

Annexes

Annex 1 - Member of the JICA Study Team

Annex-1 Members of the JICA Study Team

NAME	POSITION	BELONGING
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Annex 2 - List of Participants JST

Annex-2 List of Participants

1. JICA
2. JICA Vietnam Office
3. Ministry of Planning and Investment - Department of Economic Zones Management
4. Ministry of Construction - Bureau of Housing and Real Estate Market
5. Hung Yen Provincial People's Committee
6. Hung Yen Department of Planning and Investment
7. Hung Yen Department of Construction
8. Hung Yen Department of Natural Resources and Environment
9. Hung Yen Industrial Zone Authority
10. My Hao District People's Committee
11. Vietnam Institute for Urban Rural Planning (VIUP)
12. Vietnam Institute of Architecture (VIAR)
13. Hanoi Social Housing Management and Development, Housing Management and Development Single-member Co., Ltd
14. Hoa Phat
15. Vietnam Construction and Import – Export Joint Stock Corporation (VINACONEX)
16. Ho Chi Minh Export Processing and Industrial Zones Authority
17. Tay Ninh Department of Economic Zones Management
18. Long An Industrial Park
19. Japan External Trade Organization (Jetro) Hanoi Representative Office
20. Japan External Trade Organization (Jetro) Ho Chi Minh Office
21. Thang Long Industrial Park II Corporation
22. Thang Long Real Estate Investing and Trading JSC.(ITC)
23. Becamex Tokyu
24. Nissel Electric Vietnam Co.,Ltd (NEV)

25. Olympus
26. Toyota Industrial Equipment Vietnam (TIEV)
27. Takagi Co.,Ltd

**Annex 3 - Consideration of Architecture Design
in Vietnam**

Annex-3 Consideration of Architecture Design in Vietnam

3-1. Consideration of Architecture Design

This chapter 3-1 explains the matter of architectural consideration for workers in the basic design and the examinations progress between construction related organizations.

(1) Vietnamese Architecture in the Social Housing

In this section, the considerations to basic design would be building materials, interior/exterior finishing, structure, MEP equipment, common facilities in social housing, Feng Shui, double-layers floor, loggia, and evacuation stairs.

1) Building Materials in Social Housing

- Decree No. 188 Article 3 clause 5

The Vietnamese government has conducted propaganda to use the Vietnamese products in social housing. According to the guidelines government-defined, standard interior and exterior of the finish, construction work, plastering work, mortar-toweling work, tile work, painting work, doors/windows work, waterproofing work, canopy work, electrical work and mechanical work have defined to use domestic products and equipment as priority in social housing.

2) Interior and Exterior Finishing

a. Interior Finish

In Vietnam, the floor finish for social housing is popular tiling, and ceramic tile is used for indoors. The floor finish is required for the abrasion resistance, such as the main lobby, and stairs are designed the granite tiles.

Although plaster boards (PB) + light gaged steel (LGS) have been quite popular to use for interior wall, mostly limited to use in only office, brick walls are quite popular than applying PB+LGS in housing. Unit price of PB + LGS estimated as 1.5 times higher than that of the brick wall in terms of cost estimation. The EVG 3D panel is applied as wall finish in the standard design of single-story dormitories for MOC issued and manufactured as material company in Philippines. EVG 3D panel is shaped by the welded mesh reinforcement on the inside-outside layers by installing polystyrene form as a middle layer forming wall by spraying concrete to both sides as site-casting and toweling on surface of wall. The unit cost for EVG 3D panel is only approximately 30% cheaper than unit cost of brick wall. The construction technology for EVG 3D panel is not popular in Vietnam comparing to brick wall as standard construction method. There is no regulation to enforce using EVG 3D panel as standard methods in Vietnam. As a result, it prefers to use a brick wall in private construction work probably. About finish for interior walls, oil painting is the most common finish after plastering on a brick wall.

Cost comparison table of the interior wall as following.

Table 1 Interior Wall Types and Unit Price

Wall Finish Type	Unit Price (VND/m ²)
Brick wall (with plaster, 110mm thickness)	520,000
Brick wall (with plaster, 220mm thickness)	780,000
Plasterboard(one side)	200,000
Plasterboard(both side)	320,000
Light gaged steel wall	450,000
EVG 3D panel	350,000

About ceiling, mostly oil painting on plaster trowel finishing as exposed concrete partially are applying except the corridor of common areas, dining room, management room, toilet, etc., are designed the ceiling system. In the case of finishing, such as social housing, the exposed piping and wiring on the ceiling or wall are covered by plastering, therefore painting on the plaster.

b. Exterior Finish

In Vietnam, asphalt coating waterproofing sheet, coating type, or spraying type of vinyl chloride resin waterproofing (poly in cement) are quite popular material for waterproofing of a flat rooftop. Although the cement tiles and the metal sheeting roof are popular for the roof, the roof of the social housing and condominiums is designed as the flat roof. Historic preservation buildings, etc. are designing the roof and walls by the color of lime stone tone referred to as the influence of the French colonial era architecture. Although the oil painting on mortar base wall also is common, there are many buildings peeling oil painting, which do not manage the maintenance for a building in certain period.

Table 2 General Building Finishing in Vietnam

Parts	Finishing Materials
Waterproofing roof	Asphalt waterproofing sheet+ protection concrete
Ceiling	Plaster + oil painting (partially ceiling system)
Wall	Plaster + oil painting
Floor	Mortar + granite tile (public area) or ceramic tile (private area)

3) Structure of Vietnam Architecture

In most of building types as wall structure from the French colonial era, only historical/traditional building are approved to assume a brick wall with the thickness of 110mm more than 450mm as a load-bearing wall in regarded to preserving historical/traditional buildings. The building for Department of Labor, the building for the Ministry of Foreign Affairs and the building for the Ministry of Planning and Investment in Hanoi city were the brick wall structure.

With respect to the structure in Vietnam, recently the high-rise building is designed the framing structure with a brick wall as outer wall, framing structure + brick wall is quite popular construction method for low-rise and high-rise building in urban area and rural area. Although the brick wall is not mostly considering of reinforced rebar, RC wall and brick wall with reinforced rebar applied to special types of structure such as tanks, retaining wall, silos, bunkers are required to withstand lateral loads against natural disasters. In the structure of Vietnam, RC structure is received the load bearing on framing structure. Lateral load does not considered of structures in Vietnam that given less damages from earthquakes and typhoons.

As there are also drawings for the standard design of the MOC, the 5-storey building tends to be designed the wall structure that would be changed the size of columns for within the wall; the size of columns would be converted the thickness of wall. If the brick wall consists of from more than 11cm thickness or less than 45cm thickness, the wall seems to be the bearing walls as structural wall in designing buildings. Some developers prefer to design the size of columns within the wall in household layout, other developer not.

4) **MEP Equipment**

Whether applying what kinds of mechanical and electrical works except fire-prevention work in the housing, it is depended on each developer in Vietnam. In the case of social housing, residents should prepare to install air conditioning and gas-range for mechanical works themselves. Residents would install propane gas tanks under the kitchen with contracts. In social housing, air in the kitchen exhausted by fan and ceiling-fan as the ventilation so that mostly there is no gas-range hood. For most air-conditioning, the wall-mounted bracket for outside-units and air conditioning sleeve would be installed after the completion work, also found dwelling unit or dormitory rooms for social housing of Hanoi City Housing Authority that have installed the air conditioning individually. When constructing the social housing /condominiums, the installation of septic tank obligated by the regulation. Although sewage system is equipped in urban areas, especially must be equipped the septic tanks in case of a rural regions without sewage system.

For the lighting of social housing, the fluorescent light in the room installed. It is also possible to correspond with incandescent lamps, but a Circular 08/2014/TT-BXD has stipulated for luminance of about 100lux. In Circular No.08/2014/TT-BXD for the number of outlet, the number of outlet is required as the number of residents in each dwelling unit. Residents should contract with internet providers individually. If the social housing and condominiums are planned the elevator, it is obligated the emergency generator.

With regard to fire-prevention work, there are the regulations related to high-rise apartment houses, about the fire protection regulations, TCVN 6160:1996, the fire detection and alarm stipulated in TCVN5738:2001. As high-rise apartment complex built in before the regulation acted, the most of existing apartment is ineligible in the fact.

5) **Common Facilities in Social Housing**

Although there is no particular regulation for the required common facilities in social housing, generally speaking, common space such as the main lobby, multipurpose room; for club activities, meetings, sports and cultural activities. There are also some common spaces as control rooms, MEP rooms, management rooms, machine rooms, electrical rooms, and such as a garbage yard to consider.

6) **Vietnamese “Feng Shui”**

As Vietnamese Feng Shui affected by the Feng Shui of Chinese idea, Vietnam Feng Shui has changed in its own interpretation in Vietnam. There is no uniform thinking as Feng Shui because also considered of different ideas by Feng Shui masters. In houses, since the idea of Feng Shui is very popular in Vietnamese culture, it is important to consider of location and orientation for designing. It is also necessary to consider of wind, water and lighting among the Feng Shui. The Feng Shui usually suggests keeping good orientation, to lead cool wind, to avoid harsh sunlight and properly to set back the building from the roads. In the orientation science of Feng Shui, as the long sides of building should turn towards the south and the gable side should face to east-west directions, that orientation will help minimizing the impact of west sun light and hot wind to the apartment inside.

Although the above-mentioned ideas are general ideas, the idea of Feng Shui is definitely popular in the Vietnamese culture. In Vietnam culture, people who buy the houses to consider of the fung shui

are not a little. However, the ideas of Feng Shui are not necessary to get the approval from authorities/public agency. In Vietnam housing, altar worshipping the ancestors "Bàn thờ của tổ tiên:- family alter" decorated in a private room, such as a master bedroom.

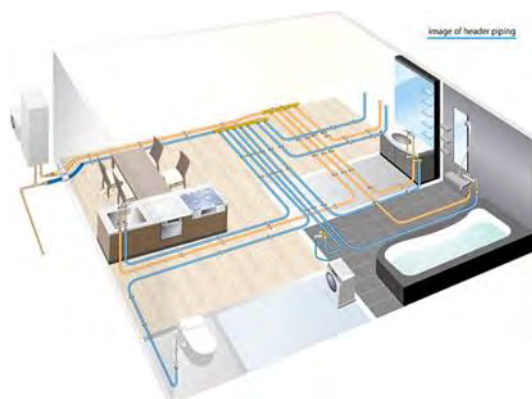
7) **Double -Layers Floor in Apartment**

In Vietnam, as applying information IT room space, central control room and etc. in office regarding OA floor; stock trading IT room, conference room, and hospitals of high-tech room, machine room, building a central monitoring rooms, electrical rooms, such as the low-voltage electrical rooms are popular to install OA floor¹. In Vietnamese condominiums, there are not so much households that corresponding to the double-layer floors because of considering as the maintenance as exchanging pipes/wirings and sound insulation.

About mechanical/electrical equipment for Vietnamese condominiums, not considering of the maintenance, the common construction method that drainage pipes generally pass thorough the downstairs, such as has not been designed the pipe space/meter boxes, etc., in Japan. Even if there the pipe space, it would be small spaces compared to such as condominium in Japan. Designing PS in households is not quite popular in Vietnam because of the implement of expensive cost and not planning a long-term operation/maintenance schedule as LCC for next 10 years and next 20 years.

In housing environment, the demand of double-layer floor to prevent some problems in terms of maintenances, social problems for noise and leaking water pipes to not considering of like Japanese housing market is not popular. In Vietnam, residential owners in condominiums could individually apply double layer floors if residents would buy their condominiums. For the service apartment nearby Hanoi city, Japanese general contractors as developer would design double layer floors in apartments aggressively because of good maintenance from now on.

Especially, as relating with the climate of Hanoi, There are some reasons that it is cold when directly applying the tile on floor and preventing moisture if applying double layers floor in apartment. Therefore, the implementation of double layer floor in Hanoi is proceeding more than Ho Chi Minh in construction business.²



Source: Diagram/Photo from Sekisui chemical webpage

Figure 1 Double-Layers Floor System



Figure 2 Piping System under Floor Panel Units

¹ Interview from local contractor company

² Interview from Japanese contractor company in Ho Chi Minh City

8) **Loggia**

In Loggia, as relating with QCVN 06:2010-BXD Vietnam building Code on Fire safety of Building TCVN 7114: 2008: Ergonomics Lighting of work places, it is necessary to design loggia for housing layout because of the evacuation in fire-prevention engineering and keeping illuminance for lighting.

9) **Evacuation Stairs**

According to the QCVN 06:2010/BXD, building code noted about N1, N2 and N3 staircase structure that stipulated as the smoke-free: exhausted air systems for high-rise apartment.

N1 stairs are designed buffer rooms to staircase from each floor passing through a ventilation space for exhausting smoke in evacuation passage. In the case of housing, the ventilation space should be as like a loggia or a balcony. In the case of other uses except housing, it is approved if opening windows of 1.2m² is planned as ventilation. It also must be provided with an opening window of 1.2m² in N1 stairs. N1 stairs and buffer rooms must be facing the outside.

N2 stairs is the smoke-free staircase system that supplies positive pressure-air exhaust smoke in the stairs by providing a duct space of more than 400 × 1,200mm.

N3 stairs is the smoke-free staircase system that supplies positive pressure-air exhaust smoke in the buffer rooms by providing a duct space of more than 400 × 1,200mm.

As N1, N2, N3 stairs of the effective width is required more than the width of 1200, in the floor where there is an exit to doorway; it was required for width 1/2 or more of the effective width of 1200 + the door width.

(2) **Vietnamese Construction**

This section would be about information related on building construction and cost estimation.

1) **Mass Production of Building Materials**

a. **Building Materials Production**

Vietnam well-endowed with natural resources upon which there are limestone mines for cement production, clay mines to produce bricks, and many more producing kaolin, sand for glass, stone, sand and gravel, dolomite and other stone and refractory clay for the mass production building materials.

According to the Vietnam Building Materials Association (VBMA), the cement production industry becomes the largest energy-consumption industry as CO₂ gas emission in Vietnam. The cement production capacity in Vietnam is increased about 73.45 million tons, as there are 73 production lines and 51 cement plants. This number, in 2015 expected to expand to 81 million tons. In 2011, the cement products have exported to Cambodia, Laos, Bangladesh and the Middle East of the neighbor countries from Vietnam.

In the domestic brick production, the baked brick at the ratio of domestic brick production in Vietnam used extensively in all types of constructions. As there are many brick factories scattered in the bank of Song Hong River, recognized the smoke from the chimney. According to Prime Minister issued Decision 567 / QĐ-TTg dated 28/04/2010, the goal of the Vietnamese government would be to keep domestic agricultural areas that due to the production of non-baked bricks, to consider of global warming due to the environmental destruction caused by the smoke from baked-brick, to process lower costs of waste management, to save coal energy consumption. Those factors would be expected the better growth of the Vietnamese economy cycle. Among the prime minister decision 567, it have legislated to define the target value to 20-25% at the proportion of non-fired

bricks in 2015 by the Vietnamese government. According to the report of the MOC, the proportion of non-baked bricks compared to 2014, achieve up to 29 percent of the total brick products in 2015.³ The goals already achieved with respect to 2015 fiscal year, in which 2020 to set the target to 30% - 40%. To raise the proportion of non-fired bricks, the Vietnamese governments have set a target to export other countries, including the neighbor countries.

According to the Vietnam Steel Association about the production of rebar involved in the RC structure, it produced 6 million tons in one year at the end of 2006. The Vietnamese government also estimates to bring the rebar product up to 25 million tons annual in 2025.

As a roofing material of standard material, the corrugated metal roof and most of metal sheeting imported in a general as standard materials from other countries.

b. Development Companies Related with Group Companies in Vietnam

Vietnamese development companies are also established many kinds of business service as a group company with development, investment, construction and building materials manufacturers such as the in-house. Therefore, group companies leaded to the costs down and a better efficiency for development project in order to serve/cover the development, investment, design, construction and materials in-house as conglomerate.

Table 3 Business Service of Development Companies and Group Companies

Development Companies	Business Services
IDICO (under MOC)	Industrial parks developments, Power generation projects, Infrastructure projects, Housing and Urban planning, Building materials manufactures, Construction business, Human resource development business, Travel agency , Hotel business, Design , Investment business
BECAMEX	Industrial Parks development, Urban development, Infrastructure projects, Health care planning, Education business, Building materials manufacture, Construction
HUD	Investment business, Real estate business, Building materials manufacture, Construction business
VIGRACERA	Building materials manufacture, Real estate business, Housing and Urban development, Industrial parks development, Office development
VINACONEX	Real estate business, Construction business, Design, Investment business, Industrial Parks business and Construction materials manufactures, Education training business, Commercial facility development
VINCOM	Real estate business, Housing and Urban Development, Hotel business, Entertainment business, Supermarket business, Fashion business, Commercial facility development, Health care business, Education business

2) Construction Work Period

In Vietnam, as it approaches the summer period from May to October as the rainy season, it happen the squall rain of 2 to 3 hours around the evening. It would be necessary to take into account of the delay in the construction schedule by the rainy season.

Although depending on the construction floor area, it would be necessary to expect the construction period of from about 4 months to 6 months for a single- story building, and the construction period of from about 12 months to 18 months in the case of the five- story building.

There is approximately some concrete batcher plants required by the building construction along the national highway route 5 around the Hanoi City suburbs, as plants are scattered around the Route 5.

3 From Vietnamese government portal website

It is restricted by the temperature for transporting time of concrete in the Thang Long II Industrial Park in Hung Yen Province, but it would be transported the ready-mixed concrete from about 1 to 2 hours to construction site.

3) **Circumstances for Construction Workers**

According to circular 04/2010/TT.BXD, the labor costs are accounted by the formula as below.

$$\sum_{j=1} Q_j \times D_{jncx} (1 + K_{nc}) = NC$$

$$J = 1$$

Index:

Q_j : Area per one building or number of buildings

D_{jnc} : Labor cost per one building or number of buildings

K_{nc} : Labor cost adjustment co-efficiency (if necessary)

For general labor costs, although it depends on the construction period, would cost about 850,000VND / m² in the single-story building, and about 1,150,000VND / m² in the five-story building. According to IMF statistics as consumer prices index (CPI) in Vietnam has been predicted to increases by an average of about 3% annually in the five years from 2015 to 2020.

