who live in surrounding areas will also be proud of HHTP, therefore they will cooperate to trials of HHTP. On the other hand, they will receive some benefits brought by new technologies from HHTP. The students in the university or other educational organizations will be trained much especially high-technology fields and then they, capable new recruits, will get a job in HHTP after graduation.

For Excellent Environment with Rich Green and Water

People will enjoy rich green and water sceneries in HHTP by means such as planting a lot of trees, well-designed buildings, well-managed lawns and clear lake water. Good townscape covered by large trees along roads will supply comfortable shady road spaces even in strong sunny days. The lakes in the park will supply clear water with less pollution and accessible waterfront spaces with nature. Primary solid waste, waste water and air will be treated at each facility, and finally those emissions will be treated properly in the park. These efforts for mitigating environmental impacts will last continuously.



Source: JICA Study Team

Figure 4.1.2: Future Visions of Eco & Smart Technology

4.1.3 The First Step for Achieving the Future Visions

Renewable Energy

It is recommended to introduce photovoltaic power system as a showcase model for the first step of renewable energies. To appeal of the showcase, these solar panels will be set up at places where people can be easily seen such as on the rooftop of management facility building, incubator center, vehicle parking garages, etc. This dispersed power system generated by photovoltaic power shall be generally connected with national-grid power system, while it is expected to complement the minimum required electric power to HHTP when power is lack or outage.

New Transport System

It is recommended to introduce electric buses or fuel cell buses for transportation round use inside the park. Battery charging stations with solar panels shall be set up in HHTP not only for charging batteries but also functioning advertisement billboards as an advanced technology. It is also recommended to introduce community electric motorcycle system which provides one more transport methods to move easily inside

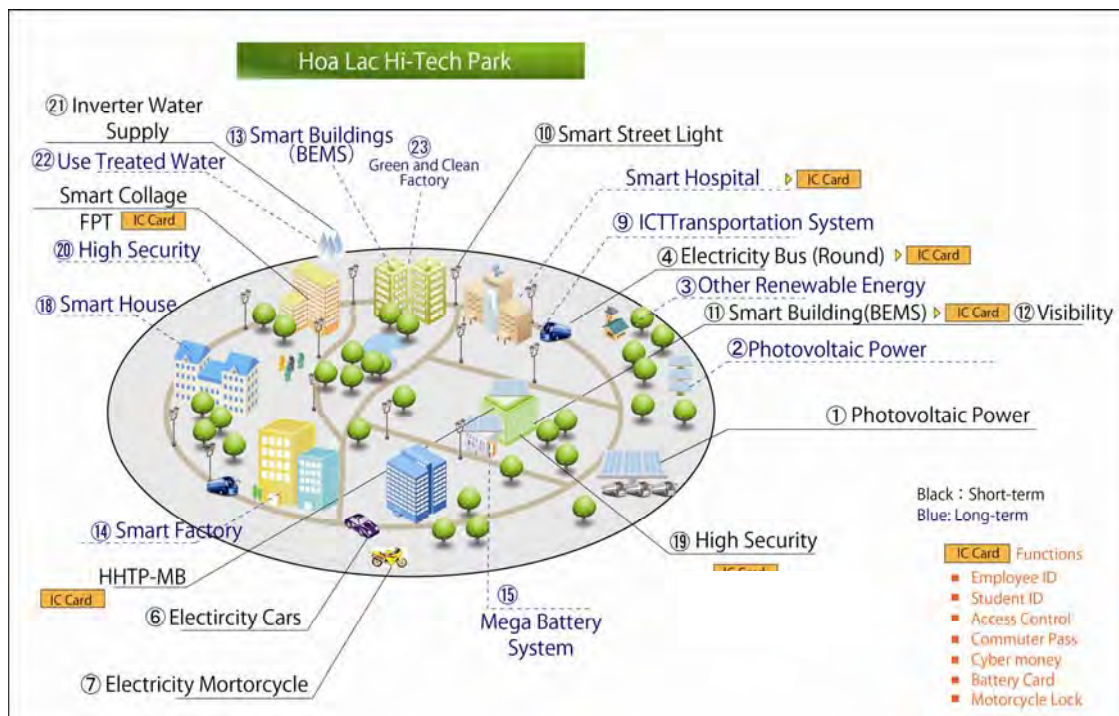
the park. Some electric cars shall be introduced and used for management and patrol use or guidance use of visitors.

Smart Energy Management System

Buildings which are often visited and seen by visitors such as management facility building, incubator center and entrance facility of university should be introduced advanced energy management system as a showcase of Eco & Smart technologies. A technology of “visibility” by controlling through a central large monitor with combination of solar panels and batteries system will contribute both to appeal advanced technology for visitors and to change the energy-saving mind for building user. The technologies of the showcase should be helpful information to energy-saving for companies moving into HHTP. Smart street light system is also efficient by controlling the use of street lights in real time by using PLC for public energy-saving.

Smart Life Technology

It is recommended to introduce a non-contact type IC card system which can be installed and combined with mobile phone. The companies’ workers and students can hold and use this system. Additionally, security system should be improved by means of setting CCTV at main gateways of the parks, setting information backup center to secure information security and establishing central control center.



Source: JICA Study Team

Figure 4.1.3: Achievement of Future Visions

4.2 Proposal for Introduction of Eco & Smart Technologies

Recommendation for introduction of Eco & Smart technologies are listed below. These technologies are classified into two phase, short term and middle-long term.

Table 4.2.1: Recommend List of Eco & Smart Technologies to be Introduced

No	Field	Technology	Method for Introduction	Phase	
				Short	Mid to Long
1-1	Renewable Energy	Photovoltaic Power	Introduction of photovoltaic power as a showcase model. To appeal it, solar panels will be set up at places where people can be easily seen such as on the roof of management facility building, incubation center and EV bus garage, etc.	■	
1-1	Renewable Energy	Photovoltaic Power	Solar panels will be setup in the roofs of factories/institutes and vacant lots, which will assure stable electric supply. Electric can be supplied when power supply is lack or outage.		■
1-2 - 1-5	Renewable Energy	Other Renewable Energy 1-2Wind 1-3Biomass 1-4Waste 1-5etc.	Following by the technology revolution and support polices introduction of other power generation technology also will be considered. Hydro-power generation sometimes do not provide enough electric during April and June, dispersed power system should be introduced for stable electric power supply during this periods.		■
1-6	Renewable Energy	Cogeneration System	In case that power generation plant will be set in the park, cogeneration system will be introduced to improve energy efficiency by making good use of both heat and electric.		■
1-7	Renewable Energy	Smart Grid System	After establishment of dispersed power system in the park, mart grid system will be established by means of duplex electric supply network with national grid. Smart meter will contribute smart energy use control.		■
2-1	New Transport System	Electric Bus Fuel Cell Bus	Some electric buses or fuel buses will be introduced and used as transportation use around inside the park. Battery charging stations with solar panels are also proposed to be set up in the park.	■	■ Continues
2-2	New Transport System	Electric Car	Some electric cars will be introduced for management and patrol use or guidance use of visitors.	■	■ Continues
2-3	New Transport System	Electric Motorcycle	Introducing a system of using electric motorcycle in community. Management station with electrical lock and battery charging port will be introduced and rental service will be provided to move easily inside the park.	■	■ Continues
2-4	New Transport System	ICT Public Transportation System	Establishing cloud service on public transport vehicles inside the park. Electric buses and cars will be managed and controlled by GPS at the center. Bus location, waiting time, battery status will be grasped and controlled in real time.		■
2-5	New Transport System	ITS Spot Service	An advanced car navigation system and ETC (electronic toll collection) system will be introduced more and these technologies will be combined closer with high spec telecommunications to supply all in one spot advanced service. To be smart way will be conducted in cooperation with highway and urban train no.5 construction.		■
2-6	New Transport	Vehicle Battery	After a certain number of electrical buses and cars are introduced, “V2G” will be tested by connecting		■

No	Field	Technology	Method for Introduction	Phase	
				Short	Mid to Long
	System		these vehicles to micro-grid.		
3-1 - 3-2	Energy Management System	3-1 Building Energy Management System (BEMS) 3-2 Factory Energy Management System (FEMS)	Introduction of energy management system to main facilities and setup of solar panels and batteries. Sensors will be setup in different places inside facilities to control air-conditioners, lighting and electrical devices for energy saving. All of them will be controlled by central control system with large monitor.	■	■ Continues
3-3	Energy Management System	Visibility Energy Service Company (ESCO)	Together with introduction of energy management system to main facilities, large monitor will be set up in the lobby where can be easily seen. To promote energy saving, introduction of ESCO service will be one of efficient methods. A pilot project will be started in the management facility buildings.	■	■ Continues
3-4	Energy Management System	Smart Street Light	Controlling the use of streetlight in real time by using PLC. Electric cost and management/maintenance cost can be reduced. Individual light will be managed 365 days even by one minute unit.		■
3-5	Energy Management System	Community Energy Management System (CEMS)	Considering the introduction progress of BEMS and FEMS, cooperating with battery building, energy management will be implemented in the whole community on trial. Introducing district heating and cooling (DHC) will be also examined with share of dispersed energy and pipe system.		■
3-6	Energy Management System	Mega Battery System	By introducing battery management system, electric generated from renewable energy can be stored. Efficient use of electric system will be constructed.		■
4-1	Smart Life Technology	IC Card System	Non-contact type IC card will be introduced to workers and students. The card system will be integrated multi functions such as employee ID, student ID, access control, commuter pass and cyber-money	■	■ Continues
4-2	Smart Life Technology	High Security	Security system should be improved by means of CCTV set at main gateways of the parks.	■	■ Continues
4-3	Smart Life Technology	Information Security (IP)	Staffs normally have their own PC in high-tech companies, therefore information data should be secured. To protect IP (Intellectual Property), technologies and system for information security should be introduced in each company and the whole park. To accelerate it, management organization can set information backup center.	■	
4-4	Smart Life Technology	Smart House (HEMS)	Energy management technologies will be introduced to houses. Consuming energy will be visible and electric use will be controlled. It will also be possible to remote control through home electronics with ICT technology.		■
4-5	Smart Life Technology	Wi-Fi Hot Spot	In the whole park area or the places where are used mainly for public use, Wi-Fi telecommunication technologies will be set up for securing high speed and large capacity internet conditions. In addition it, internet contents services for limited users will be provided.	■	

Source: JICA Study Team

In addition above, recommendations of software (regulations, derivation, legal support, etc.) for support introduction of technologies are listed below.

Table 4.2.2: Recommend List of Supporting Software to be Introduced

No	Range	Field	Technology	Method for Introduction	Phase	
					Short	Mid to Long
6-1	HHTP	Support	Special Zone of Deregulation	In the case that supporting system cannot be established in short term, special zone should be applied only to HHTP in advance, and deregulations and tax benefits will be applied preferential and experimental in the park.	■	
6-2	HHTP (and Whole Country)	Regulation	Community Planning (Community Guideline)	By considering the occupancy rate situation and necessity of tenant companies/institute/residential buildings, district plan will be proposed with the consideration of landscape and layout. Otherwise, in case that applying restrict regulation is difficult, guideline should be formulated.	■	
6-3	HHTP	Implementation	Setting a Demonstrative Test Field for Eco & Smart Tech	HHTP should be a demonstrative test field for Eco & Smart technologies. The field will be for test of new technologies and ideas such as renewable energy generation, smart grid establishment, peak-cut of energy consumption. Institute of energy and science which will move in the park will be good partner of the management board to promote such trials.	■	
6-4	HHTP	Implementation	Establishing a Commission for Eco & Smart Tech	Commission should be established to discuss and make a decision how to introduce and support Eco & Smart technologies in the park. The commission will be consist of MOST, HHTP-MB, MOIT, MONRE, MOC, MOF, VAST, IES, etc.	■	

Source: JICA Study Team

4.3 Short Term Introducing Plan

For the eco-smart technology arranged in the Table 4.2.1, the technology should be installed in the short term is formulated.

4.3.1 Internal Eco-Transport System

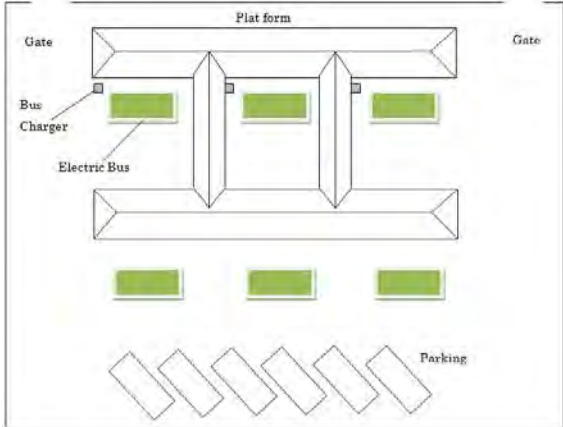
Under a transportation concept of “Emission-Free Park” (free from CO² and air pollutions) in the mid term, installation of ecological vehicles such as electric or fuel cell vehicles is proposed. For the short term, it is expected to be used by the HHTP staff, students, workers in R&D and high-tech industry as transport tools within HHTP for efficient mobilization and lead to examination of internal eco transport system that is suitable in Vietnam.

Specifically, five (5) EV buses are introduced. In addition, battery charging stations with solar panels and building (solar panels will be installed on the roof) shall be set up at the gate. Also, electric motorcycle system in the HHTP is installed for which the management station with electric lock and recharging port is positioned for the purpose of sharing transportation tools at the main location such as HHTP management facility, incubation center.

In addition, five (5) electric vehicle will be placed at HHTP management facility and used for park visitors and for park management.

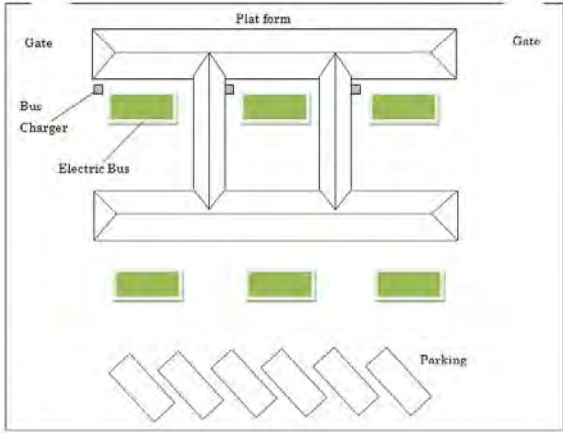
Following table shows solar electric bus station

Table 4.3.1: Internal Eco-Transport System Short Term Installation Plan (1)

Measure	Electric Bus System			
Summary	Five Electric buses will be introduced and used as transportation tool going around inside of HHTP. Solar charging stations are also proposed to be set up in the gate area of Park side.			
Installation location	The electric system would be set up at HHTP.			
Contents	<ul style="list-style-type: none"> ➤ Electric Bus: The performance of the Electric bus (78 seaters commuter bus. mileage in one charge: 50km). ➤ Quantity: In a short plan, introduce five buses. ➤ Travel Route: Five electric buses will be introduced and used as transportation tool going around inside of HHTP. ➤ Bus Station: Electric buses stations, solar power systems and rapid chargers deploy one location (In the incubation center or in front of bus stop in the side of route 5). This system includes a rapid charger and solar panel. ➤ Operation System: Manage bus services through CTC(Centralized Traffic Control). (management, fee payment system and monitoring the battery condition). <div style="text-align: center; margin: 10px 0;">  </div> <p style="text-align: center;">Figure : The Electric Bus Garage (image)</p>			
Preliminary cost Estimate	Item	Unit price (USD)	Quantity	Total (USD)
	Electric bus	1,292,000	5	6,460,000
	Rapid charger (50kW)	32,100	5	160,500
	Payment system of bus	2,700	5	13,500
	Total			6,634,000
Proposed Implementation Method	<ul style="list-style-type: none"> ➤ During less demand period, public fund for experiment of new technology shall be utilized. ➤ Private involvement can be expected after demand increased. 			