4) **Calculating the Cost Estimate for the Social Housing**

In Vietnam, MOC has issued a construction investment estimated unit cost that MOC is updated annually. In cost estimates per square meter of Vietnamese construction rough estimate by MOC, the unit price will be raised in a manner that is proportional to the ranks and floors of the building. The Decision No. 634 / QD-BXD dated 09 June 2014 of the MOC is issued in around June 2014 also would be scheduled to issue/updated in early June 2015. Every year, the construction investments costs are determined as the cost based/ reflected on construction cost in one year before an issued year in Vietnam. About this estimated cost is included; the common temporary expenses, site management costs, equipment, procurement, construction, overhead and engineering services. However, resettlement, land compensation, housing compensation, existing trees and land acquisition, utilities/equipment cost, land use costs, contingency, economic inflation, and environmental impact assessment is not included. The decision is described as among the consolidated construction cost, it includes material fee, labor cost, construction machine / equipment, the general management expenses and project management expenses.

5) **Construction Investment Unit Cost (CIUC) in 2013**

a. **Housing Facilities Construction**

Table 4 Construction Investment Unit Cost for Housing Facilities

No.	Type of Construction	Unit	CIUC	Breakdown						
				Construction	Equipment					
I	High condominium buildings with reinforced concrete structure; brick wall; In-situ concrete floor and roof, with number of floors:	1,000VND/m ² of floor								
						1	Up to 7	8,450	6,700	600
						2	From 8 to 15	9,140	7,440	560
						3	From 16 to 20	10,170	7,910	970
						4	From 21 to 25	11,310	8,800	1,080
5	From 26 to 30	11,880	9,240	1,140						
II	Private house	1000đ/m ² of floor								
						1	1-story, brick wall, sheet-metal roof	1,770	1,650	
						2	1-storey, enclosed apartment, load bearing brick wall, in-situ concrete roof.	4,660	4,340	
						3	2 to 3-story, load bearing RC frame; brick wall; In-situ reinforced concrete floor deck and roof deck.	7,150	6,660	
4	2 to 3 villa house floor deck, load bearing RC frame structure; brick wall; In-situ reinforced concrete floor deck and roof deck.	8,990	8,160							

Note: As a result of geological survey, topography survey and structure, the construction costs will be about 10% in the range of tolerance. Special case is also likely to be up 30%.

Construction investment unit cost for housing facilities with basement

Table 5 Estimated Unit Price of Construction Investment for Housing Facilities with Basement

Number of floors	Modified factor (Kd/c)	
	Number of basement floors ≤ 2	3 ≤ Number of basement floors ≤ 5
Number of floors ≤ 7	1.15 - 1.35	
8 ≤ Number of floors ≤ 20	1.10 - 1.14	1.15 - 1.40
21 ≤ Number of floors ≤ 30	1.05 - 1.12	1.13 - 1.25

6) **The Standard Specification of Construction Costs in Vietnam**

For the unit price per square meter of construction costs, it would estimate the cost of a standard finish specification in Vietnam. In these general architectural finishes, as VIAP (currently VIAR) had also reflected to the drawings that specified as the standard plans, standard finishes has been used by most of contractors in the social housing. (Hanoi Dang Xa project in Hanoi is in progress, currently the Vigalacera is developing and under the construction)

The social housing project that VIUP (currently VIAR) is in the process of developments, under the construction of about 9,000,000VND / square meters cost estimates, the most of housing is designed as 6-storey buildings (partially 14-storey building). Dang Xa project had completed in this year. In the meeting with VIUP, the JST has obtained the information that is applied by construction costs of

the above mentioned, the construction cost 8,450,000VND / square meters of housings under 7-storey that MOC has issued in the decision No.634 is almost the same cost per square meter of the VIUP Dang Xa project.

As the cost is increased from up to 7 or more stories, because it is necessary to design N1,N2 and N3 with buffer rooms for evacuation staircases as fire prevention equipment, in the social housing as cheap cost, the number of apartment projects under 7-storey is relatively large.(except high-rise social housings in urban area).

In the mechanical and electrical equipment, water supply and sanitation, general lighting fixtures, fire-prevention equipment, emergency generators, septic tanks include/accumulated as the rough estimated cost.

(3) **Building Operation and Maintenance Managements**

This section would describe information related on building management, operation and the quality of building.

In most buildings of Vietnamese architecture, since the building maintenance is not managed, such as glass curtain walls of buildings, it became in the situation that it has already passed as likely 10 years at the elapse time after about 5 years. In the projects for high-rise office and commercial facilities, such as large developers have developed, reliable operation/maintenance management companies have carried out the building maintenance. Since the quality of construction for social housings is originally poor, it is not a very good condition for building because of using standard products and materials.

1) **Durability/Quality of Building**

Many of the social housing, is a construction as low-cost, hold troubles/problems for building settlement (soil subsidence), mortar peeling and a pipe clogging with a state/conditions of no good quality building. As the awareness of the residences for social housings in building maintenance is really lower, the building maintenance is not popular in Vietnamese culture. Upon that circumstance, therefore, if there are complaints from the residents to the building management boards, these complaints are often resolved the problems between both parties with the building management boards as quickly as possible. Social housing build as low-cost by using the standard materials and products, as in that the quality is different comparing to development in private sectors. The construction of technology of JW Marriott Hotel in Hanoi City such as the United State private capital investment will be the higher than any general construction technology in Vietnam.

According to decree No.12/2009/ND-CP, the article 53 is stipulated the capability conditions for construction organization. Depending on the category of works, construction organizations are classified into 2 classes. Depending on the category of works, construction organizations are classified into 2 classes.

- i) Class-1 construction organizations may construct works of special grade and grades I, II, III, and IV of the building category;
- ii) Class-2 construction organizations may construct works of grades II, III and IV of the building category;
- iii) Organizations unqualified for any class may construct renovation or repair works capitalized at under VND 3 billion and individual houses.

2) **Renovation**

In Circular 08/2014/TT-BXD, the circular leads to the guidance of the general management of social housing. In the orders of the rental contracts for social housing to investors, the way of the sale for social housing, management methods of buildings, operation of social housing, the quality of building management, such as management methods of social housing residents have been

described. Partially, items related with renovation are stipulated in the management methods of social housing.

Housing Law 65/2014QH13 Article 88 clause 1 and 2 have been described as the rights and obligations of lessons of social housing.

In the clause 1, housing owners have the rights in the house maintenance and renovation as follow.

- i) To conduct on their own maintenance or hire other organizations or individuals for conduct the maintenance and renovations.
- ii) To require to approval the construction permit from competent state agencies/authorities
- iii) To exercise the other rights prescribed by law.

In the clause 2, Housing owners have obligations in the house maintenance and renovation as follow.

- i) To comply with regulation on house maintenance and renovation; keeping decent housing conditions by conducting the maintenance and renovation for social housing.
- ii) To pay compensations for housing if causing damages to others in buildings.
- iii) As to perform other obligations prescribed by law.

3) **Use Exchange of a Building**

There are no regulations for the use of change in social housing. Circular 02/2013/TT-BXD dated 08/03/2013 prescribed in the guideline to specify the structure of private apartments in the project of urban developments and to convert the use for a building from private apartments to social housing apartments. However, the circular had expired on 31/12/2014 because of small demand for converting use of a building.

4) **Recycling of Building Materials**

There is recycle system for the building materials as brick, concrete, metal, non-ferrous metal, plastic, such as wood used in Vietnam. Using recycling brick and concrete chunks as a substitute for rubble of lining layer in the foundation is popular and common materials in Vietnam.

5) **Environment-Related Technology**

For the social housing, there is no regulation for energy saving or energy conservation, no obligations for designing for Photovoltaic panels/Insulation boards/ green on the roof. However, the building in recent years had designed and proposed the architectural technology to global warming and insulation material as a green roof on the building such as designed by SOM master plan and by Vo Trong Nghia Architects. In Vietnam, VGBC; Vietnam Green Building Council as organization performs the greenery promotion on the roof of a building, the buildings evaluated by the environmental evaluation system called "Lotus" (Vietnam version CASBEE).

6) **Building Maintenance**

a. **Decree 71/2010 / ND-CP**

Decree 71/2010/ND-CP stipulated about maintenance management for social housings and condominiums.

- Article 40: Building management for social housing

- i) For social housing built with public state budget funding, social housing management agencies shall decide to select housing operation management units to manage the buildings. In case of two or more units register to operate the social housings, the selection of housing operation management units shall conduct through the bidding.
- ii) For social housing built with non-state budget funding, investors shall select through the bidding in accordance with the law as below.
 - a) As social housing for lease, investors may organize by themselves for the housing operation management or hire the authorized capable units to manage the operation of such social housings.
 - b) As social housing for lease-purchase, within the lease-purchase term investors shall manage the social housing operation under point a) of this clause. After lessees-purchasers make full lease-purchase payments to investors, the operation management shall conduct under point c) of this clause.
 - c) As social housing for sale, purchasers shall manage the social housing operation, for individual households. For condominiums, the operation management must comply with the provision of Laws on condominium operation management.
- iii) The social housing operation management services are subject/ entitled to social system as public-utility service under the guidance of Ministry of Finance.
- iv) Housing management units managing the operation of social housing may provide other services within these housings to collect charges in order to offset/suppress management and maintenance expenses and reduce the rental fee for social housing.
- v) Lessees or lease-purchasers of social housing may not transfer the ownerships of these housing in any form during the lease or lease-purchase period. Purchasers or lease-purchasers of social housing may sell or lease these housings only after having paid the loan to investors and obtained housing ownership certifications, after at least 10 years from the time at a housing purchase and sale or lease-purchase contract shall sign. If the purchaser of social housings wishes to sell ownerships before 10-year period, he/she may sell ownerships only to the state, the investor or the organization eligible to buy social housings under local regulations at price no higher than the price of a social housing of the same type at time of sale.
 - Article 51: Funds for maintenance of condominiums
 - i) The funds for maintenance of condominiums with common ownerships are specified as below.
 - a) In case the investor signs an apartment sale contract on or after the effective date of the Housing Law, he/she/company shall pay 2% of the housing sale price, investors must be indicated the housing sale price that is included 2% of the housing sale price in the housing purchase and sale contract. 2% value of the housing area, which the investor does not sell ownership (excluding the area for common use) shall be calculated based on the highest sale price of the apartment as condominiums.
 - b) The sales price specified at point a) of this clause shall be deducted before taxing (tax exemption for 2% of housing sales) and must be deposited at commercial banks and managed by condominium management boards and used for maintenance of a building by common ownerships in accordance with regulations for operation /management of condominiums.
 - c) In case the investor signed an apartment sale contract before the effective date of the Housing Law but did not yet collect 2% of the housing sale price, the condominium owners shall contribute funds for maintaining the building by common ownerships. These funds may be collected only when maintenance requirements are levied and shall be determined for each specific maintenance jobs for the building.
 - ii) If the maintenance funds specified at point a) and b) clause i) of this article are insufficient for maintenance of a building by common ownership, condominium owners shall additionally

contribute funds in proportion to each household floor area under private ownerships in the building. When the condominium is to be dismantled while the maintenance funds specified in clause i) of this article have not been used up, the unused funds may be used to support resettlement for rebuilding the condominium or put into the condominium maintenance funds after the condominium is rebuilt.

iii) For Housing Law No.65 /2014 / QH13 Article 64 and 107 would be enforced and operated from 1 July 2015.

- Article 64 and Article 107 have been associated with the above regulations.

3-2. Standard Design of Building for IP Workers

(1) History of VIAr (Vietnam Institute of Architecture)

Vietnam Institute of Architecture Planning (VIAP) has been separated from Vietnam Institute of Architecture (VIAr), Vietnam Institute of Urban, and rural Planning (VIUP) since 11/2013 according to/Decision no995/QD-BXD of Ministry of Construction published in 9/10/2013. There are 4 main fields of expertise/functions in VIAr, Ministry of Construction. VIAr are specialized in government advisor, consultants in the fields of architecture and planning, research and training.

1) Government Advisor in the Field of Architecture and Planning

It provides to conduct services to Vietnamese government about Building Codes and Standards in Vietnamese architecture. It holds architectural orientations on developing Vietnamese architecture. It prepares to draw architectural standard design for Vietnamese architecture.

2) Consultant in the fields of Architecture and Planning

It consults in the fields of architecture and planning, rural and urban planning and heritage reservation.

3) Research

It researches about applying and transferring new technologies, theory and criticism, architectural history and heritage preservation, managing and storing database in the field of architecture and climate change and sustainable development.

4) Training

It trains for Vietnamese architects in seminars and doctor in architecture.

(2) Housing Analysis for VIAr Standard Design

In Vietnam, Vietnam Institute of Architecture (VIAr) had been specified standard design plans for industrial park workers housing and low-income people housings and trying to promote standard designs from main institute in MOC. As analyzing the contents of standard design, subsequent process and issues are grasped. To understandings of standard of architectural design and construction technology in Vietnam relates with involved in the matters of technology developments and building cost reductions. The JST would confirm the basic specifications in order to make use of project scheme and design planning for worker's housing of industrial park.

VIAr, organization under MOC specified drawings, such as both summarizing basic architectural space activity/amenity entitled basic research and five standard designs based on drawings for worker's housing around industrial zone/low-income people's housing. Although VIAr actually must update every five years according to the regulations, upon interviewing to the VIAr in April 2015 while updating, the standard design specification is not finished to revise yet. Followings are reasons that the standard design have not generalized in worker's housings.

- a) As there are many workers for industrial park from rural regions, workers in industrial zone have not been resided and permanently settled down in worker's housings because workers would not be accustomed to spend the experience of the quite different life and activities from rural regions comparing to urban/industrial environments. Therefore, workers often preferred accommodations, such as private homes and apartments in private premises rather than the dormitories for industrial workers. For example, there are fully built as worker's dormitories for the number of workers in the industrial park in Bac Ninh province. However, it is conspicuous for unoccupied vacant in the dormitories. Dormitories for workers in the industrial park of Vinh Phuc province are unoccupied about 60 percent in the situations. There were also statistical results that 80% workers live in private homes and personal home apartments in Hung Yen Province.

- b) Both standard designs are not adequate for present demands from industrial workers and low-income people and are not matching current Vietnamese standard building codes because Vietnam government had been frequently amended the regulations a lots are reasons that VIAR was cited
- c) As a result, since the most of housings for the industrial works and social housing are developed by private sector companies, the design ideas from private developers has become quite popular to plan to worker's housings. Since there are no compelling regulations of standard designs issuing by public authority, private developers are promoting their own individual design standards.

(3) **Analysis for Standard Design from VIAR**

Standard Design for housing of industrial park workers consists of basic research information and 5 standard design types. In addition, there is collection for social housing design. The summary of the contents of the standard design diagram compilation as follow.

1) **Basic Research**

Basic research report consists of the special zoning research of dormitory for industrial workers and social housing. It summarizes of basic human activity and relationship between internal space and outer space. It provides a study for size of bunk bed and furniture. It provides a classification matrix of 14 type standard designs for industrial worker's dormitory and family type social housing. It specifies layout patterns of dwelling type in dormitories and social housings: summarizing research for the double-loaded corridor type, outer corridor type, spatial composition of I-shape building type, L- shape building type and tower building type. It is summarizing the study of spatial layout and the arrangement of the kitchen and dining room. In Vietnam, because of many flooding damages, most of standard design plan has designed for GL+0.5m floor level equalize to 1FL level.

2) **Standard Design I**

Standard design I applied to zoning layout of the single-story dormitories for single, sports facilities, cafeteria, parking lots, public garden, etc. in the urban area. All drawings consist of site plan, elevation, section and framing plan, and VIAR researches standard designs in the means of all drawing and perspective drawings of 1-storey dormitories for singles. It shows applying the EVG 3D panel (pre-welded mesh wall panel) for single-storey of the dormitory wall in specification. It designs arranging toilets, kitchens and showers in housing compartment. Since the cafeteria, etc. are located on separating buildings, it is necessary to walk 50-100m from the site. It is designed for applying outer corridor building type in standard design.

3) **Standard Design II**

Standard design II applied on zoning layout of the 3-storey dormitories for single, sports facilities, cafeteria, parking lots, public garden, etc. in the urban area. All drawings consist of site plan, elevation, section and framing plan and VIAR researches standard designs in the means of all drawing and perspective drawings of 3-storey dormitories for singles. The common space on first floor is designed for dining room, motor cycle parking, such as MEP rooms, and dormitory room space for single on 2nd-3rd floor. That arranges for toilets, kitchens and showers in housing compartment. It is designed for applying outer corridor building type in standard design.

4) **Standard Design III**

Standard design III is applied on zoning layout of the 4-storey dormitories for single, sports facilities, cafeteria, parking lots, public garden, etc. in the district of city. All drawings consist of site plan, plan, elevation, section and framing plan and VIAR researches standard designs in the means of all drawing and perspective drawings of 4-storey dormitories for singles. There is common space on the first floor: dining room, meeting room, shop, and motor cycle parking, such

as MEP rooms, and dormitory rooms' space for single people on 2nd-4th floor. It is arranging toilets, kitchens and showers in housing compartment. It is designed for applying outer corridor building type in standard design.

5) **Standard Design IV**

Standard design IV is applied on zoning layout of the 5-storey social housing for family and sheared rooms for singles, courtyards, etc. in the district; U-shape building is around the courtyards. All drawings are consist of site plan, plan, elevation, section and framing plan and VIAR researches standard designs in the means of all drawing and perspective drawings of 5-storey social housing for family type. There is a common space on first floor: dining room, meeting broom, shop, and motor cycle parking, meeting room, such as MEP rooms, second - fourth floor for family type housing and sheared rooms on each floor. These buildings apply to double-loaded corridor type.

6) **Standard Design V**

Standard design V is applied on zoning layout of the 5-storey dormitories for single, sports facilities, super market, cafeteria, parking lots, public garden, etc. in the city district. All drawings are consist of site plan, plan, elevation, section and framing plan and VIAR researches standard designs in the means of all drawing and perspective drawings of 5-storey dormitories for industrial park's workers. The north and south side of building are connected by staircase with split leveling floors among buildings. First floor's common space: dining room, meeting room, shop, motorcycle parking, meeting room, such as MEP rooms, 2nd-4th floor for dormitories for industrial workers. It is designed for applying outer corridor building type with split leveling floors.

7) **Standard Design (Social Housing Type / Unofficial Documents) VI, VII, VIII, IX**

Standard design for social housing are consists of drawings of high-rise social housing type in urban area, which is same as worker's dormitories for industrial park and social housing to be announced in public officially.

There are 4 types of social housing, which are studied a research how to arrange the core zone like elevators and stairs in I-shape building and tower shape building with double-loaded corridor type. One of them is designed 9-storey social housing as standard design VI with RC structure. 2 types of the others are planned 15-storey social housings, which are different shape apartments; tower type building as standard design VII and I-shape type building as standard design VIII. Forth type of social housing is designed 18-storey social housing as standard design IX with basement parking lots. Although there is announced to be unofficial to public from the MOC and VIAR in private, the documents has specified in 2013.

Table 6 Summary of Standard Model Plans

Design Type	Type of Building	Number of Building	Building Stories	Building Coverage	Room Area	Number of Room	Number of People	Floor Height	Common Facilities
Standard design I	Dormitory	20 buildings	1FL	32%	35 m ²	10 rooms per building	4	3.6m	Canteen, sport facilities, kitchen, shower, toilets, parking lots.
Standard design II	Dormitory	14 buildings	3FL	44%	33 m ²	20 rooms per building	4	3.6m	Canteen, sport facilities, manager room, kitchen,

									shower, toilets, parking lots.
Standard design III	Dormitory	6 buildings	4FL	41%	41 m ²	48 rooms per building	6	3.6m	Canteen, sport facilities, manager room, kitchen, shower, toilets, storage, parking lots.
Standard design IV	Apartment	17 buildings	5FL	43%	44-52 m ²	32 households and 4 people shard rooms	4	3.6m	Manager room, kitchen, shower, toilets, storage, club and parking lots.
Standard design V	Dormitory	10 buildings	5FL	40%	31 m ²	64 rooms per building	6	3.6m	Canteen, sport facilities, manager room, kitchen, shower, toilets, club, parking lots.
Standard design VI (unofficial)	High-rise apartment	5 buildings	9FL	40%	28-50 m ²	80 households per building	-	3.0-m	Manager room, Parking lots and Multi- purpose room
Standard design VII (unofficial)	High-rise apartment	2 buildings	15FL	52%	48-67 m ²	196 households per building	-	3.0- 3.6m	Manager room, Parking lots, Multi- purpose room, super market and public service.
Standard design VII (unofficial)	High-rise apartment	2 buildings	15FL	42%	34-69 m ²	154 households per building	-	3.0- 4.35m	Manager room, Parking lots and Multi- purpose

									room
Standard design IX (unofficial)	High-rise apartment	2 buildings	18FL	55%	27-61 m ²	187 households per building	-	3.0-3.9m	Manager room, Parking lots and Public service

(4) Difference between Vietnam Workers Housing and Standard Model Plan

Since the actual housing plan layout in this investigation and VIAR (Vietnam Institute of Architecture describe in 1.2 (1)) standard plan are applying as different land lots size and shape, the idea of all VIAR standard plans have not been applied/reflected to actual housing plan so far. VIAR model plans are following as standard for keeping 3.6m floor height for all section drawings, but most of buildings in social housing are actually planning as 2.6m-3.6m floor height for considering of total investment. In the actual house, there is no sun lighting and windows, 1FL is the same level as the GL, because the most of housing are planning as considering the conscious of cost..

(5) Analysis of the Standard Design

Most of research contents of the standard design diagram compilation in Vietnam are similar to contents issued by the Urban Renaissance Agency as ex-Japan housing public corporations. The JST analyzed that the standard designs should be developed more diversity of dwelling types for many targets for different life styles; not like only 3-8 people shared rooms, but more single room for one person and two people shared rooms. Therefore, although each 5 standard design are organized different types of dormitories, one dormitory building is designed to reflect the layout of dormitories rooms with combination of only one pattern for the dormitory room, might be /should be promoting more different types of dormitory rooms in one dormitory. As standard design IV is for dwelling unit type to be oriented family, JST might suggest to separate each floors between share rooms and family type, not like combing two different dwelling types: single and family in this case. If it is looking forward to the future Vietnamese economy, and the same kinds of housing development procedure and national economic growth in Vietnam followed to Japanese developments will take place 30 years later in Vietnam, it would be necessary to image/think the role and strategy development for social housing to public next 30 years.

Post-war housing policy in Japan are consists of Japan Housing Finance Agency, Public housing Agency and Urban Renaissance Agency (ex-Japan Housing Corporation) as three public institutions in housing development housing. Therefore, it has developed a supply of housings in Japan.

- Japan Housing Finance Agency

JHFA is long-term low-interest housing financing institutions to support the quantitative shortage of Japanese housing and establish financial system providing a better quality and specifications for housing constructions. This agency is promoting mortgage loan for housing construction.

- Public housing Agency in local governments

Housing development system by local governments continues to permanently support social housing to low-income people, as it is enacted the Public Housing Acts/Decrees for social housings.

- Urban Renaissance Agency (ex-Japan Housing Corporation)

As planning housing development for mid-income workers in the metropolitan area, after withdrawing from housing business for sale 16 years ago, currently the businesses support to provide only rental housings for middle-income.

Currently most of social housing development is supporting only public housing system for low-income people in Vietnam. For Vietnamese financial assistance policy for housing, most many loans from commercial banks, there is no institution for governmental financial assistance. Furthermore, less people utilize loan from commercial banks. Since there is not much public institutions support to mid-income, workers, parastatal developers, not like Japanese Urban Renaissance Agency. Local government is mainly planning housing development projects in Vietnam. As earning low profit margins, many developers would not develop overly social housings.

**Annex 4 - Surveys Related to Industrial Workers
Living Environment and Housing in Vietnam**

Annex-4 Surveys Related to Industrial Workers Living Environment and Housing in Vietnam

4-1. Surveys in Previous Years Related to Industrial Workers Duties and Housing

This section summarizes the results of surveys related to industrial workers living environment and housing in Vietnam. Following three studies are conducted as shown below. The first one is conducted by JICA for the preparation of our study. The second study is conducted by the Vietnamese government in 2014. Also, the third one carry out under this study. This summary refers to main part 5.3.

(1) Study on Living Environment Improvement around IPs in Vietnam

1) Outline of the Study

- This study was implemented in 2010 aiming at following as listed below.
- Implementing industrial labour living environment survey in designated areas
- Formulating ‘living environment development policy around IP’ including quantitative target
- Proposing a policy including new system for the development to Vietnam Government
- Formulation living development plan in the designated areas

The questionnaire survey aims at grasping living environment for factory employees. The target area and number of the sample are selected as summarized below table.

Table 1 Number of Samples and Target Area for the Questionnaire Survey.

Commune / Ward	District	Province	Number of Samples	Adjacent IP
Long Binh Ward	Bien Hoa City	Dong Nai Province	236	Amata IP
Kim Chung Commune	Dong Anh	Hanoi City	453	Thang Long I
Nghia Hiep and Lieu Xa Commune	Yen My	Hung Yen Province	205	Thang Long II
Total			805	

Source: Study on living environment improvement around IPs in Vietnam

The Results of Nghia Hiep and Lieu Xa Commune especially can be utilized for detailed planning for the new housing development adjacent to Thang Long II, while the results in the other areas can be recognized as conventional industry workers status in Northern and Southern Industrial estate.

Questioned items are summarized into following table.

Table 2 Questioned Category and Items

Category	Questions
General	Gender, age, marital status, education status
Finance	Income, source of income
Hometown	Distance, time
Social conditions	Relations in neighbours, off time activities personal relations, willingness to stay, future life plan
Housing	Living years, housing style, utilities, monthly rent fee, insufficient housing conditions and difficulties.
Working conditions	Commuting means, commuting time, working period, experience on job change, Reasons to work, willingness to work, desirable career path, request for improvement

Source: JST

2) Major Findings

According to the survey results, workers living conditions and challenges are summarized as shown below.

a. Long Binh Ward

i) Living Condition of Workers

Although the numbers of workers who settle to the district and are married are relatively large, some of them are from northern and central area of Vietnam where it takes to travel more than three hours. Their education level is junior high school. They hope to live with family, especially their parents. This is the reason that more than half are planning to work there only a few more years.

At that time, about 40% of workers have worked less than one year. In addition, more than 60% have worked less than two years. The most common opinion for the improvement is 'security.'

Most of the workers commute by motorcycle or bicycle within 30 minutes. They have rented a room shared with friends and relatives. Salaries are relatively high compared to the north. However, about half of them felt that the rent fee is burden, which is almost same as about 20-30% of the salary.

About half of workers hope to work at one company for their life, and they want to live in longer there. However, more than 60% have a plan to work the company within only a few years in the employment plan period.

ii) Challenges of industrial workers

Challenges of this area are summarized as listed below.

- Diversification of the supply is required for fitting workers life style. For example, supply of 'family type' housing and sales. Some of the workers are from the north and they hope to live together with parents.

- Life support infrastructure and services shall be provided. Those are day-care centre, nursery, schools and medical facilities because married workers or workers with children are majority.
- Private rent fee for houses shall be optimized by introducing and increasing housing supply. Introducing public housing is an option.
- Competitive housing development including entertainment and life support facilities needs to be constructed.
- A change of working style shall be promoted from current remittances from the 'migrant workers' to life-oriented, such as self-development and entertainment. Introduction of the commercial function and life support facility might be developed to achieve those changes.

b. Kim Chung Commune

i) Living Condition of Workers

Majority of interviewed workers living around Thang Long I is from Hanoi neighbourhood. Most of them are unmarried women under the age of 25. Their education level is high school. They became industrial worker together with friends and relatives because the working condition of the industry was much better than that of village life. Women tend to turnover at the marriage after 1-2 years of career as industrial worker. Ratio of workers whose career was more than two years was only about 30%.

Most of the workers are commuting by foot or bicycle within 30 minutes. They have rented a room together with colleagues. They pointed out that condition of water facilities (toilet, shower, and washing place) which were shared with other residents had priority for improvement. Rent fee, which is accounted for 20-30% of the salary, is first priority for them to be improved. Workers from Hanoi or suburban area are keen for personal development rather than improvement of housing condition. In addition, one of their anxieties is security of the region.

Although many workers want to live longer there, lifetime employment at one company, only 50% of their employment plan period is only two to three years. About half of the workers want to live with family including the parents, and if we included the "living with children, including family", it reached to 90%.

ii) Challenges of Industrial Workers

Based on the survey results of industrial workers living environment in Kim Chung Commune, direction for the improvement can be summarized as shown below.

- Water facilities including development of standards of private apartments
- Appropriate rent fee adjustment by introducing market mechanism through increase supply of houses and public house
- Revision of house rental regulation (Hanoi housing company management apartment) according to market needs

- Development of urban infrastructure including road, drainage, waste disposal, and so on
- Development of social infrastructure including education, health care, social security measures, self-development, marriage and child-rearing, for assisting lives of industrial workers

c. Nghia Hiep and Lieu Xa Commune

i) Living Condition of Workers

Majority of interviewed workers living around Thang Long IP II is from Hanoi neighbourhood. Most of them are unmarried women under the age of 25. Their education level is high school. They became industrial worker together with friends and relatives because the working condition of the industry was much better than that of village life. Women tend to turnover at the marriage after 1-2 years of career as industrial worker. Ratio of workers whose career was more than two years was less than 30%.

Most of the workers are commuting by foot or bicycle within 30 minutes. They have rented a room together with colleagues. They pointed out that condition of water facilities (toilet, shower, washing place), which were shared with other residents and were the first priority for improvement. Although rent fee is much cheaper than Hanoi, they also concern to the rent to be raised in future. Workers from Hanoi or suburban area are keen for personal development rather than improvement of housing condition. In addition, one of their anxiety is security of the region.

Some people felt anxiety to the security of the region and particular waste problem. Workers from Hanoi or suburban area are keen for personal development rather than improvement of housing condition. Although many workers want to live longer there, lifetime employment at one company, only 50% of their employment plan period is only two to three years. About half of the workers want to live with family including the parents, and if it includes the "living with children, including family", it will reach to 90%. Therefore it is obvious that current living environment cannot support their will.

ii) Challenges of Living Environment for Industrial Workers

Based on the survey, challenges for living environment in the surrounding residential area of Thang Long IP II are summarized as listed below.

- Water facilities including development of standards of private apartments
- Sanitary problems especially solid waste management
- Shortage of number of beds in hospital for future population growth
- Development of public houses, social infrastructure and utilities before issues becomes oblivious.
- Traffic facilities for pedestrian to cross Route No 5

3) **Summary of Issues Regarding the Surveys**

- Sampling method might be paid attention because the gender and living houses might not be represented usual cases.
- Surveyed year was 2010 when the working labour shortage happen to both south and north. Their working and living style might be changed due to change of labour market.

(2) **Study for-Rent Social Housing Management Schemes in Urban Areas (Implemented by VIUP1)**

Vietnam Institute for Urban and Rural Planning (hereinafter referred to as "VIUP") conducted this study in 2014. Decree 188/2013/ ND-CP) is legal basis for social housing management schemes especially on social houses for rent, which is new to Vietnam. The study aims at contribution to the realization of Government’s Social Houses Program, meeting the needs on job creations, economic growth and focusing on a major social issue, i.e. providing shelters for a part of the low-income population as well as contributing to social stability and clean urban landscape view.

This study is focusing on 3 eligible groups of targeted social housing (low-income people, workers and students) out of 9 groups which was focused by Decree 188. This survey included study example of foreign and Vietnam social housing development as well as interview to experts and statistical data analysis. Outputs are the demand projection and recommendations for captioned title of the study.

1) **Outline of the Surveys**

The target area is northern Vietnam, especially in Hanoi and its surrounding area. The survey consists of interview, site survey, sociology survey and demand forecast.

a. **Housing Demand**

Housing demand for the each category of the social houses is summarized in below.

Table 3 Demand on Social Housing for Low-Income People in Urban Area

No.	Social housing parameters	Unit	Up-to-date Number	Increase during 2013-2015	Increase during 2016-2020	Total in 2020
1	Urban population	Person	28,200,000	6,600,000	8,400,000	43,200,000
2	People with difficulty in accommodation(Population demand for social housing)	Person	1,410,000	330,000	420,000	2,160,000
3	Housing demand	m ²	11,280,000	2,640,000	3,360,000	17,280,000
		Room/apartment/house	282,000	66,000	84,000	432,000

1 Vietnam Institute Urban Planning

Table 4 Demand on Social Housing for Workers

No.	Social housing parameters	Unit	Up-to-date number	Increase during 2013-2015	Increase during 2016-2020	Total in 2020
1	Workers have housing demand (Population demand for social housing)	Person	1,400,000	315,000	637,000	2,352,000
2	Housing demand	m ²	8,400,000	1,890,000	3,822,000	14,112,000
		Room/apartment/house	280,000	63,000	127,400	470,400

Source: VIUP

Table 5 Demand on Social Housing for Students

No	Social housing parameters	Unit	Up-to-date number	Increase during 2013-2015	Increase during 2016-2020	Total in 2020
1	Students	person	3,000,000	500,000	1,000,000	4,500,000
2	Students have demand on housing	person	1,800,000	300,000	600,000	2,700,000
3	Students have been supported in accordance with Decree 65 Decision 65/2009/QĐ-TTg	Person	330,000			
4	Population demand for social housing	Person	1,470,000	300,000	600,000	2,370,000
5	Housing demand	m ²	8,820,000	1,800,000	3,600,000	14,220,000
		Room/apartment/house	245,000	50,000	100,000	395,000

Source: VIUP

b. Recommendation

Recommendations for social house management were made in the report on the following four categories.

- i) Scheme for Lessee and Developer Selection
 - Improvement of procedures for selection of lessee and developer
 - Disclosure of social houses capacity for investment attraction
- ii) Model of Spatial Development Orientations
 - Site location for social housing development project
 - Spatial zoning in each social house area
 - Promoting and maintain clear land area
 - Flexible layout and application of new materials and new technology

- iii) Construction and Operation Management Scheme
 - Reasonable construction segment in a social housing project
 - Operation and management of social houses for workers and students
- iv) Recommended Solution for Policies and Financial Sanctions
 - Promoting the role of government's finance
 - Improving role and responsibility of the banking system in social house for rent management
 - Housing Saving Fund as a financial sanctions for higher responsibility of house lessee

4-2. The Contents and Results of Living Environment Study of the Industrial Park Workers in Vietnam

The result of the survey targeted for workers who are working IP in the model site in June 2015 is shown below.

The Study for Improvement of Living Conditions for Workers Around Industrial Zones in Vietnam

REPORT SURVEY ON HOUSING CONDITION OF WORKERS AT THANG LONG II INDUSTRY PART

I. GENERAL SURVEY INFORMATION

1.1. Executive Summary

This report summarizes the data analysis results of a survey of 117 workers working in Thang Long Industrial park II, Pho Noi town, Hung Yen province, to gather information about their living condition around industrial park, June 2015.

1.2. Objective

It explores current living condition of workers around industrial park, including demographic characteristics, job status, accommodation, and activities at free time, economic condition and expectation for future life, especially the housing and facilities.

1.3. Methodology

There were 117 respondents to survey request, 53.85% of whom live in Lieu Xa and Nghia Hiep (Yen My district); 46.14% of whom live outside of Lieu Xa and Nghia Hiep, including My Hao dist, An Thi dist, Khoai Chau dist, Van Lam dist (Hung Yen province) and other provinces (Hanoi, Bac Ninh, Hai Duong).

- Survey tool: Survey questionnaire is designed including three parts with 33 items on living condition of workers living around industrial park:

- Part 1. PERSONAL ATTRIBUTES: 04 items, from Q1 – Q4
- Part 2. WORK STATUS: 05 items, from Q5 – Q9
- Part 3. LIVING CONDITIONS: 14 items, from Q10 – Q24
- Part 4. PERSONAL ECONOMIC CONDITIONS: 03 items, from Q25 – Q28
- Part 5. OTHER INFORMATION: 05 items, from Q29 – Q34

- Questionnaires were directly handed to the workers and collected by the survey team; also, questionnaires were sent to the workers via staffs of the human resources of the companies who also collected the questionnaire and sent back to the survey team.
- Data was clean and inserted into statistical software for managing and analysing. Frequency analysis and statistical tests (T-Test) are used to analyse the data.

II. SURVEY RESULTS A. FREQUENCY ANALYSE

Part. 1. Personal attributes

2.1.1. Gender (Q1)

Figure 1 and Table 1 present the gender of the respondents.

There are more females (59.83%) than males (40.17%) among respondents. This proportion reflects the common trend of the worker’s gender in Vietnam industrial park that females are more than males.

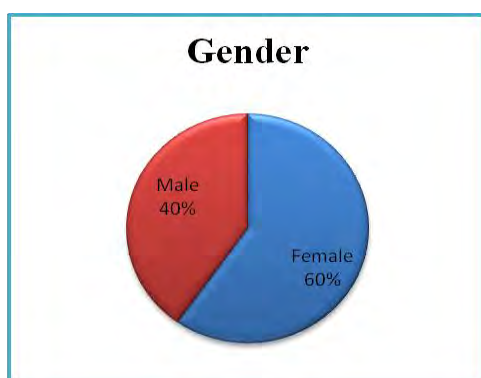


Figure 1 Percentage Distribution of Genders

Gender		
	Frequency	Valid Percent
Male	47	40.17
Female	70	59.83
Total	117	100.00
Missing system	0	00.00
Total	117	

Table 1 Distribution of Genders

2.1.2. Age (Q2)

The most popular age of the respondent ranges from 21 – 25 years old (41.88%), followed by 26 – 30 years old (36.75%).