Source: JICA Study Team

Table 4.3.2: Internal Eco-Transport System Short Term Installation Plan (2)

Measure	Photovoltaic (Solar) Power System (on bus terminal)				
Summary	Incorporate solar power system on the electric bus station. Incorporate solar power system on the electric bus station.				
Contents	<ul style="list-style-type: none"> ➢ The Electric Bus Station : These Electric Bus Stations will be located in the center of HHTP. This system includes a rapid charger and solar panel. ➢ Positioning of solar power : To investigate the efficiency and promote the solar power system. ➢ Connection with existing power grid : For mid-long term. ➢ Operation and management: O&M organization of HHTP-MB <div style="text-align: center;">  </div> <p style="text-align: center;">Figure The Electric Bus Garage (image)</p>				
Preliminary cost Estimate	The Electric Bus Station (One location, in HHTP)				
	Item	Unit price	Quantity	Total (USD)	Remarks
	200m ² Solar panels	1,620	200	324,000	Japan price
	Power Conditioner	38,500	1	38,500	Three-phase three lines for 10kw one Group
	Power receiving and transforming facilities	19,250	1	19,250	New installation
	Joint box Temperature gauge • Actinometer Board Measurement and Monitoring equipment (with personal computer)	44,940	1	44,940	Japan price
	Battery	19,250	1	19,250	
	Total			445,940	
Proposed Implementation Method	<ul style="list-style-type: none"> ➢ During less demand period, public fund for experiment of new technology shall be utilized. ➢ Private involvement can be expected after demand increased. 				

Source: JICA Study Team

Table 4.3.3: Internal Eco-Transport System Short Term Installation Plan (3)

Measure	Electric Motorcycle operational system				
Summary	The introduction of the electric motorcycle sharing business to HHTP. In several places of HHTP, the electromagnetic locks and electric chargers set up for electric motorcycles. Electric motorcycles are easy to navigate through in HHTP.				
Installation location	Hoa Lac Service Center and Administration building.				
Preliminary cost Estimate	Item	Unit price(USD)	Quantity	Total(USD)	Remarks
	200m ² Solar panels (135W Power generation efficiency)	1,620	200	324,000	Japan price
	Power Conditioner	38,500	2	77,000	Three-phase three lines for 10kw one Group
	Power receiving and transforming facilities Distribution panel	19,250	2	38,500	New installation
	Joint box	1,040	2	20,800	Japan price
	Temperature gauge · Actinometer	5,400	2	10,800	
	Board Measurement and Monitoring equipment (with personal computer)	38,500	1	38,500	
	Battery	19,250	2	38,500	
	Electric Motorcycle	400	20	6,000	For sharing
	Community Motorcycle System	184,000	2	368,000	2 system of 12 lots. Electric port, rock etc.
	total			903,380	
Proposed Implementation Method	<ul style="list-style-type: none"> ➤ During less demand period, public fund for experiment of new technology shall be utilized. ➤ Private involvement can be expected after demand increased. 				

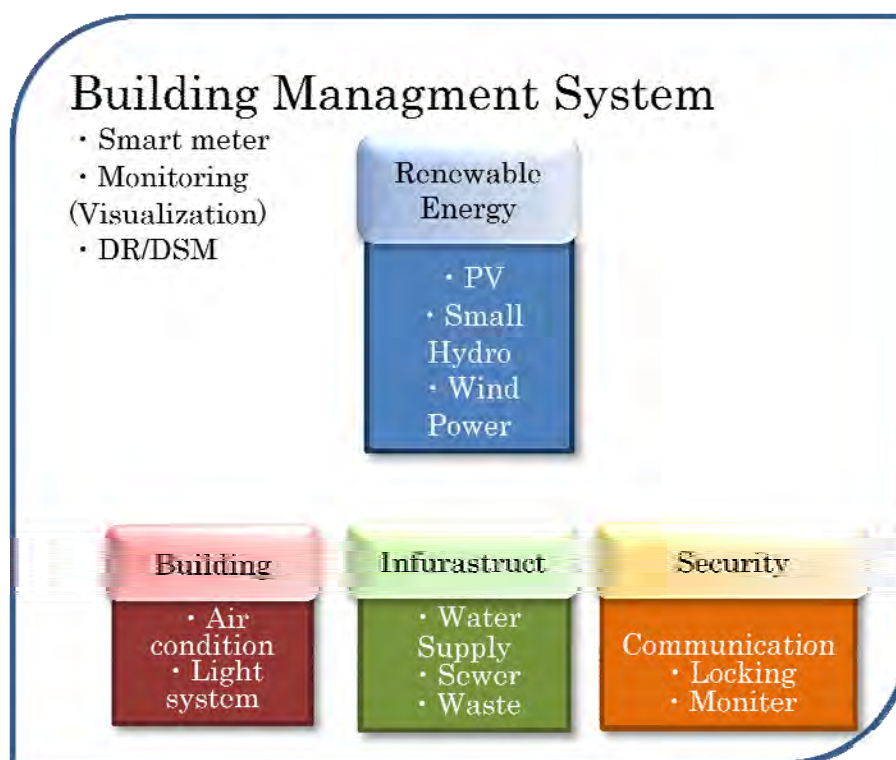
Source: JICA Study Team

4.3.2 Incubation Center with Building Management System

Installation of Building Management System (BMS) to the existing main facility is proposed. Incubator center will be installed with advanced energy management system as a showcase of Eco & Smart technologies. Building facility (air condition, light), infrastructure (water supply, waste water treatment, solid waste, information communication), security (communication, lock, CCTV) will be installed. Regarding power consumption for the facilities, in order to promote energy saving and improve efficiency, monitoring/control/management function for quantifying the impact will be developed and promote execution of BMS.

In the short term, photovoltaic power will be installed, building facility will be improved, security facility will be installed, and monitoring/control/management function for energy consumption will be installed.

A technology of “visibility” by controlling through a central large monitor with combination of solar panels and batteries system will contribute both to appeal advanced technology for visitors and to change the energy-saving mind for building user. The technologies of the showcase should be helpful information to energy-saving for companies moving into HHTP.



Source: JICA Study Team

Figure 4.3.1: Image of Building Management System

Table 4.3.4: Incubation Center with Building Management System Short Term Installation Plan (1)

Measure	High quality building facility				
Summary	Building facility (air condition, light), infrastructure (water supply, waste water treatment, solid waste, information communication), security (communication, lock, CCTV) and PV system will be installed. Implement measures to reduce the environmental impact.				
Summary of system	High quality building facility (air condition, light, electrical system) will be installed on the incubator center. PV system will be installed on the roof of incubator center.				
Installation location	Hoa Lac Service Center				
Preliminary cost Estimate	Item	Unit price(USD)	Quantity	Total(USD)	Remarks
	170m ² Solar panels (135W Power generation efficiency)	1,620	170	275,400	Japan price
	Power Conditioner	38,500	1	38,500	Three-phase three lines for10kw one Group

	Power receiving and transforming facilities Distribution panel	19,250	1	19,250	New installation
	Joint box Temperature gauge • Actinometer Board Measurement and Monitoring equipment (with personal computer)	44,940	1	44,940	Japan price
	Battery	19,250	1	19,250	
	total			397,340	

Source: JICA Study Team

Table 4.3.5: Incubation Center with Building Management System Short Term Installation Plan (2)

Measure	High Security System				
Summary	Conduct the security control for Hoa Lac Service Center and Administration building. Install security cameras (CCTV) on the main places of HHTP. Introduce non-contact IC as a multi-function card for building security .				
Installation location	Hoa Lac Service Center				
Contents	CCTV ➤ Make a high security system with CCTV and non-contact IC card. ➤ Security check to the gate of Hoa Lac Service Center. ➤ Make an alarm and report system during close time of Hoa Lac Service Center. IC card ➤ Parsons working Hoa Lac Service Center must have IC cards for enter the building. ➤ Using the ➤ Payment system of electric bus system. ➤ 10000 sheets of IC cards would be made for the system.				
Preliminary cost Estimate	CCTV				
		Item	Unit price(USD)	Quantity	Total(USD)
		Surveillance camera system	15,000	1	15,000
		Entrance management	5,000	1	5,000
		Security system for window (annual rental for indoor security sensor)	38,800/year	1	38,800
		total			58,800
		IC card			
		Item	Unit price(USD)	Quantity	Total(USD)
		Software for bus service	450,000	1	450,000
		IC Card 10,000 sheets	3	10,000	30,000
		Access control system and Cashless service system	593,000	1	593,000
	Total	—		1,073,000	

Source: JICA Study Team

Table 4.3.6: Incubation Center with Building Management System Short Term Installation Plan (3)

name	BEMS
Summary	Regarding power consumption for the facilities, in order to promote energy saving and improve efficiency, monitoring/control/management function for quantifying the impact will be developed and promote execution of BMS.
Summary of system	Building : High performance air condition, light system and electric system will be installed. PV system : PV system will be installed.
Installation location	Hoa Lac Service Center
Contents	Set up the board (measurement and monitoring equipment with personal computer) for BEMS. Check the power consumption of air condition, water and sewerage and security.
Preliminary cost Estimate	Set up of a Data Center: (USD) 12,820,000

Source: JICA Study Team

In incubation center, companies with high technology or advanced technology are expected to be operating. In order for preventing burglary and leakage regarding advanced technology and client information, security system has to be well executed. For doing so, controlling of entering and leaving at entrance and at each facilities or companies, crime prevention system will be installed. For those who are a member of the tenants, comprehensive management, such as using smart phone or IC (non couch type) will be executed.

For incubation center building, new facilities may be necessary to install more functions.

4.4 Influences on the Detailed Design Works of Infrastructure and the Mitigation Plan

There are no serious expected influences to the detailed design works caused by introduction of Eco & Smart technologies in short term until 2015. Overview of influences and mitigation plans are shown in Table 4.4.1.

Table 4.4.1: Overview of Influences and Mitigation Plans

Project	Technology	Influences/Mitigated Plan
Internal Eco-Transport System	Electric bus and payment system	<u>Influences</u> Necessary additional design for Bus station and bus stop, including necessary facilities and supplies. No effect to current basic infrastructure design.
		<u>Mitigation Plan</u> Shall be separated different design work to be conducted.
	Photovoltaic power system	none
	Electric motorcycle system	none
Building Management System (BMS)	Building facility improvement system	none
	Security system	none
	Building management system (BMS)	none

Source: JICA Study Team

4.5 Project Implementation Plan

4.5.1 Implementation Schedule

Internal Eco-Transport System and Incubation Center with Building Management System, which are planned to be installed in the short term, are planned to be realized by 2015/2016 as shown in the Table 4.5.1.

Table 4.5.1: Project Implementation Schedule

works	2012		2013				2014				2015				2016			
	1st year		2nd year		3rd year		4th year		1st year		2nd year		3rd year		4th year			
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV		
Feasibility Study	■	■	■	■														
FS approval					■	■	■	■										
Tender Design									■	■	■	■						
Tendering													■	■	■	■		
Implementation													■	■	■	■		

Source: JICA Study Team

4.5.2 Scope of Feasibility Study (F/S)

F/S will be implemented as “HHTP Smart City Project”, which includes two priority projects mentioned above; (i) Internal Eco-Transport System and (ii) Incubation Center with Building Management System, for the purpose of simplifying the procedure..

Scope of the F/S is proposed as shown below.

1. Formulation of project framework
 - a) Determination of scope of the project
 - A. Project scope for Internal Eco-Transport System
 - B. Project scope for Incubation Center with Building Management System (BMS)
 - b) Determination of project framework
2. Design Works
 - a) Confirmation of design standard
 - b) Basic design
 - A1. Bus garage
 - A2. Intelligent bus stop
 - B1. Incubation center (building)
 - c) Scope of smart technology
 - A1. EV Vehicle
 - A2. ITS
 - A3. Necessary facility
 - B1. Incubation center (building)
 - B2. Energy Management System (EMS)
 - B3. Security Management System (SMS)
 - B4. Communication System
 - B5. Integrated Operation Management System
 - d) Implementation plan
 - e) Cost estimate
 - f) Implementation plan
3. Project evaluation
4. Institutional plan
 - A. Internal Eco-Transport System
 - B. Incubation Center with Building Management System (BMS)
5. Environmental consideration
6. Recommendation

4.5.3 Financial Scheme for installing Smart Technology

The project to be implemented in the short term is designed not as “needs” base but designed as “prior investment”, it is expected that public fund to be used for implementation.

For realizing the project, it is necessary to consider the project in a comprehensive manner including examination of appropriate system and operation and management system, not as individual procurement and installation of the smart community components such as installing only solar battery. Vietnam has experiences of installing individual smart technology but has no experiences installing the system for smart community. For F/S, support from the developed countries which has experiences of installing advanced technology and possess smart technology is considered mandate.

Based on the discussion with the Government of Vietnam, two projects; (i) Internal Eco-Transport System and (ii) Incubation Center with Building Management System are proposed to be installed in the short term. For conducting F/S, it is important to examine the “components of the system” to be applied through PPP scheme (Public Private Partnership) and conduct survey to the concerned private sectors in Vietnam and Japan. Business scheme which can be implemented by the PPP scheme and possibility of private sector participation is listed below.

1. Internal Eco-Transport System
 - a) Short term: Public sector oriented projects
 - b) Mid-long term: EV Vehicle related company (EV 2 wheels, EV 4 wheels) and power supply company for development of “EV vehicle promotion exhibition”
 - c) Mid-long term: develop as profitable projects due to increase in needs (population and number of company in HHTP)
2. Incubation Center with Building Management System
 - a) Short term: “Academic/Knowledge information network” through collaboration with universities
 - b) Mid-long term: “Manufacturing Technology Exchange Support System through business matching service by industry, academic and (government).