Only 2 respondent are in between 31 – 35 years old; only one respondent is over 41 years old, which is presented in Table 2 and Figure 2.

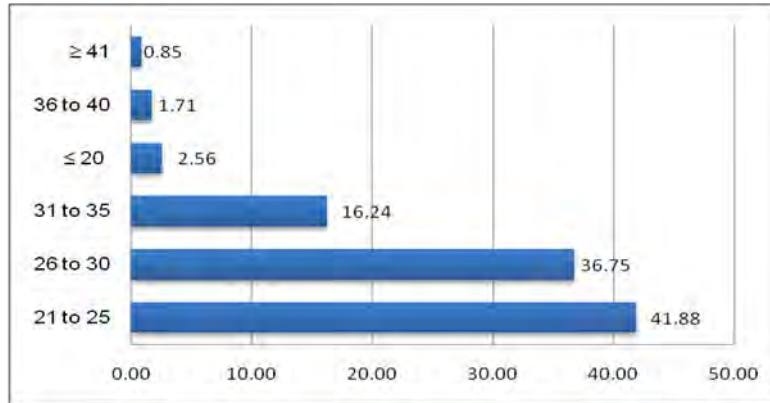


Figure 2 Percentage Distributions of Ages

Table 2 Distributions of Ages

Age	≤ 20	21 - 25	26 - 30	31 - 35	36 - 40	≥ 41	Total
Frequency	3	49	43	19	2	1	117
Percentage	2.56	41.88	36.75	16.24	1.71	0.85	100

2.1.3. Marital Status (Q3)

Marital status of the respondents is shown in Figure 3 and Table 3, in which, married respondents are more than singles (39.32% and 60.68%).

Among married respondents, married with child/children respondents have higher proportion (46.15%) than married without child respondents (14.53%).

There is no single with child/children respondent.

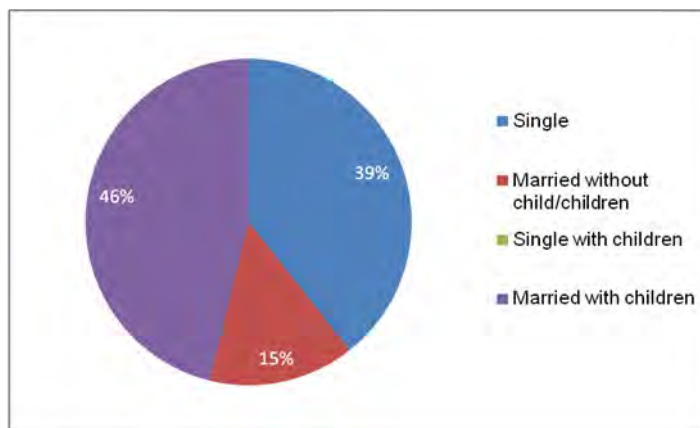


Figure 3 Percentage Distribution of Marital Status

Table 3. Distribution of Marital Status

Items	Single		Married		Total
	Single	Single with child/children	Married without child/children	Married with children	
Frequency	46	0	17	54	117
Percentage	39.32	0	14.53	46.15	100.00
	39.32		60.68		

2.1.4. Educational Background (Q4)

Figure 4 presents the distribution of percentage of the educational background of the respondents. All of the respondents have educational background from secondary school up to university.

Respondents with two year vocational take 18%. Respondents graduated colleague and university take a similar proportion (20% and 21%).

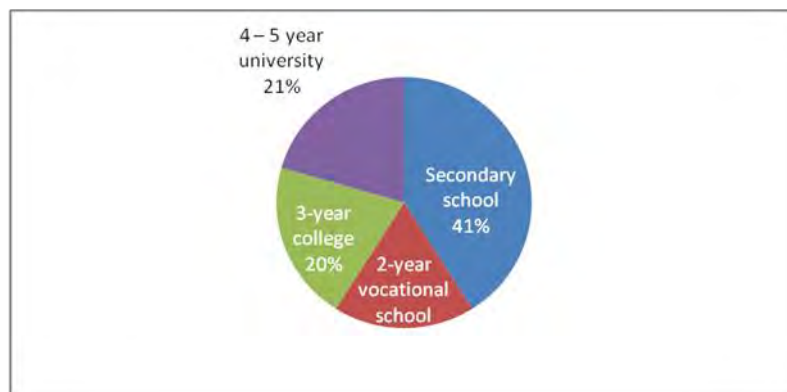


Figure 4 Percentage Distribution of Educational Background

Table 4 Distribution of Educational Background

Educational background	Below secondary school	Secondary school	Vocational school	College	University	
Frequency	0	48	21	24	24	117
Percentage	0	41.03	17.95	20.51	20.51	100.00

Part 2. Work status

2.2.1. Years of Working Experience at Current Company (Q5)

Figure 5 presents the distribution of working experience of the respondents at their current company. It ranges from less than one year up to more than 5 year experience.

The group of respondents that have less than one year working experience is the largest (23.93%), while the group with more than 5 year experience (>5 years) is the smallest (15.38%).

21.37% of respondents have 3 – 4 year experience and 16.24% of respondents 2 - 3 year experience.

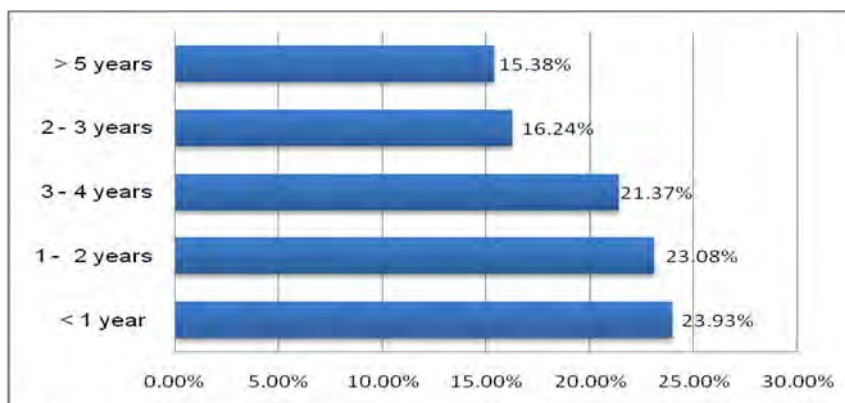


Figure 5 Percentage Distribution of Working Experience

2.2.2. Frequency of Job Change (Q6)

The survey shows that there is no one has changed their job over 5 times, while the most common (58.97 % of the respondent) is 1 – 2 times of job change.

Respondents who never change their job also take a considerable percentage (33.33%). Changing job 3 – 4 times is the case of 7.69% of the respondents.

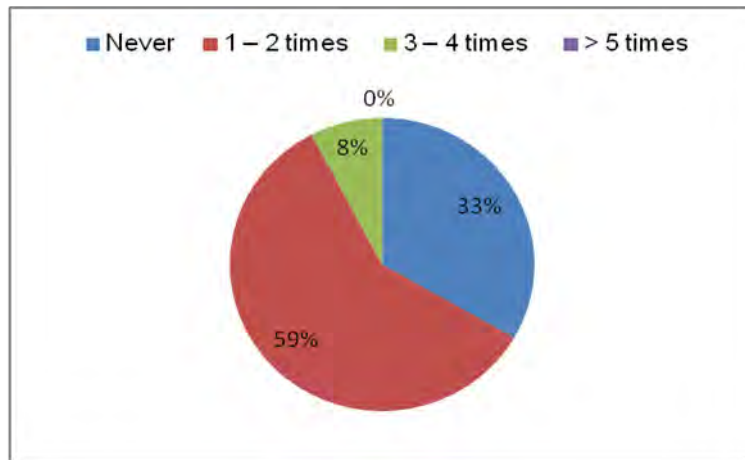


Figure 6 Percentage Distributions of Job Changes

2.2.3. Reasons for Choosing the Current Job (Q7)

According to the survey findings, “good working condition” is the most favorable reason for the respondents to choose their current job as 59.83% of them reported that.

Stability of the job and being close to family are also favorable reasons for the respondents to choose their current job, as 45.3% and 43.59% of them reported that.

Only 21.37% of the respondents considering “suitable to their qualification” is the reason for them to choose their job, while 59% respondents holding vocational school, college and university degree (see Table 4).

Good salary is not the reason for most respondents, which takes only 17.09%. It means that survey workers concern the work condition the most, then the stability of the work and distant to work, instead of the salary that they are offered.

Only one respondent reported that he/she has taken the job because there is not better job to chose.

There are three respondents report they changed there for moving closely to their spouse’s work place.

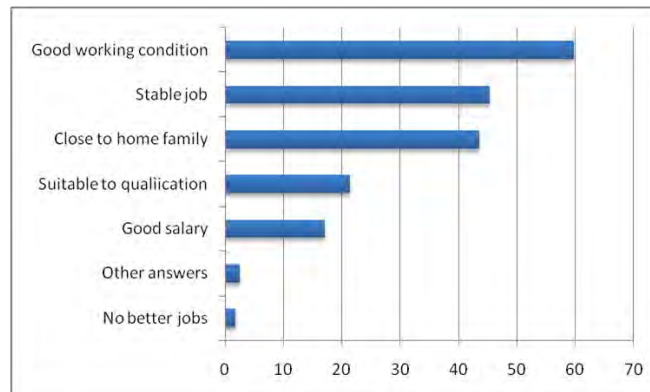


Figure 7 Percentage Distributions of Reasons for Choosing Job at the Industrial Park

Table 5 Distribution of Reasons for Choosing Job at the Industrial Park

Reason	Frequency	Percentage %
Suitable to qualification	25	21.37
Good salary	20	17.09
Close to home family	51	43.59
Stable job	53	45.30
Good working condition	70	59.83
No better jobs	2	1.71
Other answers	3	2.56

2.2.4. Extra Working Time (Q8)

Less than a half of the respondents reported that they work extra time (43.58%), in which, 32.48% of the respondents work less than 6 hours per day; 9.40 % of respondents work from 6 – 12 hours per day. Extra working time over 12 hours/day is not common, only 01 of the respondent in the case of working from 12 – 20 hours and only 01 for over 20 hours (see Figure 8 and Table 3).

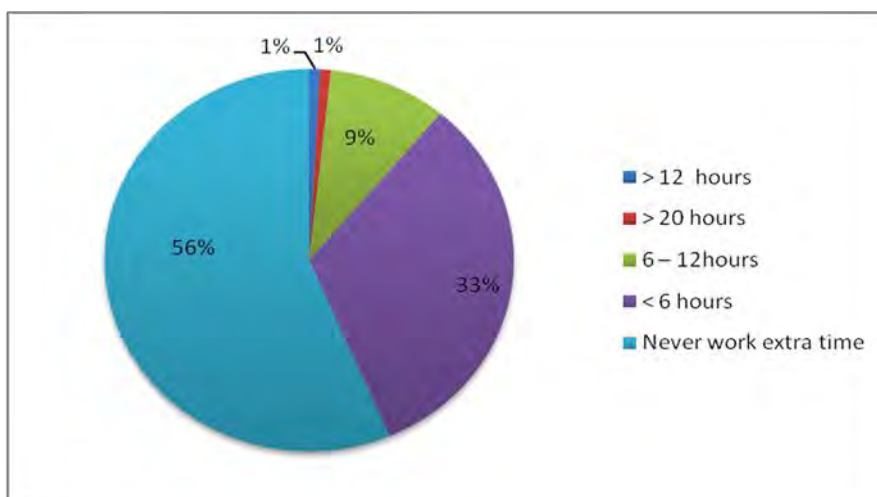


Figure 8 Percentage Distribution of Working Extra Time

Table 6 Distribution of Amount of Working Extra Time

Amount of time	< 6 hours	6 – 12 hours	12 – 20 hours	> 20 hours	Never work extra time
Frequency	38	11	1	1	66
Percentage	32.48	9.40	0.85	0.85	56.41
	43.58				

2.2.5. Working Shift (Q9)

Data of analysis results show as follows. There are 71.79% of the respondents that work in regular shift, 20.51% works in second shift; 17.95% work in first shift.

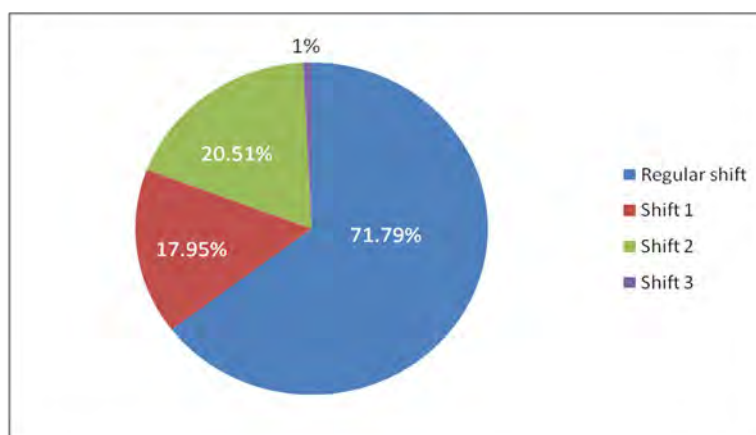


Figure 9 Percentage Distribution of Working Shifts

Table 7 Distribution of Working Shifts

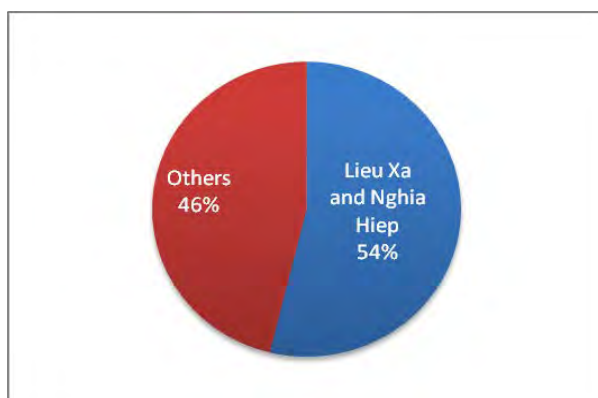
Shift	Regular shift	Shift 1	Shift 2	Shift 3
Frequency	84	21	24	1
Percentage	71.79	17.95	20.51	0.85

Part 3. Living Condition

2.3.1. Living Location (Q10)

Figure 10 shows there are 53.85% of respondents living in Lieu Xa and Nghia Hiep communes; 46.15% respondents living in other locals (communes/districts) surrounding Lieu Xa and Nghia Hiep communes, such as:

- Yen My district: Dong Than, Tan Lap, Ngoc Long, Giai Pham and Thanh Xa communes.
- My Hao district: Nhan Hoa, Di Su, Hoa Phong, Cam Xa, Phugn Chi Kien communes.
- Khoai Chau district: Khoai Chau town, Dan Tien commune.
- Van Lam district: Chi Dao commune.
- An Thi district.
- Other provinces: Hai Duong, Bac Ninh, Hanoi.



Lieu Xa and Nghia Hiep	Others
63	54
53.85%	46.15%

Table 8 Distribution of Living Locations

Figure 10 Percentage Distribution of Living Locations

2.3.2. Length of Time Staying at Current Accommodation (Q11)

As the Figure 11 shows, the most popular time period of living at current accommodation is > 36 months as 51.28% of survey workers reported that.

17.97% and 12.82% live in their current place for 6 – 12 months and 13 – 24 months; new comers who has been living for less than 6 months take only 10.26%. This trend reveals that the survey workers tend to have stable residents or they do not often change the accommodation.

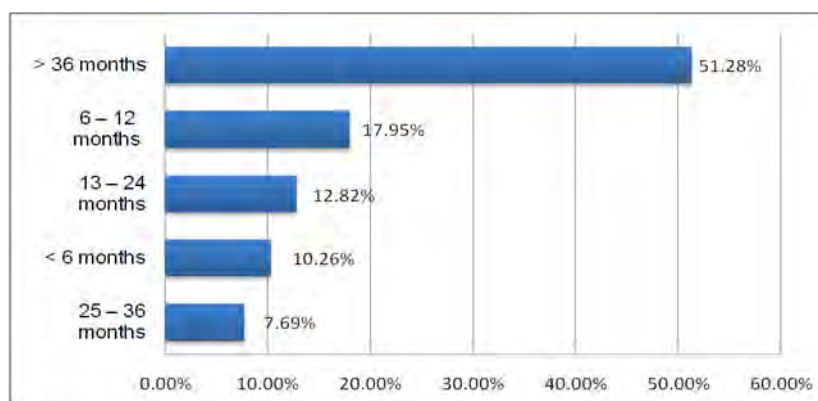


Figure 11 Percentage Distribution of Time Living in Current Accommodation

Table 9 Distribution of Time Living in Current Accommodation

Length of time	< 6 months	6 – 12 months	13 – 24 months	25 – 36 months	> 36 months
Frequency	12	21	15	9	60
Percentage	10.26	17.95	12.82	7.69	51.28

2.3.3. Type of Accommodation (Q12)

According to data in Figure 12, almost half of survey workers live at their home family (45.30%). This is suitable with recruitment strategy of many companies in the industrial park that they try to employ the local people.

For survey workers who do not live in their parents' house, renting a room is popular choice of them (28.11%), then sharing room with others (11.11%); some of them live with their relative (2.56%) or buy their own house (3.42%). A small percentage of the workers live in a rental room with their family (9.40%).

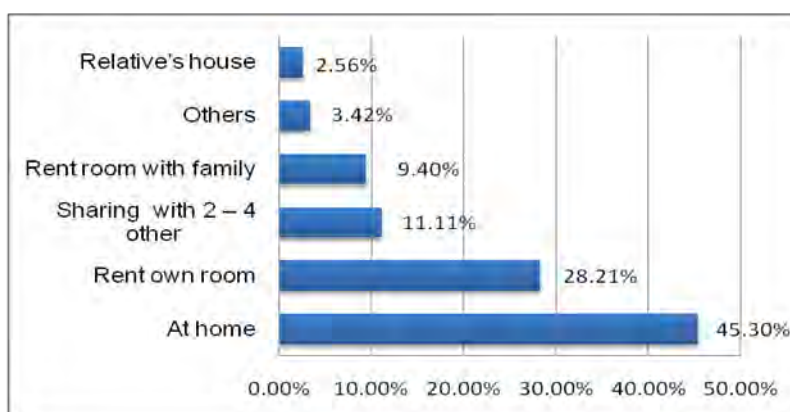


Figure 12 Percentage Distribution of Type of Accommodations

Table 10 Distribution of Type of Accommodations

Type of accommodation	Rent own room	Sharing with 2 – 4 other	Rent room with family	At home	Relative's house	Others
Frequency	33	13	11	53	3	4
Percentage	28.21	11.11	9.40	45.30	2.56	3.42

2.3.4. Room Acreage (Q13)

According to the survey workers, $> 20 \text{ m}^2$ is the most popular room area for their accommodation (48.88%), then $10 - 15 \text{ m}^2$ (23.93%).

Less than 10 m^2 room and $16-20 \text{ m}^2$ room have the same selection of the respondents (17.09%).

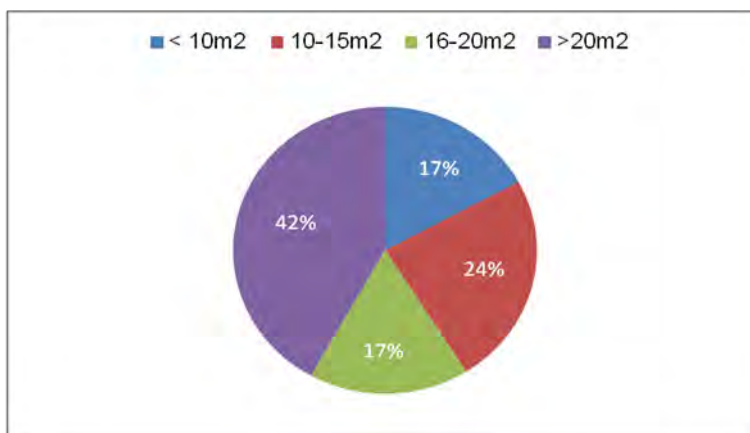


Figure 13 Percentage Distributions of Room Acreage

Table 11 Distribution of Room Acreage

Range of area	< 10m ²	10-15m ²	16-20m ²	>20m ²
Frequency	20	28	20	49
Percentage	17.09	23.93	17.09	41.88

2.3.5. Accommodation Facilities (Q14)

2.3.5.1. Bathroom and Toilet (Q14, 1)

Shared toilet – bathroom with other rooms is most popular for the accommodation of the respondents (Figure 14), as reported by 55.56% of respondents.

43.59% of the respondents reported that they had their own toilet – bathroom (provided by the landlords). Only 01 respondent reported that they have toilet – bathroom outside of their accommodation.

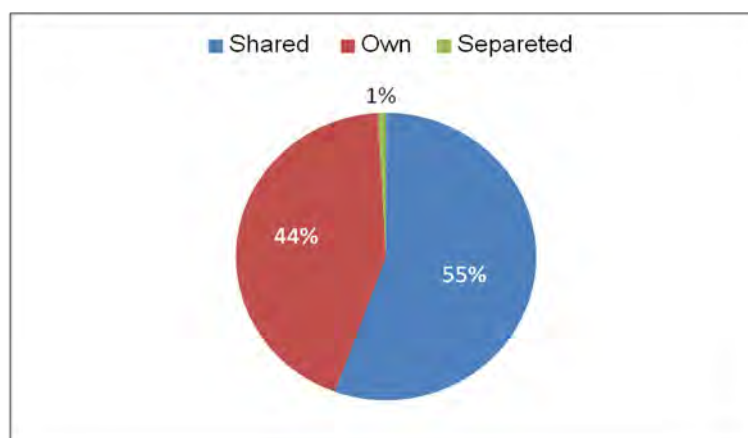


Figure 14 Percentage Distribution of Bathroom – Toilet Conditions

Table 12 Distribution of Bathroom and Toilet Condition

Bathroom-toilet	Shared	Own	Separated
Frequency	65	51	1
Percentage	55.56	43.59	0.85

2.3.5.2. Water Heater (Q14, 2)

It is quite notable that more than a half of respondents live without water heater as reported by 65.81% of the respondents. It is assumed that they do not use water heater because of saving money spending on the power. It is seen very popular in rural and the low standard living that using a coal stove is very popular for cooking, including hot water.

31.62% of respondents have water heater provided by the landlord. One respondent reported that he/she has to buy his/her own water heater.

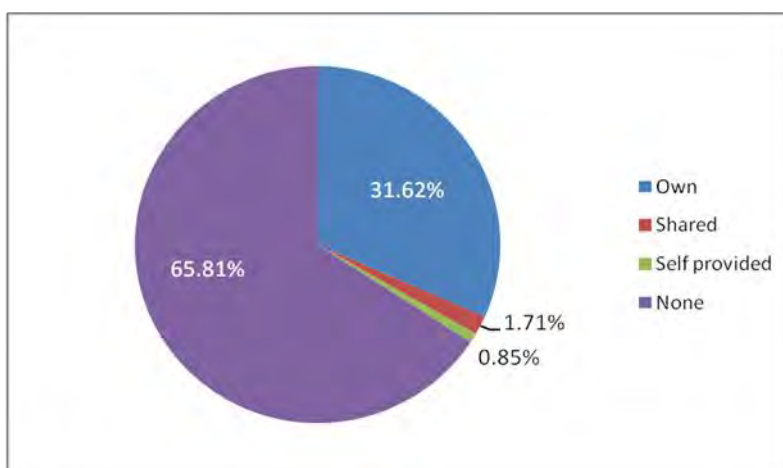


Figure 15 Percentage Distributions of Water Heater Conditions

Table 13 Distribution of Water Heater Conditions

Water heater	Own	Shared	Self provided	None
Frequency	37	2	1	77
Percentage	31.62	1.71	0.85	65.81

2.3.5.3. Air Conditioner (Q14, 3)

As the survey data shown in Figure 16, most of the respondents living without air conditioner (78.63%). There are only 19.16% of them have air conditioner provided by the landlords and very small proportions of them shared or self-provided air conditioner (0.85%).

It is easy to understand, they do not use air conditioner because the expenditure on power for air conditioner is a big money per month.

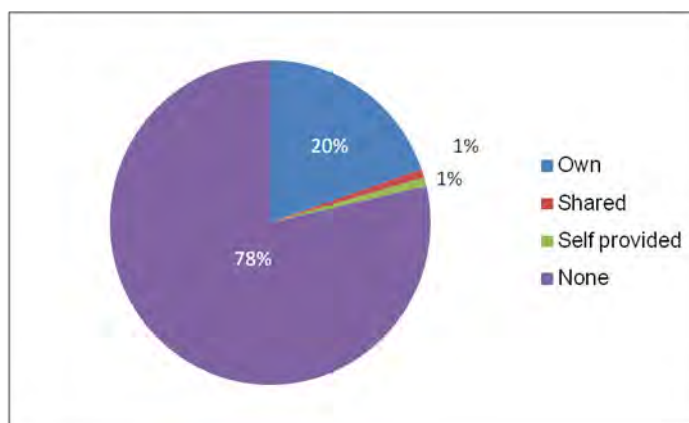


Figure 16 Percentage Distributions of Air Conditioner Conditions

Table 14 Distribution of Air Conditioner Conditions

Air conditioner	Own	Shared	Self provided	None
Frequency	23	1	1	92
Percentage	19.66	0.85	0.85	78.63

2.3.5.4. Electric Fan (Q14, 4)

Large proportion of the respondents reported that they have to buy on their own electric fan (47.86%), followed by almost the same proportion of the respondents who use electric fan provided by the landlords (47.01%).

There are only 5.13% of the respondents who live without electric fan. No one has to share electric fan with others.

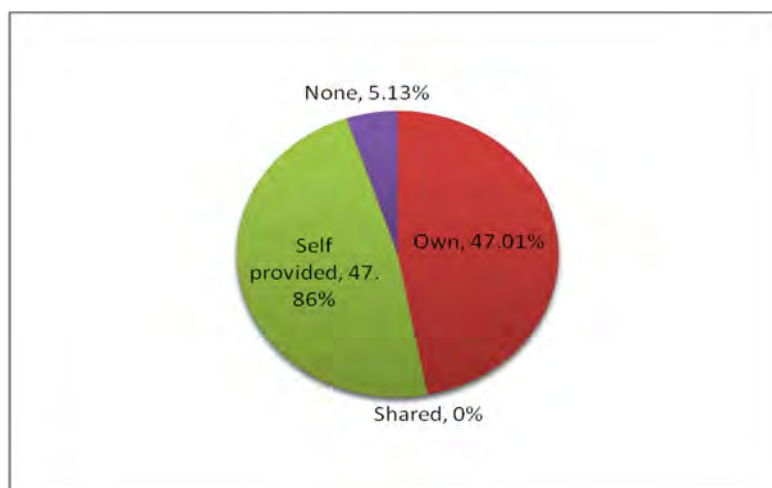


Figure 17 Percentage Distributions of Electric Fan Conditions

Table 15 Distribution of Electric Fan Conditions

Electric fan	Own	Shared	Self provided	None
Frequency	55	0	56	6
Percentage	47.01	0	47.86	5.13

2.3.5.5. Internet (Q14, 5)

More than a half of respondents do not use internet (54%). Among the respondents who use internet, 16% of them rent the internet line on their own; 24% have internet line provided by the landlord. There are only 6% of them share internet with other rooms.

It is assumed that using a laptop connected to internet, people can read news, do the net surfing, facebook, emails and including watching TV online. Therefore, to save money, the workers prefer investment in a laptop and internet line, instead of buy a TV.

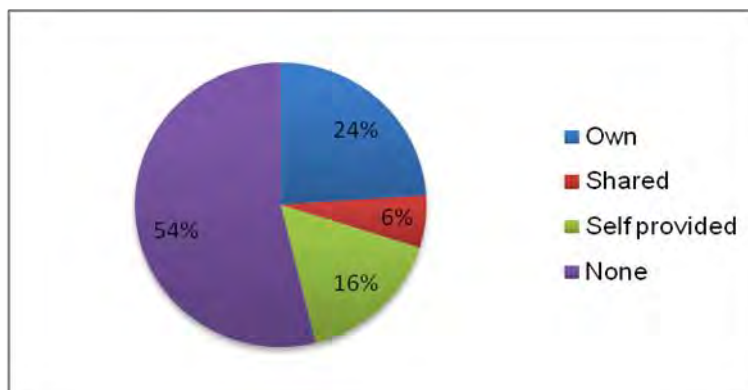


Figure 18 Percentage Distributions of Internet Conditions

Table 16 Distribution of Internet Conditions

Internet	Own	Shared	Self provided	None
Frequency	28	7	19	63
Percentage	23.93	5.98	16.24	53.85

2.3.5.6. Kitchen Area (Q14, 6)

Although having own kitchen provided by the landlord is most popular to the respondents (52.99%), a quite large proportion of the respondents do not have separated kitchen so that they have to cook in the room (44.44%).

Sharing kitchen with other rooms is not very common to the respondents, only 2.56%.

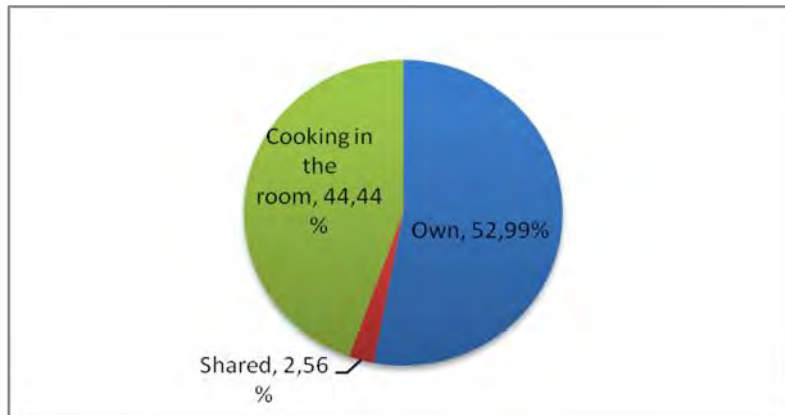


Figure 19 Percentage Distributions of Kitchen Conditions

Table 17 Distribution of Kitchen Conditions

Kitchen area	Own	Shared	Cooking in the room
Frequency	62	3	52
Percentage	52.99	2.56	44.44

2.3.5.7. Fridge (Q14, 7)

Survey data shows that respondents' living without fridge is the most popular as 47.86% of the respondents reported in this case; 41.03% of them are provided by the landlords.

There are 11 respondents reported that they bought fridge by themselves and respondents only two respondents shared fridge with others.

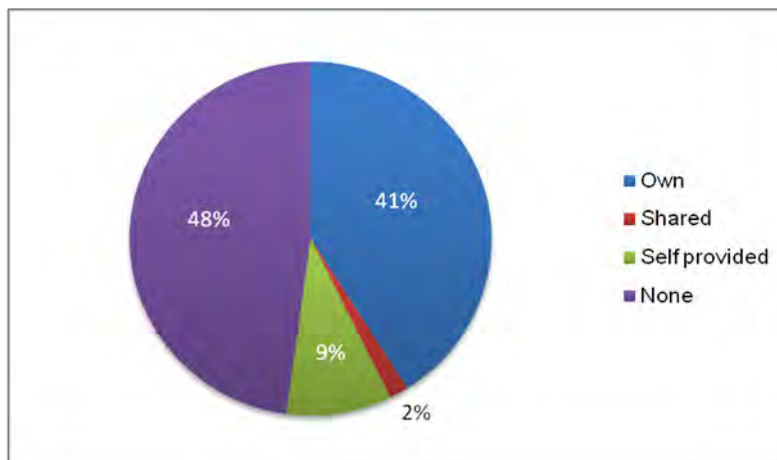


Figure 20 Percentage distributions of fridge conditions

Table 18 Distribution of Fridge Conditions

Fridge	Own	Shared	Self provided	None
Frequency	48	2	11	56
Percentage	41.03	1.71	9.40	47.86

2.3.5.8. Washing Machine (Q14, 8)

Washing machine is not a popular facility for worker as 63.25% of them do not have washing machine; 31.62% of them are provided by the landlord; a small proportion of them buy washing machine by themselves (5.13%).

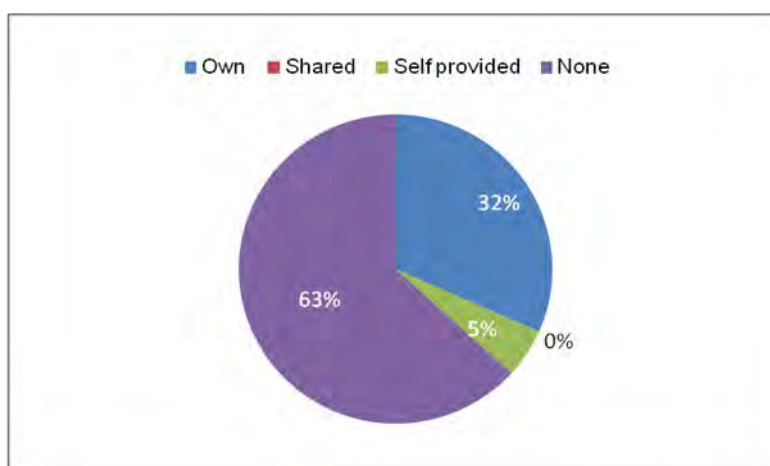


Figure 21 Percentage Distributions of Washing Machine Conditions

Table 19 Distribution of Washing Machine Conditions

Washing machine	Own	Shared	Self provided	None
Frequency	37	0	6	74
Percentage	31.62	0	5.13	63.25

2.3.5.9. Storage Condition (Q14, 9)

Accommodation without storage is quite popular as 49% of the respondents reported this. The rest of them shared storage with others (27%) or have their own storage (24%).

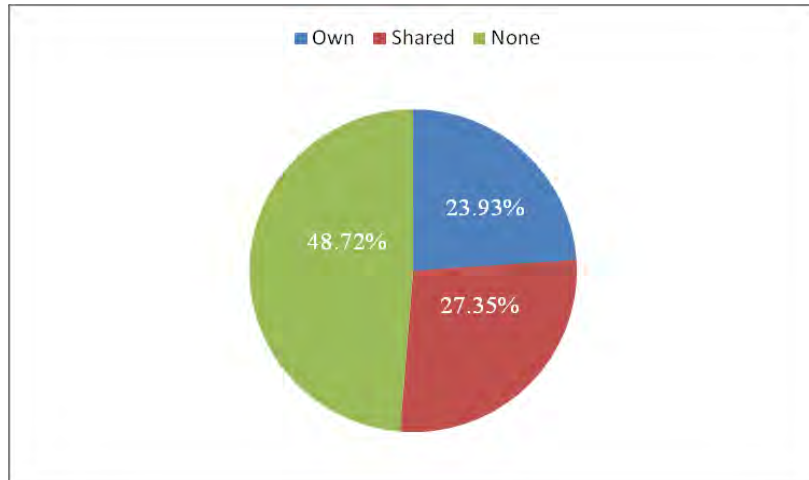


Figure 22 Percentage Distributions of Storage Conditions

Table 20 Distribution of Storage Conditions

Store	Own	Shared	None
Frequency	28	32	57
Percentage	23.93	27.35	48.72

2.3.5.10. Wardrobe Condition (Q14, 10)

Survey data (Figure 23) shows that, 45% of the respondent are provided wardrobe by the landlords ; 40% of them buy on their own and only two respondents shared wardrobe.

However, 13% of the respondents reported that they live without wardrobe.

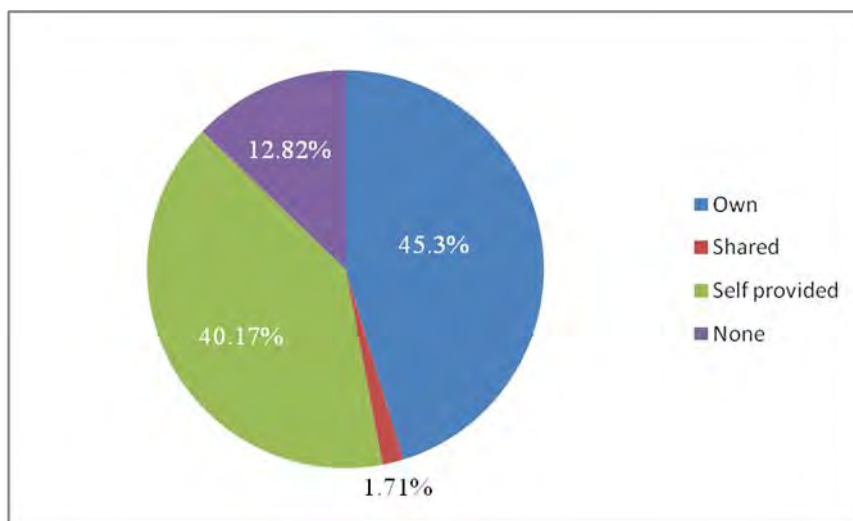


Figure 23 Percentage Distributions of Wardrobe Conditions

Table 21 Distribution of Wardrobe Conditions

Wardrobe	Own	Shared	Self provided	None
Frequency	53	2	47	15
Percentage	45.30	1.71	40.17	12.82

2.3.6. Reasons for Remaining at Current Accommodation (Q15)

As shown the Figure 24, “living in parents house” and “distance to work” are the most common reasons for the respondents to remaining at their current accommodation (41.88% and 41.03%).