Unlike usual infrastructure, development of business scheme (model) that is profitable (execute as private sector project) by installing smart technology as a system of “smart community” determines the reality and sustainability of the project. For this reason, it is necessary to prepare operation and maintenance plan and to conduct capacity development to HHTP-MB at the same time of the development of the system for the purpose of promoting expansion and sustainability of the smart community project.

CHAPTER 5: INVESTMENT ATTRACTION

5.1 Confirmation of Current Condition

5.1.1 Outline of HHTP

According to the interview with HHTP Management Board (herein after called as HHTP-MB) and Detailed Design Engineering Team and relevant documents, the outline of HHTP is as shown in the Table 5.1.1.

Table 5.1.1: The Outline of HHTP

General Information	Location	Km 29, Lang Hoa Lac Highway, Thach That District, Hanoi
	Site location (from city, port, airport)	30km from the center of Hanoi
		47km from the Noi Bai International Airport
		100km from the Hai Phong Port
		Adjacent to Route 21 and Lang-Hoa Lac Highway
	Total developed area, construction schedule, occupancy rate, remaining area, etc.	Total developed area : 1,586.1ha — Area for sale: 1,278.1ha
		1. High-tech Industrial Zone: 549.5ha (88.25ha sold)
		2. Software Park: 76.0ha (17.52ha sold)
		3. Research & Development Zone: 229.0ha (42.80ha sold)
		4. Education and Training Zone: 108.0ha (33.34ha sold)
		5. Mixed Use Zone: 87.7ha (10.94ha sold)
6. Center of High-tech City: 50.0ha (4.47ha sold)		
7. Housing and Office Zone: 42.0ha (0ha sold)		
8. Housing Complex Zone: 26.0ha (26.0ha sold)		
9. Amenity Zone: 110.0ha (0ha sold)		
Business Proprietor	Hoa Lac Hi-Tech Park Management Board controlled by the Ministry of Science & Technology	
Business Form	Hi-Tech Park	
No. of Tenant Companies	Licensed 52 Companies (including 3 Japanese companies)	
Ground Condition/ Groundwater Level	No pile foundation construction necessary	
Contact for Japanese companies	None	
Website	www.hhtp.gov.vn	
Labor-cost	VND1,780,000/month for foreign companies (Minimum labor salary, II Region) *This started from 1 Oct 2011 (Decree No.70/2011/ND-CP dated 22 Aug 2011)	
Related Legislation	Legal ground for the establishment of HHTP	Prime Minister Decision No.198/1998/QĐ-TTg on establishing HHTP (12 Oct 1998)
	Legal ground for the establishment of HHTP-MB	Prime Minister Decision No.10/2000/QĐ-TTg on establishing HHTP-MB (8 Jan 2000)
		Ministry of Science and Technology Decision No.391/2007/QĐ-BKHNC (22 Mar 2007)
	Revised Master Plan	Prime Minister Decision No.621/QĐ-TTg (23 May 2008)

Related Legislation	Functions and authority of HHTTP-MB	Prime Minister Decision No.98/2009/QD-TTg on functions and authority of HHTTP-MB (27 July 2009)
		Ministry of Construction Decision No.2486/2008/BXD-HDXD (12 Dec 2008) (Evaluation on design)
		Hanoi People's Committee Decision No.2896/2008/QD-UBND (26 Dec 2008) (Evaluation and approval on detailed design of functional zones)
		Law No.21/2008/QH-12 on High Technologies (13 Nov 2008)
	Regulations on high-technologies	Ministry of Science and Technology Decision No.27/2006/QD-BKHCHN on criteria for identifying projects on production of high-tech products (18 Dec 2006)
Regulations on high-tech parks	Prime Minister Decision No.99/2003/ND-CP on High Tech Parks (28 Aug 2003)	
	Prime Minister Decision No.53/2004/QD-TTg on policies on encouraging investment to high-tech parks (5 Apr 2004)	
Language	Japanese	Ms. Thuy
	English	Mr. Tuan
Land Information	Lease period	50 years
	Minimum lease area	N/A
	Regulations on the height of buildings	16-28m
	Building coverage	40-60%
	Land lease fee (including administration costs)	40-60 USD/m2 (This figure is based on High-tech Industrial Zone and Center Zone. R&D Zone charges free. The other zones are not yet determined.)
Leasing Factory	Leasing Factory (Y/N)	N
Facilities	Bank (Y/N)	Y: Vietinbank
	Customs (Y/N)	Y: in HHTTP (Decision No.612/QD-HQHVN)
	Logistics service	Vinaline Logistics J.S Company
	Shipping/Carriage	N/A
	Bonded warehouse (Y/N)	Y
	Post Office (Y/N)	Y
	Clinic (Y/N)	Plan to build in the Mixed Use Zone.
	Commercial facility (Y/N)	Secure the land (33.5ha) to build a movie theater, restaurants and play ground.
	Police station (Y/N)	Plan to set up.
	University (Y/N)	FPT university (30ha) is now under construction in the Education and Training Zone (108ha).
	Public bus (Y/N)	N
	Dormitory house for workers (Y/N)	N: Secure the land (26ha) to build dwelling houses for specialists or experts.
	Educational Institution for workers' children (Y/N)	N
	Referral (Y/N)	Y: through VITEC
One-stop Service	N/A	
Facilities	Incentives	<p>i) Exemption for the first 4 years (from the first profit-making); 5% for the next 09 years; 10% for the following 2 years.</p> <p>ii) Exemption from import duties and VAT for goods imported as materials for export, iii) Exemption from import duties and VAT for equipment, machinery as part of fixed assets.</p>

Electricity infrastructures	Power specs	Supplied by EVN. Three substations' capacity are 63MVA each (Voltage 110/35/22kV x 2, 110/22kV x 1)
	Power charges	N/A
	Emergency generator (Y/N)	Y: Plan to set up
	Emergency generator specs	Plan to set up 80MVA x 1 and 250MVA x 2 in the HHTP power substations
Industrial Water Infrastructure	Water treatment plant specs	4,500m ³ /day (Right to take 40,300m ³ /day from Da River)
	Industrial water rate	USD 0.3/m ³
Sewerage Infrastructure	Sewage plant specs (Y/N)	Y: 2 facilities for sewage disposal (Both disposal capacity is 42,000m ³ /day)
	Effluent standard (Y/N)	Y: TCXD VN 33-2006, Japanese standard partially.
	Disposal cost	USD 0.38/m ³
Other	Compensation costs/service costs for others excluding electric power/water supply	USD 0.25/m ³
Waste Hauling	Waste disposal cost	25km to a Waste Dump
Communications Infrastructures	Communication Equipment	1,500 Telephone linkage, Internet: VNPT, VIETTEL, EVN

Source: JICA Study Team

5.1.2 Progress of HHTP Development

According to the interview with HHTP-MB and Detailed Design Engineering Team, the progress of HHTP development is described in the Table 5.1.2 and Table 5.1.3.

Table 5.1.2 : Progress of HHTP Development (Infrastructure)

Items	Progress Situation
Land Formation	Developed Area: 200ha
Road Maintenance and Improvement	Extended road 14.5km constructed
Upgrading for Storm water and Discharged Water	Extended drainage 26km constructed
Upgrading for Power	Access to existing EVN electric distribution network
Upgrading Water Service	Temporary water supply from water well by VIWASEEN
Upgrading Sewerage Line	Extended sewerage 11,016m constructed. Wastewater treatment plant having the capacity of 6,000m ³ /day is under construction.
Upgrading Communications Infrastructures	Vietnam has increased international telephone lines by introducing international standard communication technology such as NGN. In HHTP, the transmission capacity by temporary communication lines is a disturbing problem. Tenant companies contract individually with different providers.

Source: JICA Study Team

Table 5.1.3 : Progress of HHTP Development (Activities)

Detail Development Plan and Implementation Plan of Each Zone	Because the detail development plan and implementation plan of each zone have not been completed, it is difficult for HHTP-MB to take proper measures.	
Overall Condition of Basic Infrastructure	Infrastructures such as creation of land, roads, drainage, sewage lines, clean water, etc. have not completed partly, owing to the shortage of budget. Common duct at the cross-point is not given consideration to the connection of pipe work and hard-wiring and its maintenance.	
Coordination with Ministry of Transport, Ministry of Agriculture & Rural Development and developers	Design specification of interchange	Ministry of Transport plans to build interchange at the main gate and underground road locating in the eastern area of HHTP. But the design specification of them is mismatch with HHTP's one.
	Flood Countermeasure	Flood countermeasures such as storm water reservoir for flood control, drainage, etc. are not sufficient. It would be necessary to consider about the function of flood prevention and storm water regulation by discussing with Ministry of Agriculture and Rural Development.
	Problems in High-tech Zone	High-tech Zone has been operated by VINACONEX and FPT, which causes troubles and failures. For example, gap of service level for investors, inefficient maintenance of infrastructure, problem of lot shape caused from enclave, etc.

Source: JICA Study Team

5.1.3 Situation of Investment Attraction

According to the interview with HHTP-MB and Detail Design Engineering Team and relevant documents, the updated information on the situation of investment attraction and occupancy rate is shown in the Tables below.

The number of licensed enterprises/institutions is 53, and 17 of them are in operation. The occupancy rates have stayed at a low level. The rates by zones are currently as follows: High-tech Industrial Zone has 29 enterprises/institutions, 88.25 ha (16.1%); Center of High-tech City has 8 enterprises/institutions, 4.47 ha (8.9%); Mixed Use Zone has 2 enterprises/institutions, 10.94 ha (12.5%); R&D Zone has 6 enterprises/institutions, 42.8 ha (18.7%); Software Park has 6 enterprises/institutions, 17.52 ha (23.1%); and Education and Training Zone has 2 institutions, 33.34 ha (30.1%).

However, according to the internal documents of HHTP-MB, there are 63 enterprises/ institutions (559.4 ha) that have already sent the letter of interest and/or signed MOU with HHTP-MB. They mainly include Vietnamese enterprises/ institutions and 8 foreign enterprises/ institutions (Taiwan 3, Japan 2, Korea 1, China 1).

Table 5.1.4: Investment Attraction Status in Hi-Tech Industrial Zone

Current State	High-Tech Industrial Zone	Area (549.50ha)
Completed / In Operation	NOBLE	3.00ha
	OETEK	1.00ha
	HPT	2.50ha
	IMOSO THUAN PHAT	5.00ha
	Vietnam-Korea Medicine	1.00ha
	VINAGAME	2.20ha
	FC Technology	0.75ha
	Vinaconex	3.00ha
	Vicostone	2.74ha
	Style Stone	8.57ha
	Vietnam Stone Work	5.45ha
	Vinaconex Glass Fiber Reinforced Polyester Pipe	3.70ha
	Vina-Sanwa	2.08ha
Under Construction	Medlac Pharma Italy	1.50ha
Investment License-Approved	Thanh Ha	0.66ha
	China Medicine External Trade	6.70ha
	Technical Services and Mobile Communication Network Infrastructure	1.10ha
	Telecommunication Technology	3.77ha
	ECO Energy	1.10ha
	HIT High Technology Development	2.53ha
	High-tech Telecom Informatics	2.50ha
	Ha Tay Pharmaceutical	7.00ha
	Viet Hien Development	5.00ha
	Phuc Hung Architecture	2.00ha
	Royal Company	1.00ha
	International and Intercity Postal Company	3.00ha
	SOHACO	5.00ha
Kim Dinh Green Energy	2.50ha	
Viettel	1.90ha	
Total	29 companies 88.25ha (16.1%)	

Source: JICA Study Team

Table 5.1.5: Investment Attraction Status in Center of Hi-Tech City

Current Status	Center of Hi-Tech City	Area (50.0ha)
Completed / In Operation	Kim Cuong Communication	0.07ha
Under Construction	Vietnam Network Information Center	0.80ha
	VIETTEL High-tech Center	0.80ha
	VIETTEL Equipment Placing Building	0.60ha
Investment License-Approved	VNPT	2.20ha
Total	8 companies, 4.47ha (8.9%)	

Source: JICA Study Team

Table 5.1.6: Investment Attraction Status in Mixed Use Zone

Current Status	Mixed Use Zone	Area (87.70ha)
Under Construction	MISA Company	1.20ha
Investment License-Approved	TOGI (Secondary and High School)	9.74ha
Total	2 companies, 10.94ha (12.5%)	

Source: JICA Study Team

Table 5.1.7: Investment Attraction Status in R&D Zone

Current Status	R&D Zone	Area (229.00ha)
Under Construction	Vietinbank	2.20ha
	VINASHIN	25.00ha
	Nissan Techno	1.30ha
Investment License-Approved	Information and Communications High-tech Center (Information and Communications Strategy Institute)	2.90ha
	Constructing Vietnam Metrology Center (Directorate for Standards, Metrology and Quality)	6.80ha
	HTI Corp	4.60ha
Total	6 companies, 42.8ha (18.7%)	

Source: JICA Study Team

Table 5.1.8: Investment Attraction Status in Software Zone

Current Status	Software Zone	Area (75.90ha)
Investment License-Approved	FPT Software	6.40ha
	CEO Investment	5.99ha
	Tinh Van Company	1.78ha
	NCS Corporation	1.10ha
	Kim Cuong Communication	1.05ha
	Minh Phuc Company	1.20ha
Total	6 companies 17.52ha (23.1%)	

Source: JICA Study Team

Table 5.1.9: Investment Attraction Status in Education and Training Zone

Current Status	Education and Training Zone	Area (108.00ha)
Under Construction	FPT University	30.00ha
Investment License-Approved	Dai Viet High-tech Training Center	3.34ha
Total	2 companies, 33.34ha (30.1%)	

Source: JICA Study Team

Note 1: HHTP-MB office (1.3 ha + 5.0 ha development plan), Hoa Lac Service Center (1.2 ha), FPT HHTP Development (High-tech zone developer) (225.5ha)

Note 2: VINASHIN is now being restructured.

Table 5.1.10: Investment Attraction Status of State Research Institute

Research Institute	State Research Institute	Site Area (ha)	Completed procedures
Vietnamese Academy of Science and Technology (VAST)	Prime Minister	26.8	1,3
Space Technology Institute (STI)	VAST	7.2	1,2,3
VINASHIN	Ministry of Transport	25.0	1,2,3,4,5
National Institute of Health and Epidemic (NIHE)	Ministry of Health	5.8	1,2
Institute of Information Communication Strategy	Ministry of Culture and Information	2.9	1,2,3,4,5
Vietnam Research Laboratory of Metrology	Ministry of Science and Technology	6.8	1,2,3,4,5
Total		64.4	

Source: JICA Study Team

Note: Process 1: Basic consensus between State Research Institution and HHTP has been formulated.

Process 2: HHTP-MB has distributed a site.

Process 3: State Research Institution has prepared implementation plan and submitted it to HHTP-MB.

Process 4: State Research Institution has prepared detail implementation plan and submitted it to HHTP-MB.

Process 5: HHTP-MB has approved the detail implementation plan.

Process 6: State Research Institution started construction.

Table 5.1.11: Investment Attraction Status of Education & Training Institutes

Research Institute	Investor	Site Area (ha)	Current State
FPT University	FPT University	30.0	Detail plan of Phase I (9.1 ha) has been approved. Under construction.
Dai Viet High-tech Training Center	HHTTP-MB	3.3	Applied to The Chairman of HHTTP-MB, and the license was approved.
Hanoi University of Science and Technology	VAST	65.0	On the process of fund-raising.
Hi-Tech Business Incubator	HHTTP-MB	2.6	Approved by MOST and started.

Source: JICA Study Team

Currently fixed zone developers are as following table. When eco-city/smart-community technologies are introduced in HHTTP, not only HHTTP but also zone developers will be one of the decision-makers in terms of financial matter.

Table 5.1.12 Current Fixed List of Zone Developers

Zone	Hoa Lac area		Northern Phu Cat area	
	Developer	Area (ha)	Developer	Area (ha)
Software Park	not yet appointed	65	not yet appointed	11
R&D	HHTTP-MB	229	not Applicable	
High-tech Industry	FPT	260.5	VINACONEX	289
Education and Training	HHTTP-MB	108	not Applicable	
Center of High-tech City	HHTTP-MB	50	not Applicable	
Mixed Use	HHTTP-MB	85.3	not Applicable	2.4
Houses and Offices	Viettel + Ha Noi Construction Corporation + Da River Construction Corporation	42	not Applicable	
Housing Complex	FPT + Vinaconex	23.4	not Applicable	2.6
Amenity	Foxcom Corporation (Taiwan) (tentative)	110	not Applicable	
Amusement	Gia Phat (Vietnamese JC company)	33.5	not Applicable	
Traffic & Infrastructure	HHTTP-MB	113.6	VINACONEX	1.9
Lake & Buffer	HHTTP-MB	117	VINACONEX	
Greeneries/Trees	HHTTP-MB	30.8	VINACONEX	11.3

Source: JICA Study Team

5.1.4 Outline of HHTTP-MB

The organizational structure and investment promotion activities of HHTTP-MB are shown in the Table 5.1.13.

Table 5.1.13: Organizational Structure of HHTTP-MB

Concerned Law of HHTTP-MB	Prime Minister Decision No.10/2000/QĐ-TTg on establishing HHTTP-MB (8 Jan 2000) Ministry of Science and Technology Decision No.391/2007/QĐ-BKHNC (22 Mar 2007) Prime Minister Decision No.98/2009/QĐ-TTg on functions and authority of HHTTP-MB (27 July 2009)
Supervisory State Organization	Ministry of Science and Technology
Chairman	Dr. Nguyen Van Lang (Vice Minister of Ministry of Science and Technology)
Vice-chairman (4)	Mr. Pham Dai Duong (Director of ODA PMU) Mr. Dao Duc Bay Mr. Nguyen Trung Quynh Mr. Nguyen Huy Tuong (Vice Chairman of Hanoi People's Committee)
Number of Staff	122
Organizational Structure	<p style="text-align: center;">Organizational Structure of HHTTP-MB in 2011</p> <pre> graph TD PM[Prime Minister] --> MOST[MOST] MOST --> Chairman["Chairman (1) Mr. Nguyễn Văn Lang (Vice Minister of MOST)"] Chairman --> VC["Vice Chairman (4) - Mr. Phạm Đại Dương (Director ODA PMU) - Mr. Đào Đức Bấy - Mr. Nguyễn Trung Quỳnh - Mr. Nguyễn Huy Tường (Vice Chairman of Hanoi People Committee)"] Chairman --> HHTTP_PMU["HHTTP Infrastructure Development PMU Director: Phạm Đại Dương Permanent Staff: 2 Contract Staff: 6"] Chairman --> Admin["Administration Office (12) Director: Ms. Dư Thị Thanh Hằng VD: Mr. Nguyễn Trung Hà : Permanent staff: 7 Contract staff: 4"] Chairman --> HI["Hi-tech Incubator Center (11) Director: Mr. Nguyễn Đức Long VD: Mr. Phan Đình Bính Permanent staff: 2 Contract staff: 9"] Chairman --> PCE["Planning, Construction and Environment Department (7) Director: Mr. Nguyễn Thế Hùng VD: Mr. Trần Hùng Phong VD: Ms. Trần Ngọc Hà Permanent staff: 9 Contract staff: 3"] Chairman --> TC["Training Center VITEC (13) Director: Mr. Đỗ Văn Bình VD: Lê Việt Dũng Permanent staff: 5 Contract staff: 8"] Chairman --> PAD["Planning & Accounting Department (6) Director: Ms. Phan Thị My VD: Ms. Dương Huyền Trang Permanent staff: 4 Contract staff: 2"] Chairman --> GSC["General Services Center (33) Director: Mr. Đặng Đình Tùng VD: Mr. Đinh Đức Thanh Permanent staff: 2 Contract staff: 31"] Chairman --> IPD["Investment Promotion Division (12) Director: Mr. Trần Đắc Trung VD: Mr. Nguyễn Trọng Hiếu Permanent staff: 9 Contract staff: 3"] Chairman --> PFI["PMU of State Financed Investment Projects (20) Director: Mr. Phạm Tiến Lực VD: Trần Thế Nam Permanent staff: 3 Contract staff: 17"] </pre>
Annual Budget	4,310 hundred million VND (FY2011)
Promotion Activity	Department : Investment Promotion Department Number of Contact Personnel : 12 Director Mr. Tran Dac Trung, Vice Director Mr. Nguyen Trong Hieu Major activities: i) planning and implementation of seminars. ii) hosting delegations/enterprises. iii) backup for tenant enterprises.

Source: JICA Study Team

5.2 Japanese Investor’s Needs Analysis

5.2.1 Trends of Japanese FDI in Vietnam

The accumulated FDI in Vietnam is USD 192.9 billion (12,213 projects), and the FDI of USD 40.8 billion (9,803 projects) has been executed. Japanese investment have shown their huge presence in Vietnam, while Japan is ranked No.4 in terms of accumulated FDI and No.1 on the lists of executed FDI amount by countries.

Table 5.2.1: Accumulated FDI in Vietnam Top 10 (1988-2010)

No.	Countries/Regions	Number of PJ	Aggregate Investment (million USD)	Composition Ratio (%)
1	Taiwan	2,146	22,814	11.8%
2	Korea	2,650	22,133	11.5%
3	Singapore	873	21,723	11.3%
4	Japan	1,397	20,836	10.8%
5	Malaysia	364	18,345	9.5%
6	British Virgin Islands	481	14,450	7.5%
7	U.S.A.	556	13,076	6.8%
8	Hong Kong	606	7,792	4.0%
9	Cayman Islands	52	7,432	3.9%
10	Thailand	238	5,811	3.0%
Total		12,213	192,923	100.0%

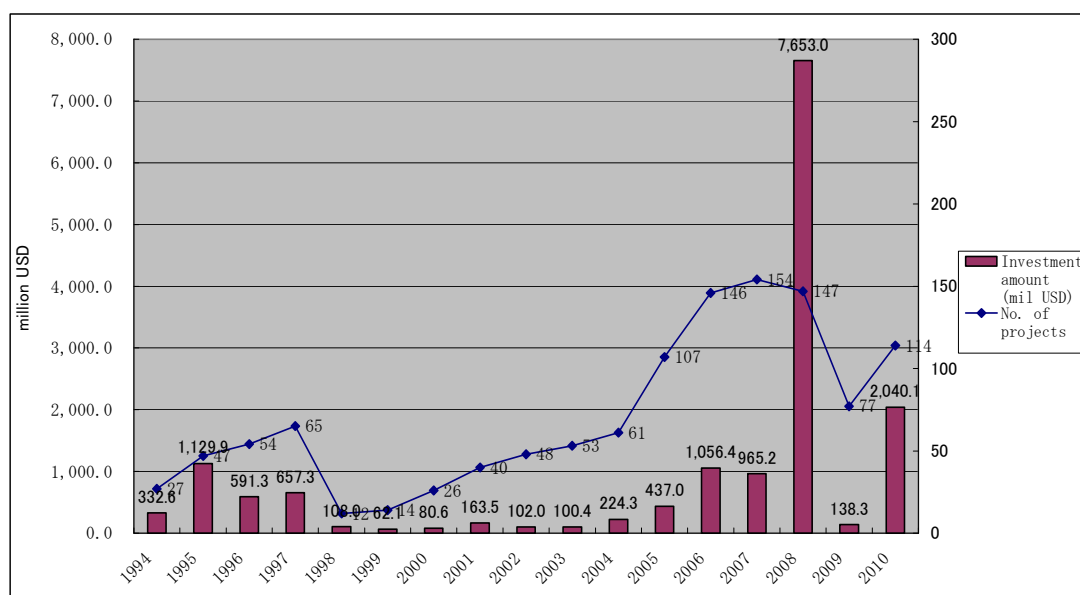
Source: JETRO Hanoi Office (Jan 2011) Summery of Vietnam 2011.

Table 5.2.2: Accumulated FDI Execution in Vietnam Top 10 (1988-2008)

No.	Countries/Regions	Number of PJ	Aggregate Investment (million USD)	Composition Ratio (%)
1	Japan	1,046	5,183	12.7%
2	Singapore	651	3,962	9.7%
3	Taiwan	1,940	3,094	7.6%
4	Korea	2,058	2,812	6.9%
5	Hong Kong	511	2,193	5.4%
6	Netherlands	101	2,030	5.0%
7	British Virgin Islands	404	1,375	3.4%
8	Malaysia	302	1,083	2.7%
9	France	234	1,045	2.6%
10	Thailand	198	835	2.0%
Total		9,803	40,841	100.0%

Source: JETRO Hanoi Office (Jan 2011) Summery of Vietnam 2011.

Taking a look at the trends of Japanese FDI in Vietnam, the result in FY 2009 stayed stagnant at 77 projects (47.6% decrease over the previous year), USD 138.3 million. In FY 2010, the trend turned upward and reached 114 projects, USD 2,040.1 million. In the first half of FY 2011, the performance was 86 projects, USD 303.3 million. The FDI trend was still upward in terms of number of FDI projects.



Source: JETRO Hanoi Office (Jan 2011) *Summary of Vietnam 2011*.

Figure 5.2.1: The Trends of Japanese FDI in Vietnam (Approval Basis)

On the other hand, according to the questionnaire surveys of Japanese companies in FY 2010, Japanese companies demonstrate the high level of their interest on Vietnam from mid-to long-term point of view.

Table 5.2.3: TDB Ranking of Overseas Investment Destination

Ranking	Under review			Not under review but attractive			Total		
	Country	No. of Responses	Composition Ratio	Country	No. of Responses	Composition Ratio	Country	No. of Responses	Composition Ratio
1	China	491	51.3%	Vietnam	1,943	31.9%	China	2,205	31.3%
2	Vietnam	255	26.6%	China	1,714	28.2%	Vietnam	2,198	31.2%
3	Thailand	241	25.2%	India	1,245	20.5%	India	1,383	19.6%
4	India	138	14.4%	Thailand	1,007	16.5%	Thailand	1,248	17.7%
5	Indonesia	106	11.1%	U.S.A.	677	11.1%	U.S.A.	748	10.6%
6	Singapore	91	9.5%	Korea	541	8.9%	Singapore	606	8.6%
7	U.S.A.	71	7.4%	Singapore	515	8.5%	Korea	605	8.6%
8	Korea	64	6.7%	Indonesia	490	8.1%	Indonesia	596	8.5%
9	Taiwan	63	6.6%	Taiwan	480	7.9%	Taiwan	543	7.7%
10	Hong Kong	63	6.6%	Australia	403	6.6%	Anstralia	425	6.0%

Source: Teikoku Data Bank (Feb 2011) *Survey on Trends of Enterprises' Location*.

Table 5.2.4: Mid to Long Term (3 years) Promising Investment Destination Countries (Rate of the Vote)

Year Ranking	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
1	China 82%	China 89%	China 93%	China 91%	China 82%	China 77%	China 68%	China 63%	China 74%	China 77%
2	U.S.A. 32%	Thailand 29%	Thailand 29%	Thailand 30%	India 36%	India 47%	Indo 50%	India 58%	India 58%	India 61%
3	Thailand 25%	U.S.A. 26%	U.S.A. 22%	India 24%	Thailand 31%	Vietnam 33%	Vietnam 35%	Vietnam 32%	Vietnam 31%	Vietnam 32%
4	Indonesia 14%	Indonesia 15%	Vietnam 18%	Vietnam 22%	Vietnam 27%	Thailand 29%	Thailand 26%	Russia 28%	Russia 23%	Thailand 26%
5	India 13%	Vietnam 15%	India 14%	U.S.A. 20%	U.S.A. 20%	U.S.A. 21%	Russia 23%	Thailand 27%	Thailand 21%	Brazil 25%
6	Vietnam 12%	India 13%	Indonesia 13%	Russia 10%	Russia 13%	Russia 20%	U.S.A. 18%	Brazil 19%	Brazil 20%	Indonesia 21%
7	Taiwan 11%	Korea 8%	Korea 9%	Indonesia 10%	Korea 11%	Brazil 9%	Brazil 9%	U.S.A. 17%	U.S.A. 14%	Russia 15%
8	Korea 8%	Taiwan 8%	Taiwan 7%	Korea 9%	Indonesia 9%	Korea 9%	Indonesia 9%	Indonesia 9%	Indonesia 11%	U.S.A. 11%
9	Malaysia 8%	Malaysia 8%	Malaysia 6%	Taiwan 8%	Brazil 7%	Indonesia 8%	Korea 6%	Korea 6%	Korea 6%	Korea 6%
10	Singapore 6%	Brazil 5%	Russia 5%	Malaysia 6%	Taiwan 7%	Taiwan 6%	Taiwan 5%	Taiwan 5%	Taiwan 5%	Taiwan/Malaysia 6%

Source: Prepared by JBIC Questionnaire Survey on Overseas Direct Investment

However, from the short-term point of view, it is widely indicated that the Vietnam's future outlook and its country risks are in the unpredictable situation where Vietnam suffers from potential pressure of inflation, depreciation of Vietnamese Dong, structure of trade deficits, etc. Therefore, the potential investors' anxious feeling about the Vietnamese macro economy might be the obstacles against the managerial

decision-making on Vietnam investments. This is not a matter of which high-tech park to select in Vietnam.

5.2.2 Needs and Challenges of Japanese Companies

Generally, according to the JBIC questionnaire survey FY 2010 and others, the reasons why Japanese companies recognized Vietnam as a mid-to long-term promising investment destination country are the followings: cheaper labor costs, local market’s potentiality to grow, excellent human resources, diversification of other countries’ investment risks, base of operation for exporting to the third countries. In short, the ultimate reason why Japanese companies pay much attention to Vietnam is that they expect cheaper and excellent human resources. They also focus on the potential market and the strategic position of Vietnam in Asian business.