The “rental” is also considered by 22.22% of the respondents when they decided remaining at the current accommodation.

Good facilities are also concerned by 17.95% of the respondents.

To live with friends is not very common to the respondents as it takes 8.55% of them.

It seems the respondents do not pay attention at quality of the room as there are only 5.98% of them concerning the quality of the room.

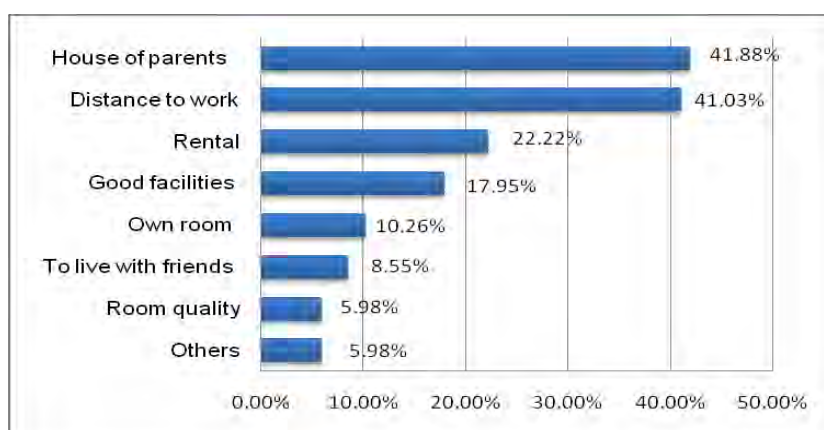


Figure 24 Percentage Distributions of Reasons for Remaining at Current Accommodation

Only 5.98% of the respondents reported that they choose this accommodation because of the followings: Good security; good services; good water and power; get used living in the area; lays for changing; good neighbours.

Table 22 Distribution of Reasons for Remaining at Current Accommodation

Reasons	Rental	Distant to work	Own room	Nice room	Good facilities	To living with friends	House of parents	Others
Frequency	26	48	12	7	21	10	49	7
Percentage	22.22	41.03	10.26	5.98	17.95	8.55	41.88	5.98

2.3.7. Good Factors in Current Environment (Q16)

Public market is the best factor in the living environment, according to 70.94% of the survey workers, followed by fresh environment (47.01%) and supermarket (28.21%).

* **“Fresh environment”** means a clean environment that is free of pollution (because survey community is close to the industrial park), mainly imply the air pollution because it is more popular than the others in the survey area.

Shop or restaurant is rated as good factor by only 16.24% of the respondents.

Sport facilities, recreation facilities and religious facilities are rated as good factors by few respondents (10.26%, 6.84% and 3.42%). Probably, these are poor facilities in the locals.

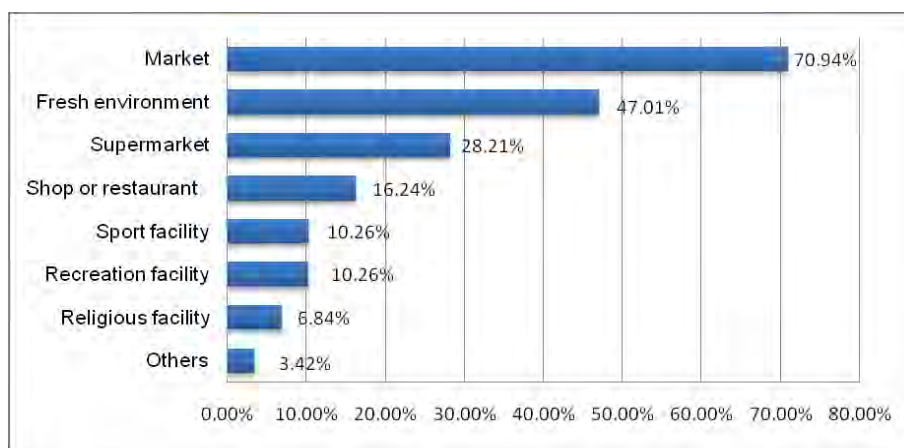


Figure 25 Percentage Distributions of Good Factors in Current Environment

Only 4 respondents rate “good neighbours” as good factors (in the “Other” answer”).

Table 23 Distribution of Good Factors in Current Environment

Factors	Frequency	Valid percent
Market	83	70.94
Supermarket	33	28.21
Recreation facility	12	10.26
Sport facility	12	10.26
Fresh environment	55	47.01
Religious facility	8	6.84
Convenient coffee shop/restaurant	19	16.24
Others	4	3.42

2.3.8. Facilities Need to be Improved (Q17)

According to the respondents, room space needs to be improved the most (41.88%), followed by kitchen (38.46%) and housing stuffs (37.61%). Toilet and room quality are proposed to be improved by 34.19% and 33.33% .

Only 9.40% of the respondents mentioned other facilities, such as the quality of fresh water.

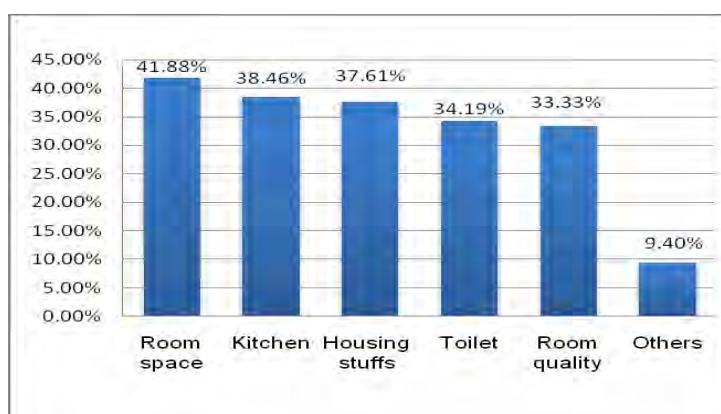


Figure 26. Percentage Distribution of Facilities Need to be Improved

Facilities	Room quality	Room space	Toilet and bathroom	Kitchen	Housing stuffs	Others
Frequency	39	49	40	45	44	11
Percentage	33.33	41.88	34.19	38.46	37.61	9.40

Table 24 Distribution of Facilities Need to be Improved

2.3.9. Environment Factors Need to be Improved (Q18)

As shown in Figure 27, “fresh environment” needs to be improved the most as reported by 52.99% of the respondents. Fresh environment can be understood as clean environment.

Sport facility is reported to be improved by 28.21% respondents’ answers. Public market is reported to be improved by 26.50% respondents’ answers. Convenient coffee shop/restaurant is reported to be improved by 19.66% respondents’ answers.

Recreation facility and supermarket take the same proportion of the respondents (16.24%) on their improvement.

Religious facility improvement is not the factor that is paid attention by many respondents as its proportion is smallest (5.13%).

It is may be assumed from this survey results that the survey workers are more interested in a fresh environment, sport facilities and public market than the other factors such as recreation facility or religious facility.

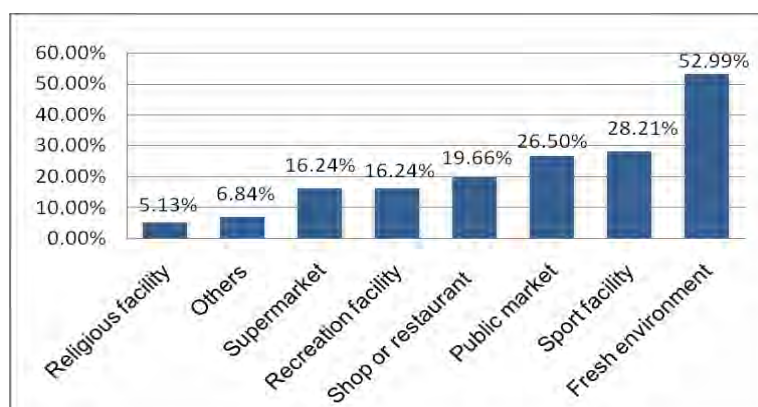


Figure 27 Percentage Distribution of Environment Factors Need to be Improved

Factors	Frequency	Percentage
Public market	31	26.50
Supermarket	19	16.24
Recreation facility	19	16.24
Sport facility	33	28.21
Fresh environment	62	52.99
Religious facility	6	5.13
Convenient coffee shop/restaurant	23	19.66
Others	8	6.84

Table 25 Distribution of Environment Factors Need to be Improved

2.3.10. Transportations to Work (Q19)

Going to work by motor bicycle is the most popular vehicle to the survey workers as 85.47% of them reported this case.

Far less common compared to motor bicycle is bicycle (10.26%).
Others vehicle also used by the survey workers is electric-bicycle.
Company's bus is not popular as travel vehicle to the survey workers (1.71%).
There are no any cases reported to go to work by walking.

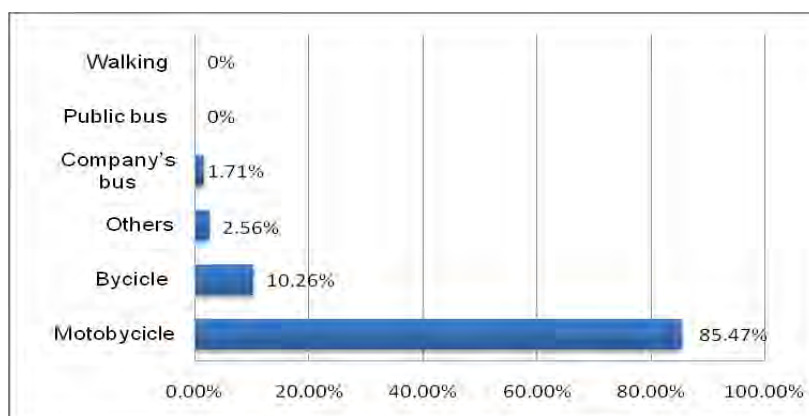


Figure 28 Percentage Distributions of Transportations to Work

Means	Walking	Bycicle	Motobycicle	Public bus	Company's bus	Others
Frequency	0	12	100	0	2	3
Percentage	0	10.26	85.47	0	1.71	2.56

Table 26 Distribution of Transportations to Work

2.3.11. Travel Time to Work (Q20)

According to the survey workers, 49.57% of them spend less than 15 minutes travelling to work. It can be assumed that these survey workers live close to the industrial park.

There are 40.17% of the respondents spend 15 – 30 minutes on the way to work.

Only 10.26% of the respondents spent 31 – 60 minutes travelling to work. Perhaps, this group of respondents live quite away from the industrial park.

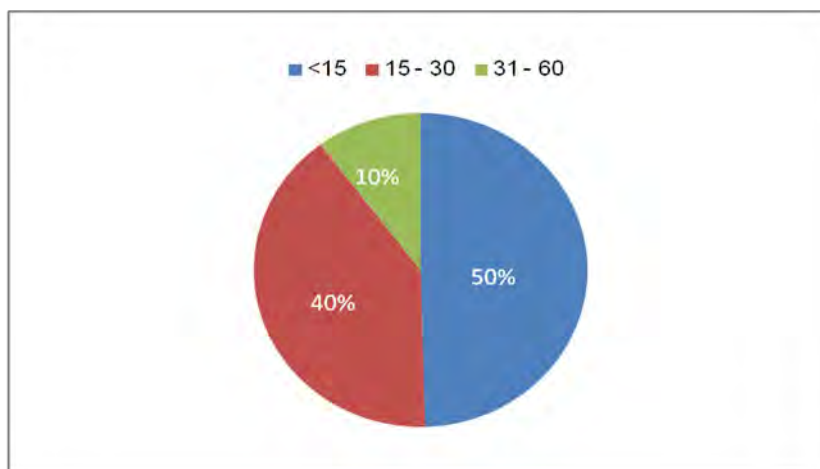


Figure 29 Percentage Distribution of Travel Time to Work

Table 27 Distribution of Travel Time to Work

Time	<15	15 - 30	31 - 60
Frequency	58	47	12
Percentage	49.57	40.17	10.26

2.3.12. Reasons for Changing Accommodation (Q21)

Figure 30 shows that, 78.63% of the respondents never change their accommodation.

However, for the respondents who have moved, rental fee is more common reason than others are as it takes 7.69% of respondents; followed by other reason (5.13%) including the poor fresh water condition, poor housing condition is also reason for the respondent to move (4.27%). The respondents also change their accommodation because of their families. Only one respondent reported that he/she change accommodation because of moving with the roommate, also one respondent move to other accommodation because of the landlord.

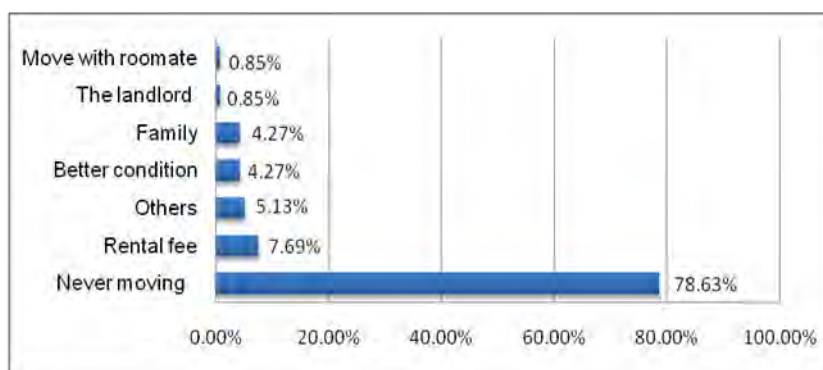


Figure 30 Percentage Distributions of Reasons for Changing Accommodation

Table 28 Distribution of Reasons for Changing Accommodation

Reasons	Frequency	Percentage
Never moving	92	78.63
The landlord	1	0.85
Rental fee	9	7.69
Move with roommate	1	0.85
Better condition	5	4.27
Family	5	4.27
Others	6	5.13

2.3.13. Activities after Work (Q22)

Reading (including web surfing) and watching TV are the most popular activities that the respondents often do at their free time (after work) as they take 45.30% and 44.44%. This results also match with 46.15% of the respondents who use internet (see Table 15).

Taking care of children is concerned by 39.32% of the respondents.

Resting after work is preferred by 35.90% of the respondents.

Visiting relatives and friends are favourable for 25.64% of the respondents.

Playing sport is found at 18.80% of the respondents.

Only 5.13% of the respondents also study, especially study English, and do the gardening at their free time.

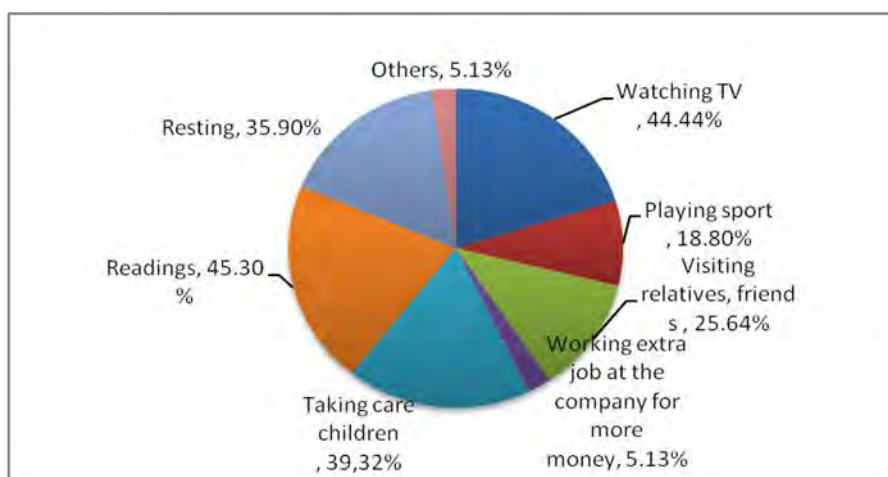


Figure 31 Percentage Distributions of Activities after Work

Table 29 Distribution of Activities after Work

Activities	Frequency	Percentage
Readings	53	45.3
Watching TV	52	44.44
Playing and taking care children	46	39.32
Resting	42	35.9
Visiting relatives, friends	30	25.64
Playing sport	22	18.8
Working extra job at the company for more money	6	5.13
Others	6	5.13

2.3.14. Activities at the Weekend (Q23)

At the weekend, when having longer off – time, respondents often visit their family, as it shown in Figure 32, 54.70% of the respondents reported this, followed by resting at home as reported by 49.57%.

Visiting friends and going shopping are found in 28.21% and 25.66% of the respondents.

The respondents of 19.66% like to gather with friends for coffee or drinks.

Few of them play sport at the weekend, as there are only 6.84% answers.

Besides, 6.84% of respondents reported that they spend time studying further, do the gardening and help their parents (in the item “Others”)

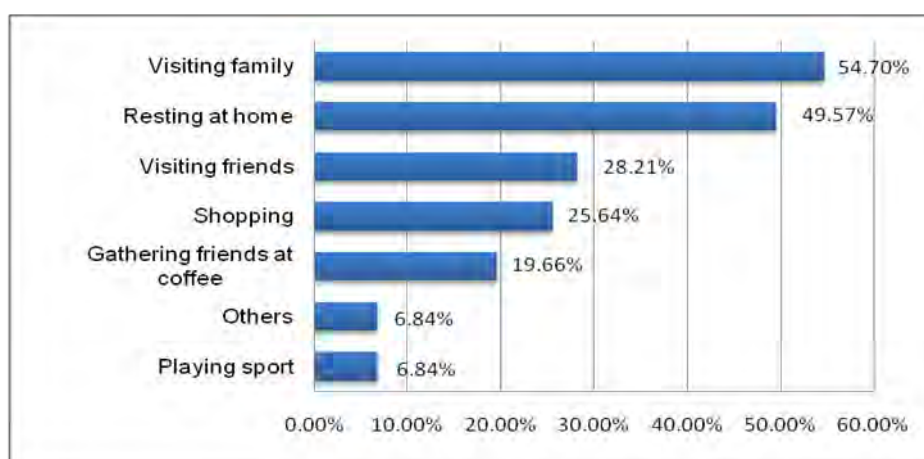


Figure 32 Percentage Distributions of Activities at the Weekend

Table 30 Distribution of Activities at the Weekend

Activities	Frequency	Percentage
Shopping	30	25.64
Shopping	30	25.64
Gathering friends for coffee/drinking	23	19.66
Playing sport	8	6.84
Resting at home	58	49.57
Visiting family	64	54.70
Visiting friends	33	28.21
Others	8	6.84

2.3.15. Accommodation Satisfaction (Q24)

More than a half of respondents (53%) have no answers on expressing their satisfaction to their current accommodation.

34% of respondents revealed that they were satisfied with current housing (11% are very satisfied and 23% are satisfied).

Only 13% of respondents reported that they were not satisfied with current accommodation with 4% of respondents reported that they are very unsatisfied.

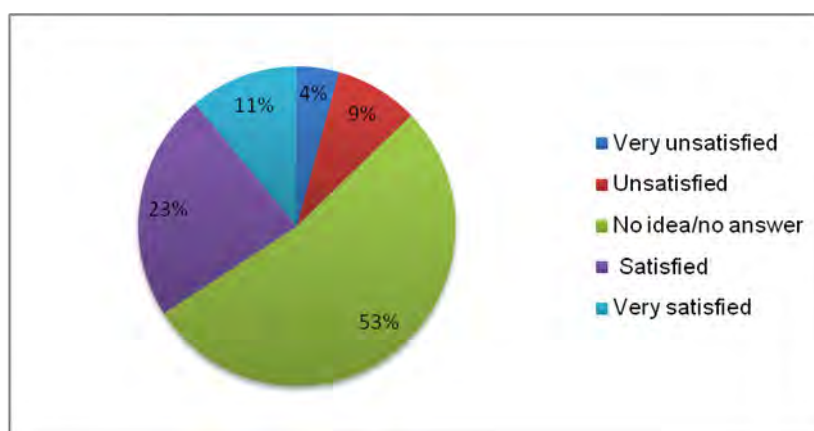


Figure 33 Percentage Distribution of Accommodation Satisfaction

Table 31 Distribution of Accommodation Satisfaction

Satisfaction	Very unsatisfied	Unsatisfied	No idea/no answer	Satisfied	Very satisfied
Frequency	5	10	62	27	13
Percentage	4.27	8.55	52.99	23.08	11.11

Part 4. Personal Economic Condition

2.4.1. Monthly Income (Q25)

Most of respondents have monthly income from 4.000.000 – 5.000.000 VND,

reported by 47.01% of the respondents.

21.37% of respondents earn at the lowest rate, from 2.000.000 – 4.000.000 VND.

16.24% of respondents earn more than 7.000.000 as monthly income.

11.11% of respondents have monthly income in 5.000.000 – 6.000.000 VND.

Only 4.27% of respondents have monthly income from 6.000.000 – 7.000.000 VND.

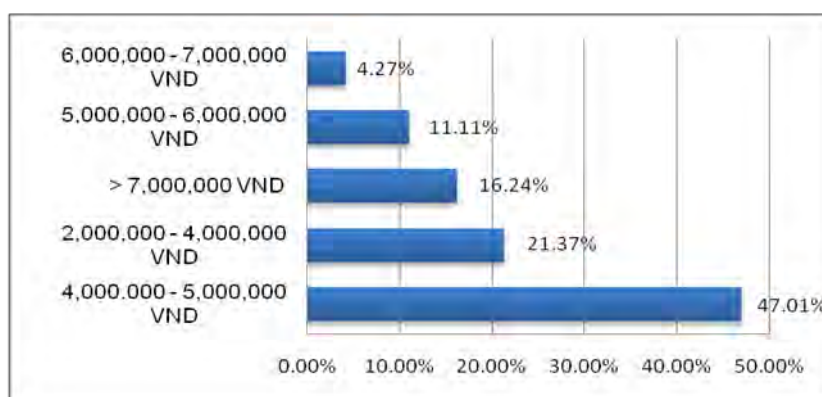


Figure 34 Percentage Distribution of Monthly Income

Table 32 Distribution of Monthly Income

Monthly income	Frequency	Percentage
2,000,000 - 4,000,000 VND	25	21.37
4,000,000 - 5,000,000 VND	55	47.01
5,000,000 - 6,000,000 VND	13	11.11
6,000,000 - 7,000,000 VND	5	4.27
> 7,000,000 VND	19	16.24

2.4.2. Monthly Housing Cost (Q26)

500,000 - 750,000 VND is the most popular amount of money that the survey workers spend on housing per a month as there are 48.28% of them reported this.

The 19.83% of the survey workers spend 750,000 - 1,000,000 VND per month on housing.

The 18.97% of the survey workers spend less than 500,000 VND per month on housing.

The 8.62% of the survey workers spend 1,000,000 - 1,500,000 VND per month on housing.

The 3.54% of the survey workers spend 1,500,000 - 2,000,000 VND per month on housing.

Only 0.86% of the survey workers spend more than two million per month on housing.



Figure 35 Percentage Distribution of Monthly Housing Cost

Table 33 Distribution of Monthly Housing Cost

Housing cost monthly	Frequency	Percentage
< 500,000 VND	22	18.97
500,000 - 750,000 VND	56	48.28
750,000 - 1,000,000 VND	23	19.83
1,000,000 - 1,500,000 VND	10	8.62
1,500,000 - 2,000,000 VND	4	3.45
> 2,000,000 VND	1	0.86

2.4.3. Housing Support from Company (Q27)

There are 68.38% of the respondents received housing support from company and 31.62% not had any support from their company.

Among housing supported respondents, more received housing support at 200.000 – 500.000 VND per month as 33.33% of them reported that; > 500.000 VND is the second largest group of respondents as 25.64% of them reported that; only 9.40% of respondents received less than 200.000 VND monthly as housing support from their company.

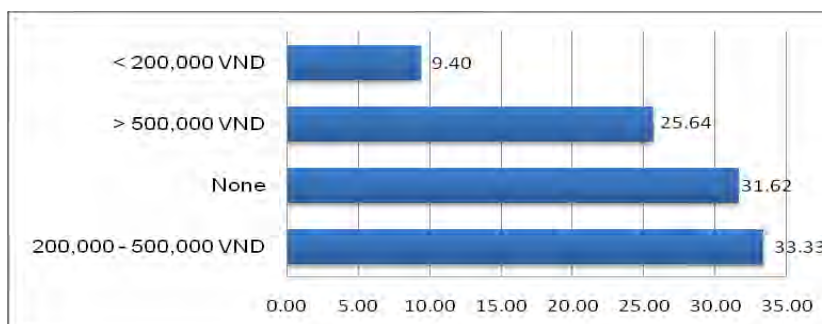


Figure 36 Percentage Distribution of Supporting Money for Housing

Table 34 Distribution of Supporting Money for Housing

Amount of money	Frequency	Percentage
< 200,000 VND	11	9.40
200,000 - 500,000 VND	39	33.33
> 500,000 VND	30	25.64
No support	37	31.62

2.4.4. Desirable Rental Fee (Q28)

When being asked about the desirable rental fee per month, most of the respondents (46.55%) chose “< 500,000VND”; 40.52% chose “500,000 - 750,000VND”; 4.31% chose “750,000 - 1,000,000VND”; also 4.31% chose “1,000,000-1,500,000VND”.

Only three respondents accept “> 2,000,000VND” for rental fee monthly and only two respondents accepted “1,500,000 - 2,000,000 VND”.

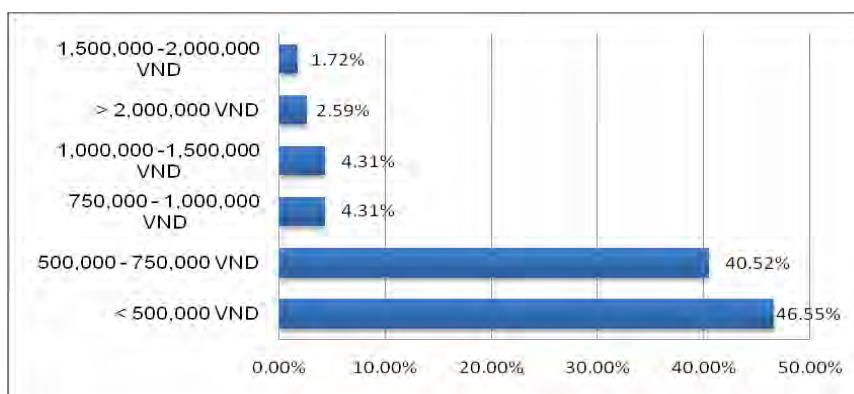


Figure 37 Percentage Distributions of Desirable Rental Fee

Table 35 Distribution of Desirable Rental Fee

Amount of money	Frequency	Percentage
< 500,000 VND	54	46.55
500,000 - 750,000 VND	47	40.52
750,000 - 1,000,000 VND	5	4.31
1,000,000 -1,500,000 VND	5	4.31
1,500,000 -2,000,000 VND	2	1.72
> 2,000,000 VND	3	2.59

Part 5. Other Information

2.5.1. Future Work Plan (Q29)

Almost all of respondents (94%) reported that they will work hard for promotion or get higher salary in the future. This reflects the common trend of a part of Vietnamese people that they prefer stability.

In the rest group, three reported that they would study further for better job; two reported that they would look for better job; other two reported that they would go home.

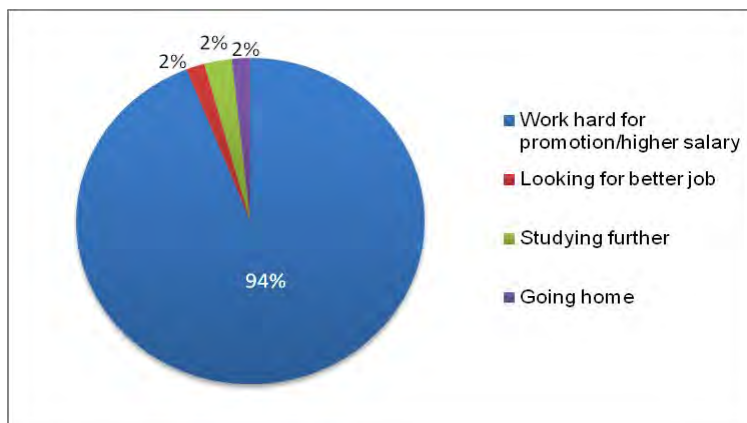


Figure 38 Percentage Distribution of Future Work Plans

Table 36 Distribution of Future Work Plans

Plans	Frequency	Percentage
Work hard for promotion/higher salary	109	93.16
Looking for better job	2	1.71
Studying further	3	2.56
Going home	2	1.71
Others	1	0.85

2.5.2. Possibility of Moving to Urban for Industrial Park (Q30)

Almost one third (29%) of respondents reported that they would certainly move to urban for workers of industrial park;

Only 8.55% of respondents reported that they would not to move to urban for workers of industrial park.

Many of the survey workers do not have certain answer for this matter as 62.39% of them reported that they would “Consider if it is suitable”.

Once again, this result also reflects a habit of Vietnamese people that people prefer stability in the life, work and avoid the changes.

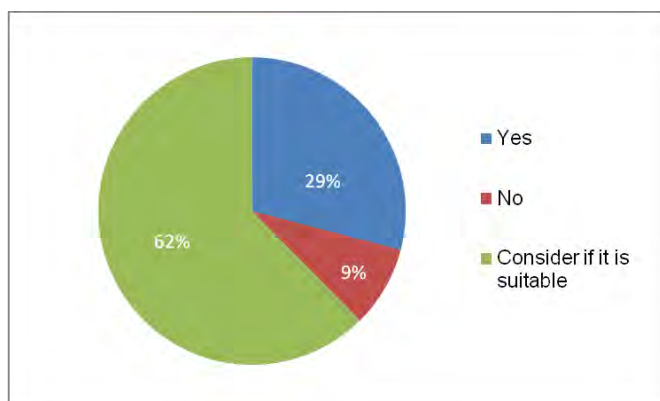


Figure 39 Percentage Distribution of Possibility to Move to Industrial Park Urban

Table 37 Distribution of Possibility to Move to Industrial Park Urban

Possibility	Yes	No	Consider if it is suitable
Frequency	34	10	73
Percentage	29.06	8.55	62.39

2.5.3. Type of Accommodation Possession in Industrial Park Urban (Q31)

The 68.97% of respondents said the urban for workers of industrial park should have both rental apartment and permanent possession house/apartment.

The 27.5% of respondents said that the urban for workers of industrial park should have house/apartment for rent.

Then, only 3.45% of respondents prefer the sale type of the house/apartment to in the urban industrial park for worker.

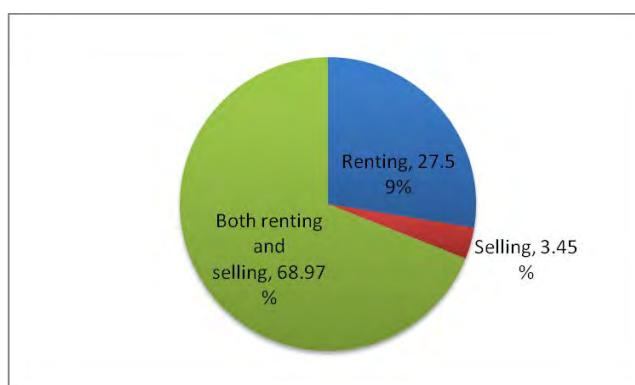


Figure 40 Percentage Distribution of Favourable Type of Accommodation Possession

Table 38 Distribution of Favourable Type of Accommodation Possession

Type of accommodation	Renting	Selling	Both renting and selling
Frequency	32	4	80
Percentage	27.59	3.45	68.97

2.5.4. Point of View of Respondents on Sharing Public Services Between Urban for Industrial Park and Local Community (Q32)

More respondents agree with sharing public services between urban for industrial park and local community as 33.33% agreed and 23.00% disagreed.

However, 43.59% refused to give their ideas on this matter.

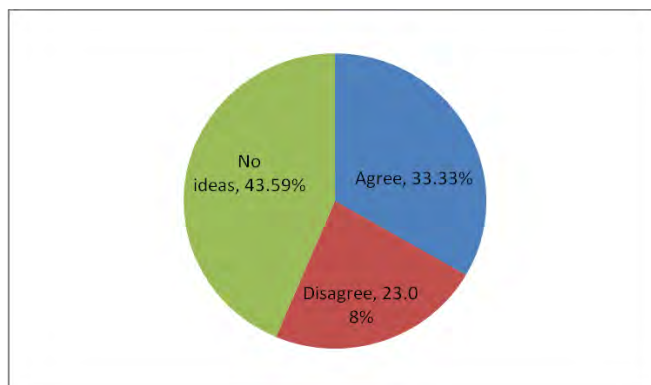


Figure 41 Percentage Distributions of Different Ideas on Sharing Public Services

Table 39 Distribution of Ideas on Sharing Public Services

Ideas	Agree	Disagree	No ideas
Frequency	39	27	51
Percentage	33.33	23.08	43.59

2.5.6. Factors Need to be Included in the Urban for Industrial Park (Q33)

When asked for the items that an urban for industrial park should cover, super market and convenient store is recommended by 85.47% of respondents; following by green garden or green park with 78.63%.

The 68.38% of respondents also recommended “Kindergarten” in the urban.

The 54.70% of respondents suggested “Primary school” .

More than half of respondents (52.14%, 54.70% and 51.28%) prefer “Bank service” and “Private gate” with 24/24 hours guarding service and barrier to separate with external area.

23.08% and 36.75% respondents recommended “Laundry” and “Hairdresser”.

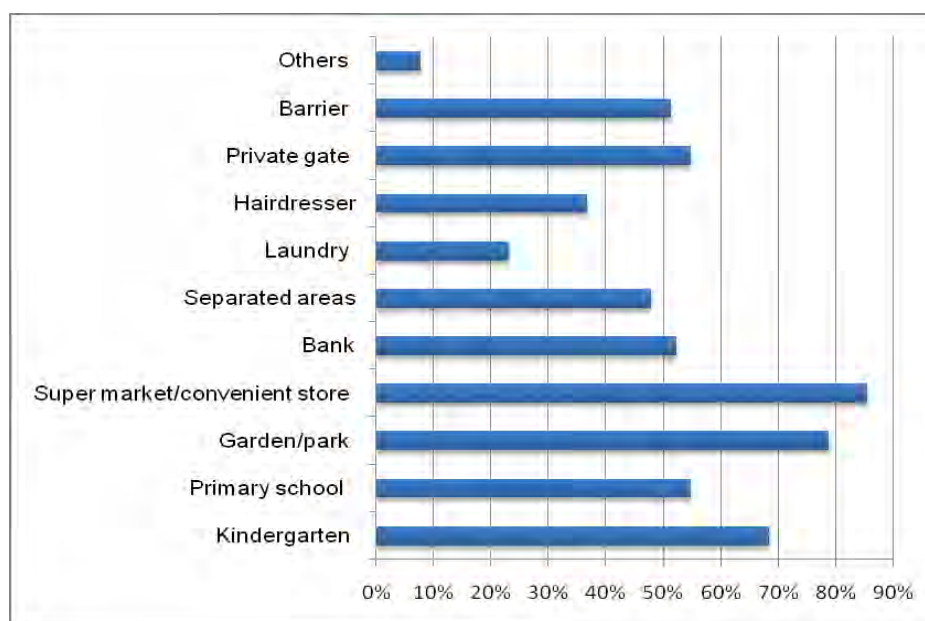


Figure 42 Percentage Distribution of Factors Need to be Included in the Urban for IP

Table 40 Distribution of Factors Need to be Included in the Urban for Industrial Park

Plans	Frequency	Percentage
Kindergarten	80	68.38
Primary school	64	54.70
Garden/park	92	78.63
Super market/convenient store	100	85.47
Bank service	61	52.14
Separated rooms for men/women or individuals/families	56	47.86
Laundry	27	23.08
Hairdresser	43	36.75
Private gate with 24/24 hours guarding service	64	54.70
Barrier to separate with external area	60	51.28
Others	9	7.69

2.5.5. Other Recommendations (Q34)

2.5.5.1. Housing

- It is expect to have an urban area for workers near industrial park, with good living condition and green environment.
- It is expect to have own house (private house) with good and full furniture, garden and good surrounding environment.
- It is expect to have an apartment in the urban area for workers near industrial park with full furniture, enough space and kitchen for family.

2.5.5.2. Environment

- Urban residential area should have good waste collection system. Pollution from industrial park should be taken into account for prevention, control and treatment.
- Urban residential area should have playground for children.
- It is expect to have bus for workers from urban to the industrial park if it cannot be reached by walking; as well as bus to neighbour province so that workers can go home easier.