Table 5.2.5: Reasons for Hopeful Vietnam (FY 2010)

(No. of companies that respond: 165)		No. of companies	Ratio
1	Cheap labor-costs	101	61.2%
2	Potential market to grow	101	61.2%
3	Excellent human resources	34	20.6%
4	Diversification of other countries’ investment risks	31	18.8%
5	Base of operation for exporting to the third countries	27	16.4%

Source: JBIC (2010) Questionnaire Survey on Overseas Direct Investment

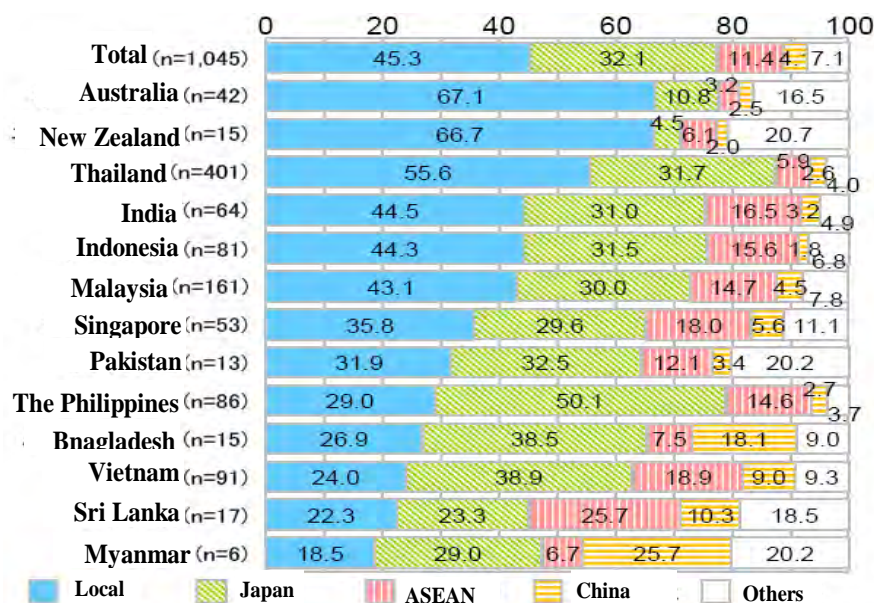
On the other hand, in Vietnam, the Japanese companies have challenges such as undeveloped infrastructure, difficulty of hiring managerial staff and uncertain practices of legal enforcement. They are all significantly important matters related to the fundamental investment environment. As a result, Japanese companies typically pay attention to industrial parks/ high-tech parks where they can enjoy a developed infrastructure and administrative one-stop service.

Table 5.2.6: Japanese Companies’ Challenges in Vietnam (FY 2010)

(No. of companies that respond: 156)		No. of companies	Ratio
1	Undeveloped infrastructure	48	30.8%
2	Difficulty of hiring managerial staff	41	26.3%
3	Uncertain practices of legal enforcement	38	24.4%
4	Increase of labor costs	33	21.2%
5	Tough competition with other companies	31	19.9%

Source: JBIC (2010) Questionnaire Survey on Overseas Direct Investment

In addition, there is a problem on undeveloped supporting industry in Vietnam. According to the JETRO Survey (FY 2009) on the status of Japanese companies located in Asia and Oceania, the rate of local procurement of raw materials/ components is only 24%, which remains lower than the rates of other Asian and Oceania countries. This is one of the critical policy challenges of the Vietnamese government.



Source: JETRO (Jan 2010) Survey on status of Japanese companies located in Asia and Oceania FY2009.

Figure 5.2.2: Raw Materials/ Components Supplying Countries for Japanese Companies in Asia/ Oceania (%)

In Vietnam where undeveloped infrastructure is regarded as the problem, the most important aspect for Japanese potential investors, particularly manufacturers, is the level of foreign investors’ satisfaction with HHTP-MB. While it is critical that HHTP establishes basic infrastructures such as electric power, water supply, physical distribution service and roads, the important evaluation items are as the followings; (i) the possibility to hire excellent and cheaper staff, (ii) the possibility to achieve the sales for domestic demand, (iii) existence of subcontractors for procuring raw materials/ components, and (iv) the possibility to get satisfactorily the investment effect based on the prepared feasibility study. Furthermore, in order for high-tech parks/ industrial parks to encourage the investors’ decision-making on investments, the sense of trust in the developer of high-tech parks/industrial parks may be the key factor. Also the factors to foster such sense of trust are as the followings; (i) successful business results of the developer, (ii) existence of big-name companies in the park, and (iii) the sense of trust in the person whom the investors meet.

5.2.3 Hi-Tech Industries in Vietnam

The possibility to expand business in Vietnam becomes a major concern to Japanese companies, and the critical point to consider is the related industry’s potentiality to grow in Vietnam. In that sense, it is desirable for HHTP-MB to analyze the growth potentiality of targeted high-tech industries and identify the high-priority targets of investment promotion when HHTP-MB makes marketing policy and strategy.

Table 5.2.7: The Situation of Industries in Vietnam connected to Candidate Corporations for HHTP

Business Area	Business Variety	Product	Market Scale	Players (Share)	Japanese Corporations and their Involvement	Outlook
Manufacturing	Automotive	Automobiles	Domestic market 200,000 cars: domestically manufactured 120,000, imported as complete cars 80,000. Market rapidly increasing in size. The sales breakdown is 52% passenger vehicles, 42% goods vehicles.	17 companies. Ranking by number of vehicles sold, among foreign firms Toyota is top, with GM/Daewoo. Ford and Honda are next. Among local firms, Trung Hanoi, Vinamotor, Vinaxuki,	Toyota, Honda, Hino, Nissan, Isuzu, Mitsubishi, Suzuki	From 2018 tariffs on imports of complete cars from ASEAN members will fall to zero. As the establishment of foreign-owned sales companies will also become possible under the WTO treaty, foreign manufacturers will be forced to choose between specialising in selling cars imported from Thailand or similar, or looking at the possibility of export and aiming to increase the scale of production for a limited range of models.
	Motorcycles/ Bicycles/ Tyres	Motorcycles (2 wheels)	Domestic market 3,000,000 units	An oligopoly, where Honda and Yamaha between them make and sell 2,000,000 units. The proportion assembled in Vietnam is increasing (cab type 90%, scooter type 60%). Taiwan's SYM (scooters) and Italy's Piaggio opened local factories in 2009. Engine capacity is almost always 125cc. 70% of sales are cab type, 30% scooter type.	Honda, Yamaha	It will become important to pitch high quality models at the richer consumers in cities who have become able to afford cars.
	Electronic and Electrical Appliances	Telephones and other communication equipment, personal computers and printers, home appliances, televisions and audio-visual appliances, digital cameras	Domestic market 3.7 billion dollars (2008). Telephones/communication 29%, Computers/Printers 26%, Home appliances 23%, TV/Audio-visual 20%, Digital Cameras 2%	Manufacture for export: Fujitsu, Canon, Brother, NIDEC, Mabuchi Motor, Samsung, Foxconn Local manufacturing and sales: Panasonic, Sanyo, Toshiba Sales of imports (or local agent): Sony, Sharp, Hitachi Top-ranked companies by product type: Desktop PC: Compaq; Laptop PC: HP; Air conditioning: Panasonic; Washing machine: Sanyo; Cell phone: Nokia; Refrigerator: Sanyo; LCD TV: Samsung	Sony and Sharp have succeeded in establishing wholly-owned sales companies under the relaxed regulations	The development of a sales network that is long north to south but narrow, and competition with foreign manufacturers are issues. It is also important to strengthen business among young people and in the mass market.
	Shipbuilding	Shipbuilding	Turnover of ships of 23 trillion dong (2008). Vietnam is the world's fifth largest shipbuilder, after Japan, South Korea, China, and the Philippines. There are no national data on the scale of construction, but Vinashin, the dominant company, constructed 470,000DTW in 2008.	There are 16 main shipbuilding companies, of which 12 are in the Vinashin Group. The Vinashin Group accounts for about 80% of total capacity. The company has 30 shipyards, but business problems have become apparent since 2010, due to the global recession. Ship designs are bought from overseas, and almost all engines and other machinery are imported.	Kanematsu orders ships from Japan, and supplies the necessary machinery as a package. Mitsubishi Heavy Industries engaged in technical collaboration on ship engines, and the first Vietnamese-made engine was completed in February 2010. Nakashima Propeller makes nautical screws in Vietnam.	Although Vinashin issue There are expectations for further growth.
	Pharmaceuticals/ Quasi-drugs	Pharmaceuticals	Domestic market 2 billion dollars (2010 estimate), 60% of which is imports. Further, 90% of pharmaceutical ingredients are imported.	Main Domestic Manufacturers: Traphaco Jsc, Company Equipment Health Binh Dinh, Domesco Medical Import-Export Jsc, Imexpharm Corporation, DHG Pharmaceutical Jsc Important Foreign Manufacturers: Sanofi-Aventis Corp, GSK Group, Servier Group	Hisamitsu Pharmaceutical, Rohto Pharmaceutical, and Taisho Pharmaceutical are already active in Vietnam.	As health is a priority, there are high hopes for the entry of foreign companies and further growth. The development of the market for health foods is also possible.
	Cosmetics/ Toiletries		Domestic market 22 trillion dong.	Unilever (30~50% share), Procter & Gamble Vietnam Ltd., Colgate Palmolive Vietnam Ltd., My Hao Cosmetic Co., Ltd., L'Oreal Group (These companies are all located in HCMC.)	Shiseido, Kao, Rohto Pharmaceutical, and Lion are attempting to break into the market.	The market is expected to grow. The challenge is expanding sales to the 70% of the population in rural areas.

Business Area	Business Variety	Product	Market Scale	Players (Share)	Japanese Corporations and their Involvement	Outlook
Communication/ Software	Software	Software	Total sales 670 million dollars (2008). Over the past three years the market has grown at an average rate of 36.9% per year. The market is 40% foreign (offshore development outsourcing) and 60% domestic (SI, ERP services, accounting software development and sales.)	The FPT Group (turnover 1 billion dollars, 2009) members FPT Information System (turnover 170 million dollars, 2009) and FPT Software (turnover 42 million dollars) dominate. CMC Group (turnover 130 million dollars) members CMC Software (turnover 5.35 million dollars) and CMC System Integration (turnover 66.89 million dollars). In addition, there are many small and medium-sized enterprises with under 1,000 employees. VINASA (Vietnam Software Association) has 171 member companies. HCA (Ho Chi Minh Computer Association) has 231 member companies.	According to a survey carried out by the Information-technology Promotion Agency, of Japanese corporations doing offshore developments, 13.9% do it in Vietnam. That is third, behind China (83.8%) and India (15.3%). The attraction is the low personnel costs. There are also opportunities for BPO.	VINASA is continuing to establish domestic standards for IT skills, but improving the level of engineers is still an issue.
	Communication/ Internet	Mobile Phones	There were 74.87 million mobile phone contracts as of the end of 2007. The total sales of mobile phones were 3.2 billion dollars (2008).	Among carriers, the VNPT companies Vinaphone (28.3%) and Mobiphone (29.0%) have seized a 57.3% share. Next is Viettel (controlled by the Defence Ministry) (34.9%). These three companies control 92.2% of the market. All three companies use the GSM system. The fourth-ranked S-Fone has a 6.5% share. As mobile phone companies, there are EVN Telecom and Hanoi Telecom (a national company controlled by the Hanoi People's Committee).	NTT Docomo has become close to VNPT's Vinaphone.	3G service began in 2009. For the future, as there is little prospect of an increase in new subscribers, companies are placing their hopes in earning from 3G data transfer.
		Internet	Turnover 250 million dollars. There were 21.43 million internet users as of May 2009, representing 25% of the population. Only 5% of the population owns a PC. Many use the internet at internet cafes. The proportion of households connected to the internet is 9.2%. 99% of corporations use the internet, of which 92% use ADSL.	There are 66 ISPs. Number 1 is VNPT (63.6% share), followed by FPT Telecom (14.2%), Viettel (12.7%), EVN Telecom (6.1%), SPT (2.0%), and others with 1.5%		Although the problem over Vinashin leaves unpredictable elements, there is room to increase the domestic uptake of the internet.
		Online Shopping	The proportion of corporations with websites increased from 25% (2004) to 45% (2008). Among them, 38% are conducting e-commerce but the proportion is increasing.	Delivery methods used are: own company 55%, collection from shop 44%, delivery company 33%, postal service 17%. Companies offering escrow and electronic payment services have appeared. Corporations selling directly online or offering electronic malls have also started up, and the number of accesses and total sales are increasing.		Further growth in online shopping is expected. The issues are payment and delivery.
		Digital Contents/ Mobile added value services	Sales of digital content were 700 million dollars (2009, 59% increase from the previous year). Online games, ring tones, and wallpapers are the main products. The market for online games is about 120 million dollars. Vingame has half of the market.	VMG (30% owned by VNPT) (20% share), followed by VTC (Ministry of Information & Communication controlled), BlueSea (private) and Dong Ha (private)	Cyberagent has invested in WEBGAME.VN, Vietnam Price and others	With the introduction of 3G, there are high expectations for value added services on mobile phones.

Business Area	Business Variety	Product	Market Scale	Players (Share)	Japanese Corporations and their Involvement	Outlook
Finance	Banks	Banks	The total asset of credit institutions was 2,536 trillion, 397 billion dong as of August 2009. Bank deposits were 1,497 trillion 837 billion dong as of June 2009. The banking market is expanding.	There are 4 large state-owned banks (50% share of asset), 40 privately-held banks, 5 that have merged with foreign groups, 5 purely foreign-owned banks, 30 branches of foreign banks, and others. With the overall loan-deposit ratio of banks over 90%, the liquidity of the inter-bank financing market is low. It is difficult to respond to growing demands for capital. Interest rate competition to secure deposits is becoming fierce. Floated private banks such as ACB and Sacombank have accepted foreign banks as strategic investors, are putting their energy into absorbing skills in credit risk assessment, retail banking, and financing for small and medium enterprises, and aggressively pursuing income from handling fees for services other than loans.	Among Japanese banks, all the megabanks have branches operating in Vietnam. Sumitomo Mitsui Banking Corporation has invested in Eximbank.	It is thought that the delayed conversion of BIDV, the Bank of Investment and Development of Vietnam, will be realized, and the Bank is likely to accept strategic investors. Under a macroeconomic policy imposing limits on lines of credit and strengthening the supervision of banks, the issues are developing new products, increasing income, and strengthening risk management. Note that the field of finance leases is undeveloped, and has room for expansion.
	Insurance	Life insurance/ General insurance	The insurance market is 21 trillion 253 billion dong. Within that, life insurance is 10 trillion 303 billion dong, general insurance is 10 trillion 950 billion dong. The average annual rate of growth from 2002 to 2008 was 16% for life insurance, 27% for general insurance. In life insurance, policies that serve as savings for old age are more popular than those offering death benefits. In general insurance, car and motorbike insurance is 40%, marine insurance 30%, and fire insurance 20%.	11 life insurance companies, 27 general insurance companies Life insurance market: Prudential Vietnam (41% share), Bao Viet Life (33%), Manulife Vietnam (10%), AIG (6%), Dai-ichi Life Insurance of Vietnam (6%), Ace Insurance (3%) General insurance market: Bao Viet Insurance (31%), PetroVietnam Insurance (17%), Bao Minh Insurance (17%), Petrolimex Insurance (10%), PTI (4%).	Dai-ichi Life Insurance, Sumitomo Life (joint venture with Vietnam Bank for Agriculture and Rural Development), Tokio Marine & Nichido Fire Insurance, Mitsui Sumitomo Insurance, Sompo Japan, Aioi Insurance	The level of life insurance holdings is 11% (4.6% if multiple policies on a single person are taken into account). Life and general insurance make up 2% of GDP. In general insurance, marine insurance and similar needs are growing. Increased competition is predicted, but continued growth in the business is expected.
	Funds/ Securities Companies	Funds	As the securities market appears, the industry is taking shape.	100 Securities companies Main funds: US/European based: Dragon Capital, Indochina Capital, Mekong Capital, BankInvest, Vietnamese based (including expatriates): Vina Capital, Saigon Investment, IDG Ventures	Among Japanese funds, Daiwa SMBC Capital, Dream Incubator Vietnam, Mitsubishi UFJ Capital, JAIC, and SBI are active.	The importance of investment by funds in Vietnam is important for several reasons: the low level of mutual stock holdings between companies such as banks, the lack of development of the securities market, and the fact that access to capital is difficult due to the small size of the Chinese expatriate network.

Sources: JETRO (July 2010) *Analysis of Vietnamese Industry*, Viet-Kabu.com (August 2010) *Vietnamese Stock Companies Data 2010*.

5.2.4 Implications Obtained from the Interview with Japanese Companies

In order to understand the concrete needs and challenges of Japanese companies, the Study Team has visited 10 Japanese companies including existing tenant companies in HHTP and venture businesses that have started to prepare for investments in Vietnam. In addition, the Study Team has exchanged views with JETRO Hanoi Office and HCMC Office, accounting firms and consulting firms. The implications on Japanese companies' potential needs and challenges obtained from the interview are described as follows:

- Two venture businesses have started to prepare for investments in Vietnam. Both of them focus on HCMC, mainly because their business partners are located in HCMC. They didn't know the existence of HHTP when they started getting general information on Vietnam investment over the internet. This implies that website is the important tool for Japanese companies' information collection on Vietnam.
- In order to improve the brand value of HHTP, it is effective to attract brand-name global enterprises. At the same time, it would be helpful to the HHTP branding to fulfill “incubation function” that creates new industries by enhancing venture businesses (both Vietnamese and Japanese).
- For example, there is a venture business of electric-powered motorbike manufacturer. Overlaying the eco image of “electric-powered motorbike” and motorbike image of “Vietnam”, introduction of electric-powered motorbike circulating system could contribute to the improvement of HHTP brand. The company has already started looking for some suppliers of materials/ components in HCMC and surrounding area, and it plans to invest in an industry park near HCMC. But there is the possibility that HHTP will collaborate with the company in the field of electric-powered motorbike development & design and work together for the introduction of electric-powered motorbikes in HHTP.
- Another venture company of websites-making & consulting has been interested in Vietnam, because the company needs a lot of staff for the lower process of website-making and Vietnam has cheaper labors (approximately 70% of Chinese labor costs) and looks attractive for offshore outsourcing of software development. The company is planning to establish a base of offshore outsourcing of software development and later find out business chances in the Vietnamese potential market. The ICT industry is on the primitive stage in Vietnam (The market scale is USD 1.8 billion). The indicators on ICT industry remain at a lower level comparing to neighboring countries such as Singapore, Malaysia, China, etc. However, the growth rate is pretty high in Vietnam. In the software service industry, the market scale of USD 0.36 billion in 2006 reached USD 1.58 billion in 2009. The market increased by 3.3 times in the recent 3 years. Diffusion ratio of internet increased rapidly, which shows the growth potentiality as an emerging market. According to the latest statistics, there are 21.43 million internet users, representing 25% of the population. Only 5% of the population owns a PC. Vietnam has a lot of internet café users characteristically, and proportion of households connected to the internet is 9.2%. 99% of corporations use the internet, of which 92% use ADSL. There are 74.87 million mobile phone subscribers as of end-2008, and the total sales of mobile phone reached USD 3.2 billion in 2008. In terms of e-commerce, the proportion of corporations with websites increased 25% (2004) to 45% (2008). Among them, 38% are conducting e-commerce but the proportion is increasing. In terms of e-settlement, there are some new companies that provide with escrow services and e-settlement services. There are some emerging companies that increase their sales and access number by providing with on-line shops and e-malls. Although e-commerce is expected to grow, the main problems remain on settlement and delivery. The total sales of digital content industry is approximately USD 0.7 billion in 2009 (59% increase from the previous year), which mainly include the sales of online game, ring tones of mobile phone and wallpapers of mobile phone. With the introduction of 3G, there are high expectations for value added services on mobile phone. The market of website-making/ consulting/ mobile-related business is potential to grow and it is the business field where the

Japanese venture company will be able to show its competitiveness. Supporting potential Japanese venture companies could contribute to HHTP branding.

- JETRO has been recognized as a gateway to Vietnam. Comprehensive business support is necessary for Japanese companies, in particular, less experienced SME managers/ persons in charge of overseas investments. If the window of industry parks can provide with such comprehensive business support services, it would be advantageous to a certain extent.
- International-standard accounting/tax services are also important for the Japanese companies' secure investment in Vietnam. In particular, in case that the affiliate company in Vietnam is the company adopting consolidated accounting, the role of accounting firm is essential. The person in charge of investment promotion at a high-tech park would be required to build networks to introduce such experts.
- It is indicated by the Japanese tenant companies of HHTP that the common challenges of HHTP include the followings; (i) further development of infrastructures, and (ii) simplification of approval process. Although the interviewee Japanese companies have wide experiences of overseas investments, the approval documentation and preparation for the HHTP Council seem to be a heavy burden to them. Assistance by a Japanese advisor would be essential for the Japanese companies trying to invest in HHTP in the future ahead.

5.3 Survey on Existing Similar Industrial Parks in Vietnam

5.3.1 Industrial Parks in Vietnam

According to the JERI (2011) Survey on Industrial Parks on Vietnam, Thailand and Indonesia, there are 260 industry parks in Vietnam as of end-2010, which have developed land of 71,394 ha including leased land of 45,854 ha, and the occupancy rate is 46.0%. In the south region (8 provinces and 2 centrally-controlled cities), there are 132 industry parks (50.8% of total number), and 39 industry parks (15.0% of the total number) in the north region (5 provinces and 2 centrally-controlled cities).

5.3.2 Current Situation of Existing Similar Industry Parks

In the field survey, the Study Team has investigated the following six (6) industrial parks and one (1) urban development project. The outline of those similar industrial parks as described in the Table 5.3.2.

Table 5.3.1: Lists of Surveyed Similar Industrial Parks

Area	Name	Address	TEL
North	Thanh Long Industrial Park	Dong Anh District, Hanoi	04-3881-0620
	VSIP Bac Ninh Industrial Park	No.1, Huu Nghi Bluevard, VSIP Bac Ninh, Tu Son District, Bac Ninh Province	0241-3765-668
	Que Vo Industrial Park	Phuong Lieu Commune, Yen Phong District, Bac Ninh Province	0241-3634-034
South	Saigon High-tech Park	D1 Street, Hanoi High Way, Tan Rhu Ward, District 9, HCMC	08-3736-0293
	Quang Trung Software Park	Quoc lo 1A, Phuong Tan Chanh Hiep, Quan 12, HCMC	08-3715-5055
	Tan Duc Industrial Zone	Lo 8, Duong Du Hoa Ha, KCN Tan Duc, Huyen Duc Hoa, Long An Province	0723-761-821
Middle	FPT City Danang	Building FPT, An Don Industrial Park, Ngo Quyen Street, Son Tra, Da Nang	0511-3913913

Source: JICA Study Team

Table 5.3.2: The Outline of Similar Industrial Parks in Vietnam

Name	Saigon Hi-tech Park	Quang Trung Software City	Tan Duc Industrial Zone	Que Vo Industrial Park
Overview and Specialty	One of three biggest high-tech parks in HCMC. Strong support from the Government. Hard conditions for being a tenant but incentives (preferential taxation). Close connection with HCMC People's Committee. Electric custom system. Incubation facility for ICT, Bio-technology, Nanotechnology, etc. (now leasing). In the coming year, the Park focus on marketing of Phase II.	One of the most famous software parks in HCMC. Incubation facility is enhanced mainly operated by Quang Trung Software Business Incubator Co., Ltd. Inviting target number is 150 tenant companies and 20,000 people.	24H electric power guaranteed.	The Park was developed by a private company established in 2003 and expand its business since then. There are 8 industrial parks in the North of Vietnam. The specialty of the Que Vo IP is to provide a supporting industry zone (leasing factory).
Plan of Eco-City/ Smart Community (Y/N) and its outline (player, purpose, outline, competitiveness, technical problems, etc)	N	N	N/A	N
Promotion Activity and Follow Up	Focus on high-tech industries. Investment promotion supported strongly by the local government. One-stop Service.	One-stop Service	N/A	One-stop Service
Website	www.shp.hochiminhcity.gov.vn	www.quangtrungsoft.com.vn	www.itaexpress.com.vn	www.kinhbaccity.com
Business Proprietor	100% Government Operation (Government and Ho Chi Minh City People's Committee)	100% Quang Trung Software City (Ho Chi Minh City People's Committee)	100% private (Tan Duc Investment <100% subsidiary company of Tan Tao Group-)	100% private (Kinh Bac City Jsc <affiliate company of Saigon Investment >)
Business Form	High-tech Park	High-tech Park	Industrial Park	Industrial Park
Year of Start	2002	2001	2007	2002
Total Developed Area	913 ha (The area for sale : 913ha)	36ha	1,159 ha (The area for sale : 1,059ha)	640 ha (The area for sale : 640 ha)
Ratio of Sold Area	Sold Out at Phase I	Sold Out	35% (375 ha)	62% (396 ha)
Minimum Dimension	Unregulated	—	N/A	5,000 m2, 1,000 m2 as for Japan-Vietnam Supporting Industry Zone (space for 15 projects, but no tenants).
Developed Area of Phase I	300 ha (Industrial sites were sold out. Remaining site for research is 10 ha)	36ha	—	340 ha
Developed Area of Phase II	613 ha (60% of total area for production since 2012) 613 ha	7ha (Scheduled to be completed 2012)	—	300 ha
Developed Area of Phase III -	—	—	—	—
Location	Adjacent to Route 1	Near the Tansonghat International Airport	HCMC border with Province Route 825 (Route 10) . Close to residential area. Close to Duc Hoa Town. 15 km by Route 830 from Ben Luc Town.	Adjacent to Route 18
Distance to the center of city	15km from the Center of Ho Chi Minh City (30min.)	30km from the Center of Ho Chi Minh City (60min.)	20km from the Center of Ho Chi Minh City (30min.)	35km from the Center of Hanoi (60min.)
Distance to the center of International Airport	18 km from the Tansonghat International Airport (25min.)	10 km from the Tansonghat International Airport (15min.)	20 km from the Tansonghat International Airport (30min.)	33 km from the Noi Bai International Airport (50min.)
Other	12 km to the port of Saigon	—	25 km to the port of Saigon	110 km to the port of Hai Phong
Ground Condition (Soil Bearing Capacity)	N/A	N/A	N/A	Solid / No pile foundation construction necessary for flat buildings
Customs Clearing (Y/N)	Y: Electric custom system	N	Y	Y
Land leasing (Rents)	Phase I: 55 USD/m2	5.5 USD/m2/month~6.5 USD/m2/month(excluding VAT)(QTSC office building) , 13 USD/m2/month (excluding VAT)(Anna office building), 11 USD/m2/month (excluding VAT)(Helios office building)	70 - 90 USD/m2	63 - 80 USD/m2
Administration Cost (Y/N)	Y: 0.48 USD/m2/year	N (Included in the rent for the office)	Provided for Stipulation of Long An Province Industrial Zone Management Committee	Y: 0.3 USD/m2/year
Payment Method	10 % deposit at the contract for land leasing. 40% payment when getting the investment license. Remaining 50 % payment will be made within 3 - 5 years.	Monthly Payments	Flexible way of payment for investors	40% deposit at the contract for land leasing. 60% payment when getting the investment license.
Lettable Factory (Y/N)	Y	Y: Retail office, minimum space is 16 m2		Y: land site 5,000 m2, 3-3.5 USD/m2/month
Power Supply	15/22KV-63MVA	Public Electricity	110KV (via Electric Exchange 110KV/22KV), Total amount 2x63MVA by low-voltage line	110KV/22KV (Supplied by EVN)
Industrial Water (Supply Quantity)	9,500 m3/day (It will be expanded to 24,300 m3)	3,600 m3/day	48,000 m3/day	10,000 m3/day
Industrial Water (Water Rate)	6,700 VND/m3	8,000 VND/m3	4,000 VND/m3	7,500 VND/m3
Sewerage (Throughput Capacity)	5,000 m3/day (It will be expanded to 20,000 m3/day)	1,300 m3/day	9,000 m3/day	10,000 m3/day
Sewerage (Disposal Cost)	0.24 USD/m3	—	N/A	4,286 VND/m3
Communications Infrastructures	Metropolitan Area Network	HCMC Communication Company	HCMC Communication Company	1,000 Telephone Linkage
Facilities	R&D Center, Incubation Center, Training Center, Post Office, Fire Station, Police Station	Bank, Post Office, Restaurant, Bus, Dwelling houses for Specialist, Kindergarten, One-stop Service	Park (10 ha), Restaurant, Hotel, Hospital, College, and many other public and entertainment services	Commercial Facility, 14 Industrial Training School in the neighborhood (Welding, Metallic Mold, Lathe, Foreign Language, etc.), Dormitory House for Workers (10,000 capacity), Staff Agency, Bonded Warehouse, Bac Ninh Hospital (7 km from the IP)
Occupancy State (By Country)	54 companies (25 Vietnamese companies, 4 American companies, 5 Japanese companies, etc.)	104 companies (50 Vietnamese companies, 9 Japanese companies of 54 foreign companies)	17 companies (3 Japanese companies, 2 Korean companies, 2 American companies, 1 German company and 1 Vietnamese company)	57 companies including 10 Japanese companies
Main Tenant Companies	Intel (U.S.A.), Jabil (U.S.A.), Nidec Corporation, Nidec Sanyo, Nidec Servo Vietnam Corporation	Global Sybersoft, Digitexx, Worksoft	SONGWOL (Korea)	Canon, Nippon Steel Trading, Toyo Ink Compounds VN

*“Hoa Lac Hi-Tech Park Infrastructure Development”
Special Assistance for Project Implementation (SAPI)
Final Report*

Name	VSIP Bac Ninh Industrial Park	FPT City Danang	Thang Long Industrial Park	Hoa Lac High-Tech Park
Overview and Specialty	Singapore Government has taken the initiative in developing and supporting previous business results such as VSIP, VSIP II, VSIP Binh Duong. In the North of Vietnam, it has developed Bac Ninh and Hai Phong. In Bac Ninh, the target number of attracting tenant companies is 200. Recently NOKIA has made a decision on the investment in the VSIP Bac Ninh IP.	Plan to build a town on the concept of smart infrastructure and eco.	One of the most successful IP of attracting Japanese investors. The Park has recently provide follow-up services by "Park Concierge".	The first high-tech park in Vietnam that has been supported by the Japanese Government, JICA, Misui Co. In Nov 2006, MOST has signed MOU on cooperation of investment promotion with Misui Co., Misui-sumitomo bank, Misui-sumitomo Insurance. FPT has established "PFT Hoa Lac High-tech Park Development", which is constructing FPT software park. The population of the Park will be targeted to 143,500 in 2015 from 11,100 (June 2008), and aspire to becoming Silicon Valley and Bangalore.
Plan of Eco-City/ Smart Community (Y/N) and its outline (player, purpose, outline, competitiveness, technical problems, etc)	Hai Phong has new vision of river front comprehensive development.	Has discussed with some companies that have green technologies, but it would take more time to make ideas concrete projects.	N/A	—
Promotion Activity and Follow Up	One-stop Service	—	One-stop Service	None One-stop Service, Referral through VITEC
Website	www.vsip.com.vn	www.fptcity.vn/home/	www.tlpl.com	www.hbtp.gov.vn
Business Proprietor	VSIP Bac Ninh Co., Ltd. (JV: VN State-owned Becamex, Singapore Sembcorp) *Mitsubishi Corporation has invested indirectly.	FPT Group	Thang Long Industrial Park Corporation (VN: State-owned construction company 42%, Japan: Summit Global Management II <100 % subsidiary company of Sumitomo Corporation> 58%)	Hoa Lac High-tech Park Management Board (controlled by MOST)
Business Form	Industrial Park	Industrial Park	Industrial Park	High-tech Park
Year of Start	2009	—	2007	1998
Total Developed Area	500 ha (400 ha for sale)	181.6 ha (181.6 ha for sale)	272.5 ha (207.06 ha for sale)	1,586 ha (1,278 ha for sale)
Ratio of Sold Area	60%(240 ha)	—	Sold Out	High-tech Industry Zone: 15.7%, Software Zone: 23.1%
Minimum Dimension	1 ha	—	1 ha	Unregulated
Developped Area of Phase I	310 ha (240 ha for sale)	—	121 ha (68.89 ha for sale)	—
Developped Area of Phase II	190 ha (160 ha for sale)	—	73 ha (61.93 ha for sale)	—
Developped Area of Phase III -	—	—	78.5 ha (56.24 ha for sale)	—
Location	Adjacent to Route 1A	Near the Da Nang International Airport and the area there are a number of side-by-side resort hotels.	10km from Route 18	Adjacent to Route 21 and Lang-Hoa Lac Highway
Distance to the center of city	30km from the Center of Hanoi (60min.)	5km from the Center of Da Nang (10min.)	16km from the Center of Hanoi (25min.)	30km from the Center of Hanoi (45min.)
Distance to the center of International Airport	40km from the Noi Bai International Airport (60min.)	5km from the Da Nang International Airport (10min.)	14km from the Noi Bai International Airport (20min.)	47km from the Noi Bai International Air Port (70min.)
Other	120 km to the port of Hai Phong	—	130 km to the port of Hai Phong	100 km to the port of Hai Phong
Ground Condition (Soil Bearing Capacity)	Consolidated paddy field by earth fill	N/A	Solid / No pile foundation construction necessary for flat buildings	No pile foundation construction necessary for flat buildings.
Customs Clearing (Y/N)	Y	N/A	Y: North Thang Long Tax Office	Y
Land leasing (Rents)	Negotiable	Negotiable	N/A	40 - 60 USD/m2
Administration Cost (Y/N)	Y: 0.21 USD/m2/year	—	N/A	N (included in the rent for the land)
Payment Method	Flexible way of payment for investors	—	N/A	—
Lettable Factory (Y/N)	Plan to provide with site of 2,000 m2	—	Y: 500 m2, 11 Rooms	N
Power Supply	110KV/22KV (Supplied by EVN)	110KV/22KV (Supplied by EVN)	22KV, Underground installation	Supplied by EVN. 2 electric power substations (No.1 : 63MVA x 3 • Voltage 110/22KV, No.2: 40MVA x 2 • Voltage 110KV)
Industrial Water (Supply Quantity)	30,000 m3/day	—	50,000 m3/day (Water purifying facility funded by Japanese ODA)	4,500m3/day (Right to take 60,000m3/day from Da River)
Industrial Water (Water Rate)	0.31 USD/m3	—	0.72 USD/m3	0.30 USD/m3
Sewerage (Throughput Capacity)	24,000 m3/day	—	38,000 m3/day (Effluent processing facility funded by Japanese ODA)	2 facilities for sewage disposal (Both disposal capacity is 34,000m3/day) .
Sewerage (Disposal Cost)	0.19 USD/m3	—	0.24 USD/m3	0.38 USD/m3
Communications Infrastructures	Set up by each tenant company	Fiber-optic Network Accessible	Fiber-optic Network Accessible	1,500 Telephone Linkage/ Internet : VNPT, VIETTEL, EVN
Facilities	Bank, Logistics Park (Mapletree), Police Station, Planned urban area next to the Park (200 ha)	Adjacent to International School (SIS), American University (APU), Da Nang International Hospital, Golf courses and Beach. Planning to attract schools, convenience stores, department stores, residence) in the City.	Bank, Logistic system (Dragon Logistics), Bonded Warehouse, Post Office, Clinic, Japanese Restaurant (Hotaru), Police Station, North Thang Long Univ. (1.5 km from HHTP), Public Bus (50/day), Dormitory House for Workers (12,000 capacity), Kindergarten	Bank, Logistic system (Vinaline Logistics JSC). Clinic, Police Station (scheduled for construction). None public bus, dormitory houses for workers, educational institution for workers children.
Occupancy State (By Country)	32 companies including 10 Japanese companies	—	88 companies including 80 Japanese companies	17 companies. * 52 licensed companies including 3 Japanese companies.
Main Tenant Companies	Daichi Denso Buhin, Fujita Corporation	—	Canon, DENSO, CHIYODA INTEGRE	Viettel Electronics Design, FPT Digital Content, NOBLE, Vina-sanwa, Vinagame

5.3.3 Implications from Investment Promotion Systems of Existing Similar Industry Parks

The interview survey with similar industrial parks in Vietnam shows some implications as follows:

- Assuming that Saigon High-tech Park and others are competitors, it is important for HHTP to provide with the information on IT human resources and make a differentiation strategy.
- It would be effective to attract brand-name companies such as “Intel” in Saigon High-tech Park and “Canon” in Que Vo Industrial Park. Other brand-name companies following “Nissan Techno” would be highly expected to invest in HHTP.
- The most critical factors of Japanese companies’ decision-making on Vietnam investments are “sense of security” as well as comparative cost competitiveness. HHTP should consider about what create “sense of security”. For example, successful business results of industrial park developer, investor’s feeling of trust in the person in charge of marketing/ promotion, fullness of infrastructure, etc. It might not be sufficient to advertise “One-stop Service” with exaggerated praise and provide with beautiful marketing tools (website, pamphlet). The key factors for potential Japanese investors are the feeling of trust in the person they contact and the expectation of backup.
- The person at the HHTP window should be a Japanese speaker, if HHTP wants to attract Japanese investors. A Japanese person in charge of the HHTP window is quite helpful especially for Japanese SME managers who do not have experiences of Vietnam business. This could create “sense of security” for Japanese managers. It may be effective for HHTP to have a Japanese advisor who can support Japanese investors at HHTP.
- Attractive marketing tools such as website, pamphlet, etc. are necessary for the first step of attracting Japanese investors. If the marketing tools are not excellent, that might spoil the Japanese companies’ interest in HHTP on the first stage of investment decision-making process. Although the marketing tools are not related directly to the investor’s final decision-making on investment, HHTP should at least prepare the marketing tools of minimum quality.
- HHTP-MB has 63 enterprises/ institutions (559.4 ha) that have already sent the letter of interest and/or signed MOU with HHTP-MB. They mainly include Vietnamese enterprises/ institutions and 8 foreign enterprises/ institutions (Taiwan 3, Japan 2, Korea 1, China 1). HHTP needs to attract those candidate investors steadily by doing the follow-up activities to avoid the change of their investment mind.
- 57 tenant companies of Que Vo Industrial Park include 10 Japanese companies in operation such as Canon, Nippon Steel Trading, Toyo Ink, etc. The Park has Supporting Industry Zone that provides with the leasing factories for 15 companies. As of today, there are not tenant companies in the Supporting Industry Zone. Comparing to the case of Amata Nakorn Industrial Estate in Thailand, the factory space per land plot is too large in the zone (It was 5,000 m² initially. Now it is 1,000 m²). That might be the reason for the slump of the Supporting Industry Zone. From mid-to long-term point of view, it might be an idea to attract supporting industries and suppliers of components/ parts in order to attract Japanese companies widely.
- The function of “one-stop business support” including investment approval process support and investment follow-up activities would be highly required. The key for successful investment promotion will be to strengthen the organization/ systems and hire necessary human resources.

5.4 Advices on Business Policy and Strategy

5.4.1 Strengthening of the Function of Hi-Tech Business Incubator (HBI)

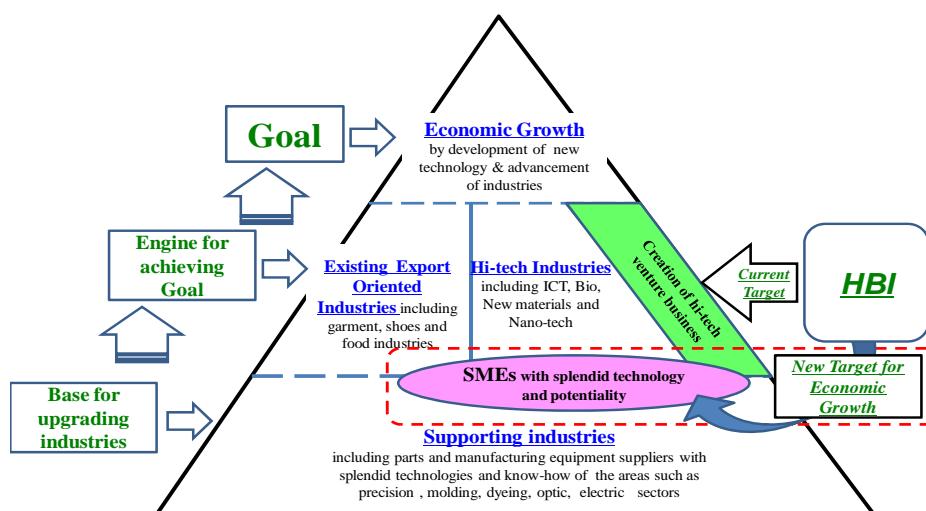
It is recommended strengthening the function of the HBI as follows:

(1) Background

- In the similar industrial parks, the concept of both “one-stop business service” and “incubation center for venture businesses” are well known in Vietnam, but there is not an international and full-scale incubation center where investment promotion and cross-border business alliances of Vietnamese and foreign companies can be accelerated.
- HBI in HHTP was established in December 2006, with current number of staff of 13. The targets for assistance are not only entrepreneurs who spin off from universities and big businesses but also venture businesses that have the business record of less than two years. The priority technologies include Information and Communication Technology (ICT), Bio, new material and nanotechnology.
So far, HBI has supported 12 business entities in total, including 3 entities was already left. The details of the 12 entities are classified as 4 bio-related companies, 6 ICT companies and 2 entrepreneurs in the ICT business field.
The services includes; (i) leasing office space, (ii) business consultation, (iii) assistance in product commercialization, (iii) networking, and (iv) financing. In terms of the business alliances with external organizations, HBI has some business partners such as Vietnam Academy of Science and Technology (VAST), Vietnam Training and Examination Center VITEC (VITEC), National Office of Intellectual Property of Vietnam (NOIP), University of Engineering and Technology, Vietnam University of Science (Vietnam National University, Hanoi (VNU)), and IDG Ventures Vietnam (IDGVV: the first technology venture capital fund in Vietnam).
- HHTP-MB (Investment Promotion Dept.) has a business idea about the establishment of “one-stop business center” from the perspective of investment promotion.
- In Vietnam as “a middle developing country” where the incomes per capita exceeded USD 1,000, new industrialization strategy has been highly expected. Vietnam has faced a dilemma where it would suffer from huge trade deficits by increasing exports. In terms of garment and shoes, there are some reasons for the dilemma: (i) It rely on the import of textile and machinery, and (ii) Quality and design of products are not competitive internationally and lower value-added.
In order to solve such an obstacle, Vietnam would need to foster; (i) petroleum chemistry and textile industry for manufacturing raw material, (ii) industrial machinery and mold/precision machine, and (iii) dyeing and design industry to produce value-added products. Those should be recognized as “strategic supporting industry” necessary for the growth of the Vietnamese economy. However, generally in Vietnam, only subcontractors of garment, shoes, food-processing industries are classified as so-called “supporting industry”. If the Vietnamese government takes a policy of economic growth and upgrading of industrial structures, it would be necessary to develop companies that have the technologies such as industrial machinery, mold, precision machine, dyeing, and design. Those technologies and industries would be necessary in the hi-tech industries field. In that sense, the target for assistance should focus widely on “industries providing with goods/services supporting hi-tech industries”.
- According to the questionnaire surveys of Japanese companies in FY 2010 done by JBIC, the Japanese companies demonstrate the high level of their interest on Vietnam from mid-to long-term point of view. On the other hand, in Vietnam, the Japanese companies have challenges such as undeveloped infrastructure, difficulty of hiring managerial staff and uncertain practices of legal enforcement. In particular, there is a problem on undeveloped supporting industry in Vietnam. From the macro-economic point of view, it is predicted that Vietnam will continue to suffer from potential pressure of inflation, depreciation of Vietnamese Dong, and structure of trade deficits. Therefore, it is expected that the Vietnamese authority shall control to avoid sudden depreciation of Vietnamese Dong.
- It would contribute to the branding of HHTP and investment promotion, if HHTP focuses on not only hi-tech industry but also related supporting industries and fulfill an “international

incubation facility” to create new industries by attracting technology-oriented Vietnamese and Foreign SME and/or venture businesses.

- In HHTP, window or desk for supporting Foreign companies with a reliable and experienced foreign advisor would be quite necessary, such as Japan-Desk.



Source: JICA Study Team

Figure 5.4.1: The Enhancement Concept of HBI Function

(2) Objectives

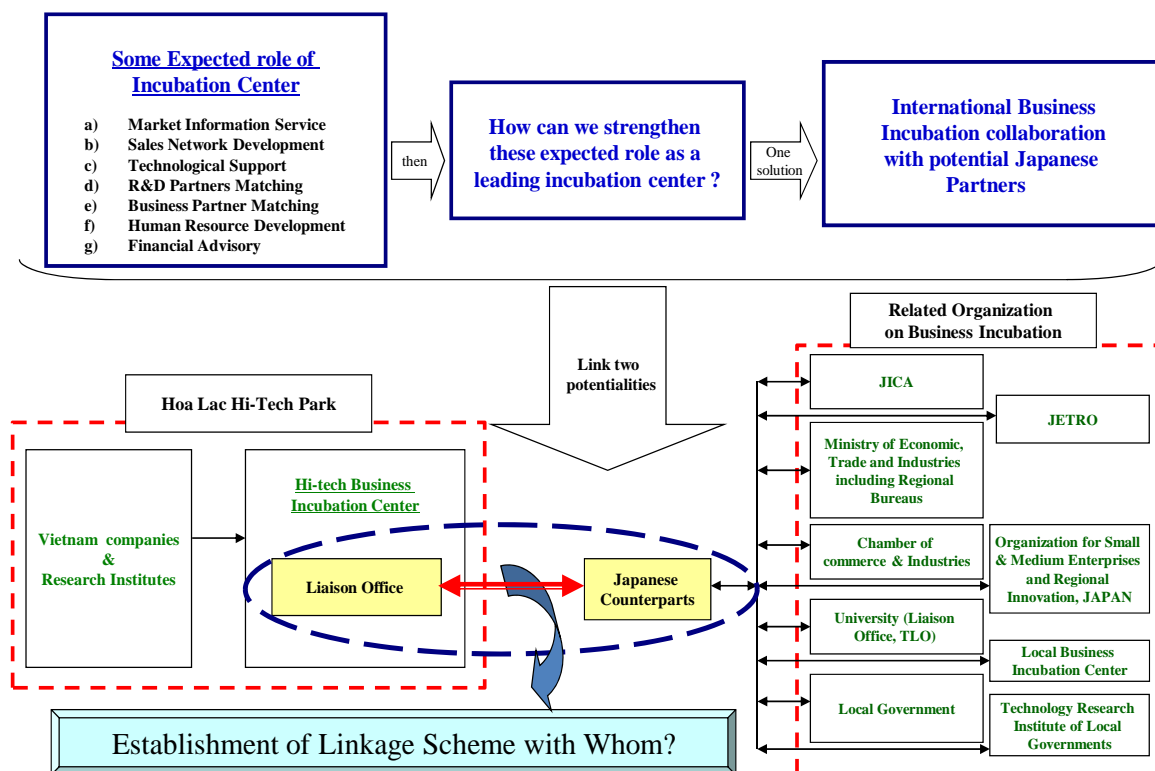
- Increase the brand value of HHTP.
- Enhance the beneficiaries for tenant companies.
- Attract technology-oriented Foreign SME/ venture businesses.
- Foster “strategic supporting industry” to remedy trade deficit structure.
- Contribute to the development of Hi-Tech industries in Vietnam.

(3) Services

- Foster the Vietnamese entrepreneurs and venture businesses by strengthening of the existing function by adding some talented staff.
- Full-scale business support for Foreign entrepreneurs/SME/venture businesses that are categorized as hi-tech industries and supporting industries (as a new service).
- Business matching service for Vietnamese and Foreign entrepreneurs/venture businesses (as a new service).

(4) Implementation Plan

- Employment of business consultant and/or concierges.
In total three (3) experts are recommended, and introducing flexible and better working conditions.
- Assignment of foreign advisors in the liaison office of HBI, which consists of one (1) full-time expert and two (2) part-time experts, with qualifications of; (i) more than two (2) years working experiences in Vietnam, (ii) capable in assistance of investment license application, (iii) reliable and kind, (iv) wide human network for Vietnamese and Foreign business communities, (v) communication skills including English and/or Vietnamese proficiency, and (vi) experiences in business incubation and/or venture business support.
- Cooperation between strategic foreign agencies, such as JICA, JETRO, Japan Chamber of Commerce for Japanese agencies.
- Implementation period: April 2012 to March 2014 (2 years).



Source: JICA Study Team (Nov 2011)

Figure 5.4.2: Proposed Idea on Implementation of HBI (for Japanese Case)

5.4.2 Improvement of Marketing Tools

(1) Necessity of Improvement of Pamphlet and Website

Considering the market demand which commonly will start to research the investment direction from internet, the simple and attractive website which can give a good impression is necessary.

As other important marketing tools, the handing over material, such as pamphlet and brochure, also necessary to simplify the information by limiting only for required data by the investor, and have a good design to makes a good impression.

(2) New Pamphlet as for the “Introduction”

The Study Team has recommended that HHTP-MB prepare a new compact pamphlet including the following contents as minimum information commonly required by the investors’.

- Why Vietnam: *as one of the most promising investment destination countries for tenants*
- Why HHTP: *an ideal destination for local and overseas hi-tech tenants*
- Costs of Doing Business in HHTP: *cost-competitiveness of HHTP*
- Procedure of Doing Business: *how to start doing business in HHTP?*
- HHTP Infrastructure
- Contact

The Study Team prepared three (3) options (see Figure 5.4.3 and 5.4.4) for the design of new pamphlet. Based on the discussion with HHTP-MB, one alternative was selected for forepart printing by JICA Study Team and prepare both in English and Vietnamese. However, design data (English version only) for all options was required by HHTP-MB for further printing and future revision.

(3) Competitive Website

The website shall be prepared by bench marking the similar parks website over the world, because the investor will looking over and make a comparison between those. Therefore, JICA Study Team was made a bench marking survey for the advance and stylish website which is not to exaggerate both from information and data size point of view.

Based on the result of bench marking survey, the design concept below was identified.

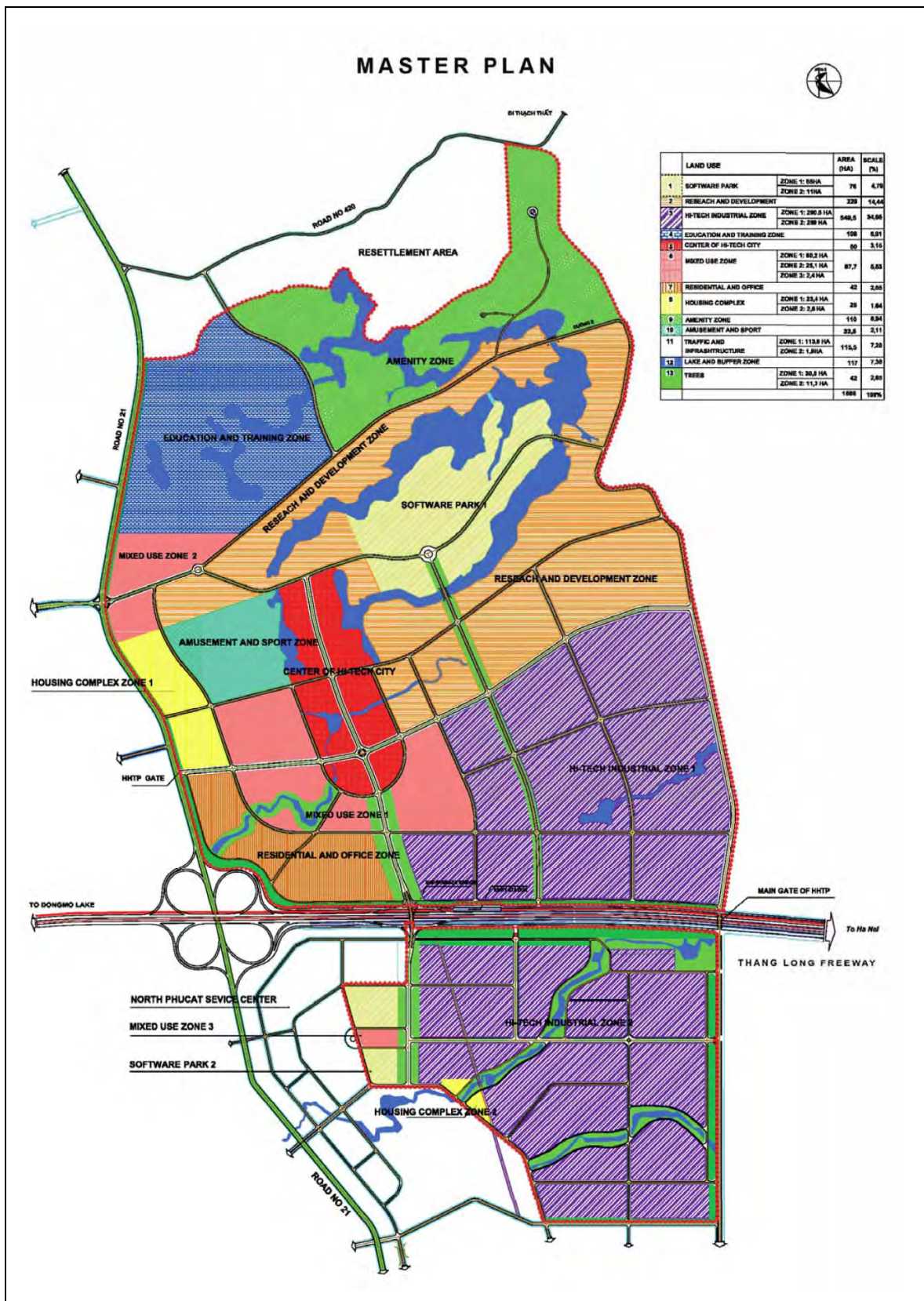
- Front page shall good at design and easy look for all web contents without page scrolling.
- To select and showing minimum information required by the investor to make a decision or selects as a candidate.
- To share the files for related documents and necessary application forms by downloading.
- SMART and user friendly design.

Design of the website was consistent with pamphlet and new banner of “Concierge for Foreign Investors” will be prepared in the current website to jump to new website which is specified on HHTP (see Figure 5.4.5). The website was prepared for English, Japanese and Vietnamese.



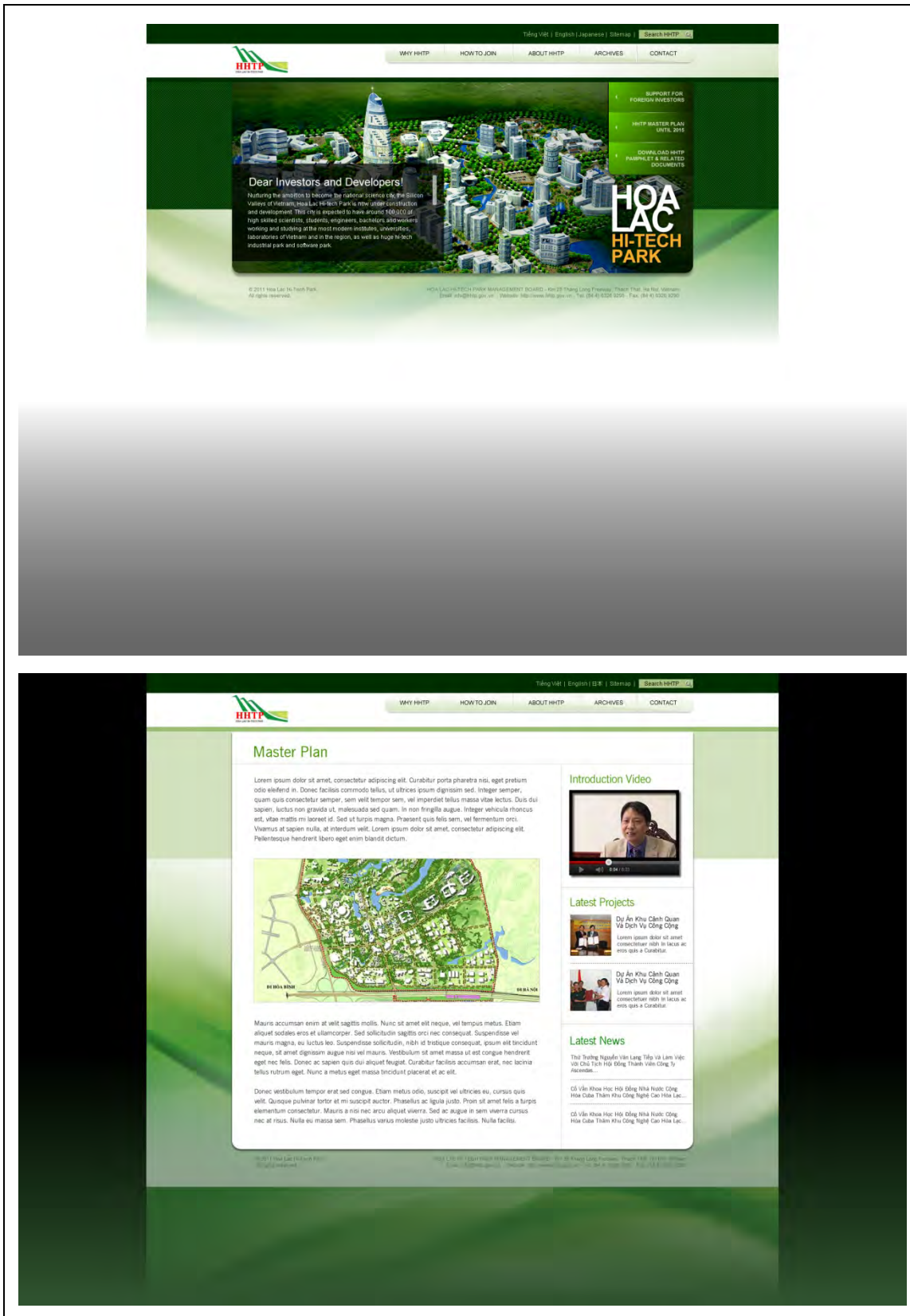
Source: JICA Study Team

Figure 5.4.3: Designed New Pamphlet (Outside)



Source: JICA Study Team

Figure 5.4.4: Designed New Pamphlet (Inside)



Source: JICA Study Team

Figure 5.4.5: Designed New Website