B. DIFFERENCES ANALYSE

1. Differences by Location

This part reports the differences between group of respondents living in Lieu Xa and Nghia Hiep communes and group of other locals surrounding Lieu Xa and Nghia Hiep communes. The difference is study regarding to respondent’s demography, the concept and situation related to housing and living condition.

However, the difference is not very clearly found in each attributes of each group, Lieu Xa and Nghia Hiep communes and surrounding communes. Perhaps, the same province survey locals (Hung Yen province) and also small number of the survey workers in other province have made little differences in survey results.

This part only focuses on some results that may show the trend of differences.

1.1. Gender (Q1)

The differences in gender of respondents in Lieu Xa and Nghia Hiep communes are clearer than in other communes (38% and 61.9%; 42.59% and 57.41%).

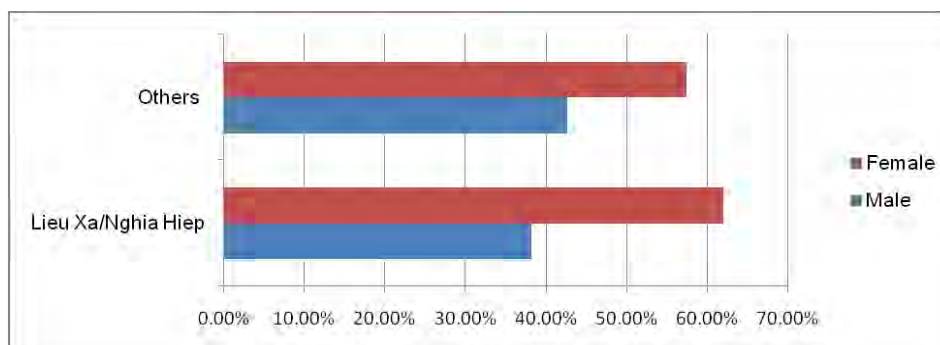


Figure 43 Differences in Genders

Table 41 Differences in Genders

Gender	Lieu Xa/Nghia Hiep Communes		Others	
	Frequency	Valid Percent	Frequency	Valid Percent
Male	24	38.10	23	42.59
Female	39	61.90	31	57.41

1.2. Marital Status (Q2)

There are less single respondents in Lieu Xa and Nghia Hiep communes than in other communes (36.51% and 42.59%). It also means that there are more married respondents in other locals than in Lieu Xa and Nghia Hiep communes (see Table 42).

Table 42 Differences in Marital Status

Marital Status	Lieu Xa/Nghia Hiep Communes		Others	
	Frequency	Valid Percent	Frequency	Valid Percent
Single	23	36.51	23	42.59
Married without children	10	15.87	7	12.96
Married with children	30	47.62	24	44.44

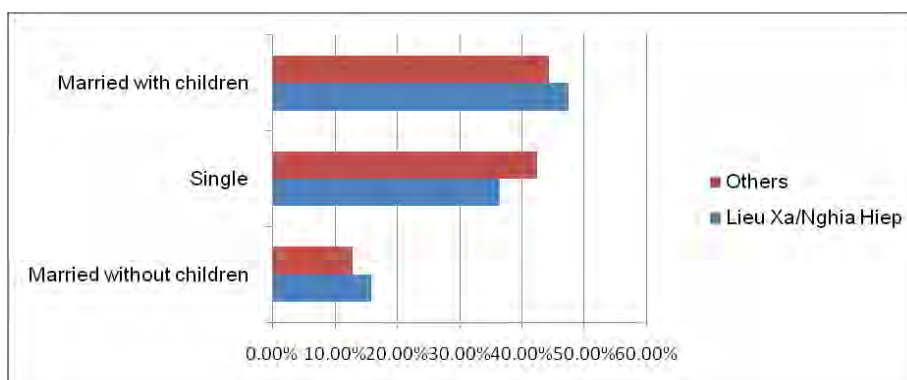


Figure 44 Differences in Marital Status

1.3. Educational Background (Q3)

The number of respondents that have higher qualifications (from vocational school to university) in other locals is greater than that in Lieu Xa and Nghia Hiep.

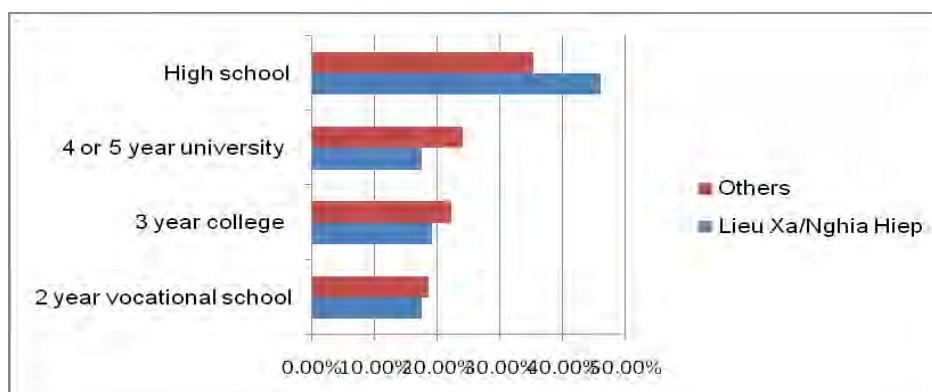


Figure 45 Differences in Educational Background

Table 43 Differences in Educational Background

Education Background	Lieu Xa/Nghia Hiep Communes		Others	
	Frequency	Valid Percent	Frequency	Valid Percent
High School	29	46.03	19	35.19
2 Year Vocational School	11	17.46	10	18.52
3 Year College	12	19.05	12	22.22
4 or 5 year University	11	17.46	13	24.07

1.4. Reasons to Choose the Current Job (Q7)

“Work condition” is the most common reason for the respondents to choose their job with 61.90% respondents in Nghia Hiep and Lieu Xa communes, 57.41% respondents in other communes.

For the respondents in Nghia Hiep and Lieu Xa communes, “Stable job” is the reason reported by the second largest percentage of respondents (44.44%), while in other communes it is the third largest percentage of respondents (46.30%), see Figure 46 and Table 44. This also reflects the result in “Frequency of job change” (Figure 6) that the survey worker tend to stay at their job as 58.97 % of them changed job at 1 – 2 times and 33.33% of them never change the job.

About reason related to income, 24.07% respondents in other communes chose the current job because of “good salary”, while only 11.11% respondents in Nghia Hiep and Lieu Xa communes.

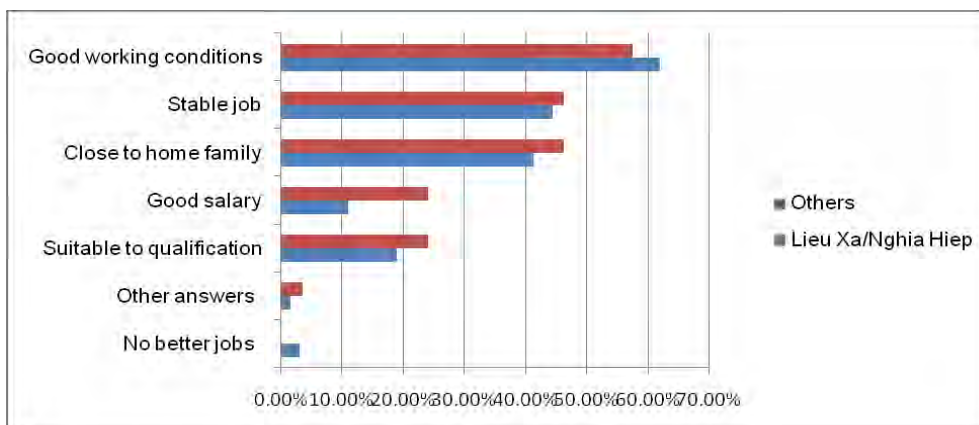


Figure 46 Differences in Reasons to Choose the Current Job

Table 44 Differences in Reasons to Choose the Current Job

Item	Lieu Xa/Nghia Hiep Communes		Other Communes	
	Frequency	Percentage	Frequency	Percentage
Suitable to Qualification	12	19.05	13	24.07
Good Salary	7	11.11	13	24.07
Close to Home Family	26	41.27	25	46.30
Stable Job	28	44.44	25	46.30
Good Working Conditions	39	61.90	31	57.41
No Better Jobs	2	3.17	0	0.00
Other Answers	1	1.59	2	3.70

1.5. Reasons for Remaining at Current Accommodation (Q15)

The clearest difference between reasons for remaining at current accommodation of respondents in Lieu Xa & Nghia Hiep communes and other communes is “the distant to work” and “the rent” (see Figure 47 and Table 45). By contrast, no difference between respondents in Lieu Xa & Nghia Hiep communes and other communes for the reason of living at “parents’ house” and the rest.

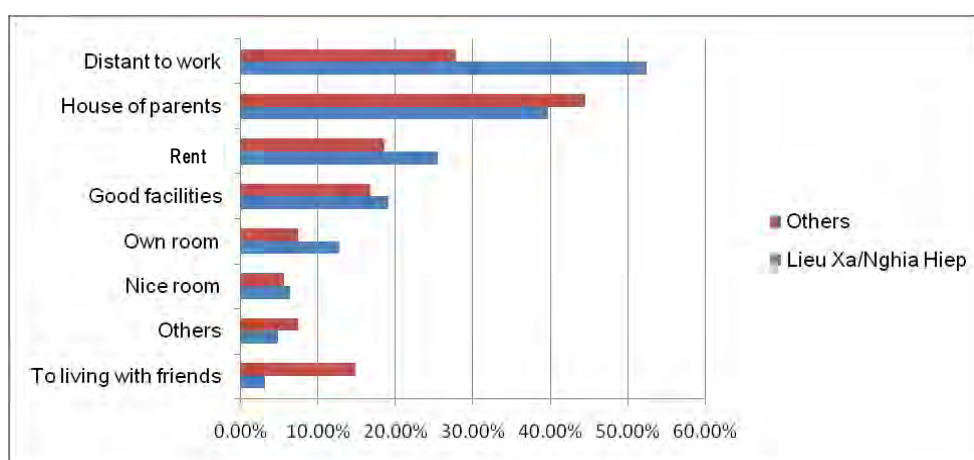


Figure 47 Differences in Reasons for Remaining at Current Accommodation

Table 45 Differences in Reasons for Remaining at Current Accommodation

Reasons	Lieu Xa/ghia Hiep Communes		Other Communes	
	Frequency	Percentage	Frequency	Percentage
Rent	16	25.40	10	18.52
Distant to Work	33	52.38	15	27.78
Own Room	8	12.70	4	7.41
Nice Room	4	6.35	3	5.56
Good Facilities	12	19.05	9	16.67
To Living with Friends	2	3.17	8	14.81
House of Parents	25	39.68	24	44.44
Others	3	4.76	4	7.41

1.6. Good Factors in Current Environment (Q16)

There is a striking difference between respondents in Lieu Xa & Nghia Hiep communes (33.33%) and other communes (62.96%) when answering “Fresh environment” as a good factor in current environment.

Also the difference can be seen at the percentage of respondents consider “supermarket” as a good factor in two areas, Lieu Xa & Nghia Hiep communes (36.51%) and other communes (18.52%).

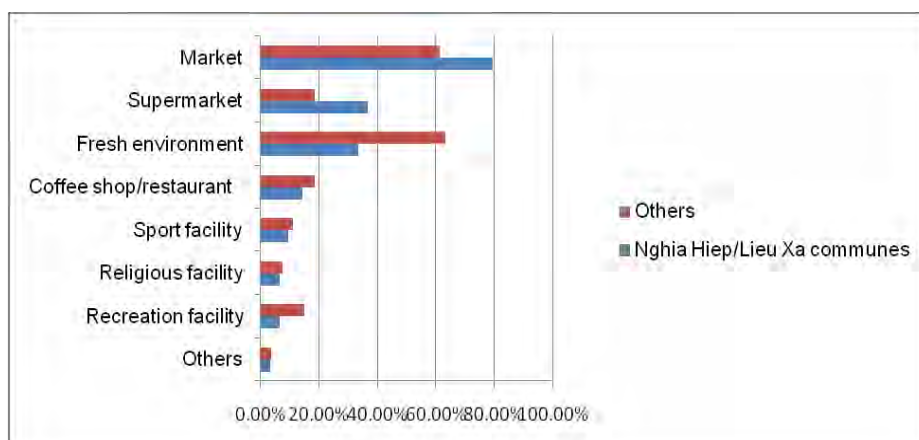


Figure 48 Differences in Good Factors in Current Environment

Table 46 Differences in Good Factors in Current Environment

Factors	Nghia Hiep or Lieu Xa Communes		Others	
	Frequency	Valid Percent	Frequency	Valid Percent
Market	50	79.37	33	61.11
Supermarket	23	36.51	10	18.52
Recreation facility	4	6.35	8	14.81
Sport facility	6	9.52	6	11.11
Fresh environment	21	33.33	34	62.96
Religious facility	4	6.35	4	7.41
Convenient coffee shop/restaurant	9	14.29	10	18.52
Others	2	3.17	2	3.70

1.7. Facilities Need to be Improved (Q17)

Respondents in Lieu Xa & Nghia Hiep pay more attention on “room space”, then “room quality” by 20.51% and 15.38% of them as facilities need to be improved.

Respondents in other communes tend to focus on improving “Kitchen”, then “Housing stuffs” by 24.79% of them chose each item.

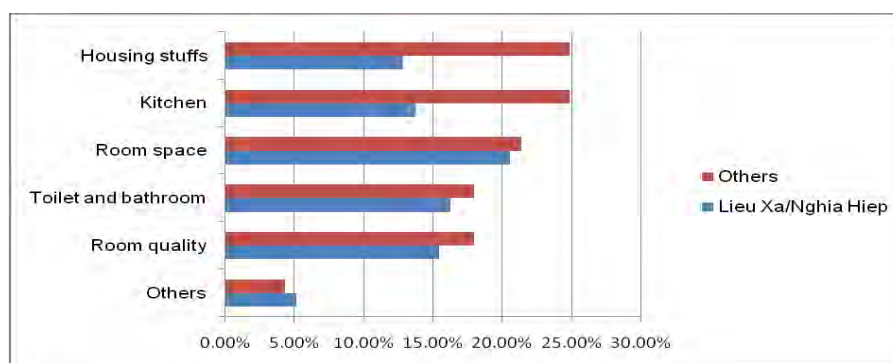


Figure 49 Differences in Facilities Need to be Improved

Table 47 Differences in Facilities Need to be Improved

Facilities	Lieu Xa/Nghia Hiep Communes		Other Communes	
	Frequency	Percentage	Frequency	Percentage
Room Quality	18	15.38	21	17.95
Room Space	24	20.51	25	21.37
Toilet and Bathroom	19	16.24	21	17.95
Kitchen	16	13.68	29	24.79
Housing Stuffs	15	12.82	29	24.79
Others	6	5.13	5	4.27

1.8. Environment Factors Need to be Improved (Q18)

Respondents in Lieu Xa & Nghia Hiep rate “Fresh environment”, “Public market”, “Sport facility” and “Supermarket” as four factors that need to be improved the most by the order of the highest percentage of them (see Table 48).

However, respondents in other commune’s rate “Fresh environment”, “Sport facility”, “Convenient coffee shop/restaurant” and “Public market” as four factors that need to be improved the most by the order of highest percentage of them (see Table 48).

More respondents in other locations than in Lieu Xa & Nghia Hiep consider have chosen “Fresh/clean environment” as a factor that need to be improved (74.07% và 34.92%). It is applied the same as “Sport facility” and “Convenient coffee shop/restaurant”. This may give us more attention on looking at different needs of two location survey groups regarding to the environment, sport facility and convenient coffee shop/restaurant.

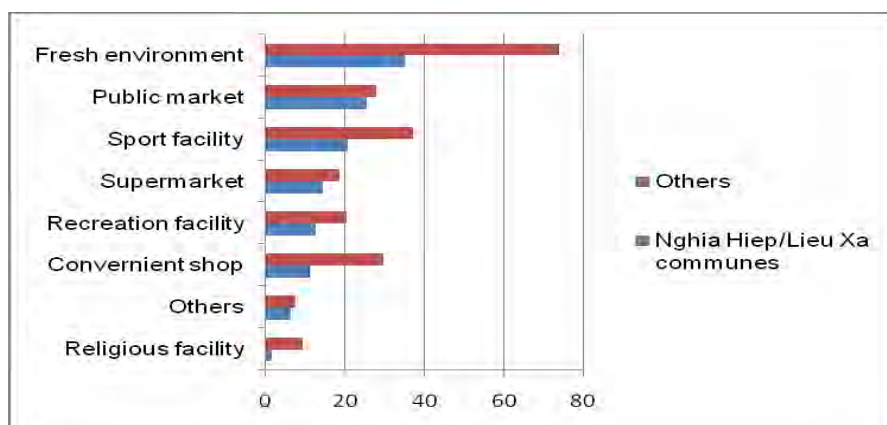


Figure 50 Differences in Environment Factors Need to be Improved

Table 48 Differences in Environment Factors Need to be Improved

Factors	Lieu Xa/Nghia Hiep Communes		Others	
	Frequency	Percentage	Frequency	Percentage
Public Market	16	25.40	15	27.78
SuperMarket	9	14.29	10	18.52
Recreation Facility	8	12.70	11	20.37
Sport Facility	13	20.63	20	37.04
Fresh Environment	22	34.92	40	74.07
Religious Facility	1	1.59	5	9.26
Convenient Coffee Shop/Restaurant	7	11.11	16	29.63
Others	4	6.35	4	7.41

1.9. Travel Time to Work (Q20)

Results of T-test on the travel time to work of two group of respondents, Lieu Xa & Nghia Hiep communes and other communes (table 56) shows that there is the difference in the travel time of workers in Lieu Xa & Nghia Hiep communes and other communes (T value = 20.88, $p < 0.0001$).

Table 49 Differences in Travel Time to Work

	Mean	SD
Lieu Xa or Nghia Hiep Communes	1.36	0.51
Others	1.89	0.72
T Value = 20.88, $p < 0.0001$		

1.10. Activities after Work (Q22)

The respondents in Lieu Xa & Nghia Hiep communes often “Watching TV”, then “Readings” and “Playing and taking care children” mainly at do their free time after work (50.79%, 44.44% and 39.68%).

In comparison, the respondents in other communes often do “Readings”, then “Playing and taking care children” and “Watching TV” mainly at their free time after work (46.30%, 38.89% and 37.04%).

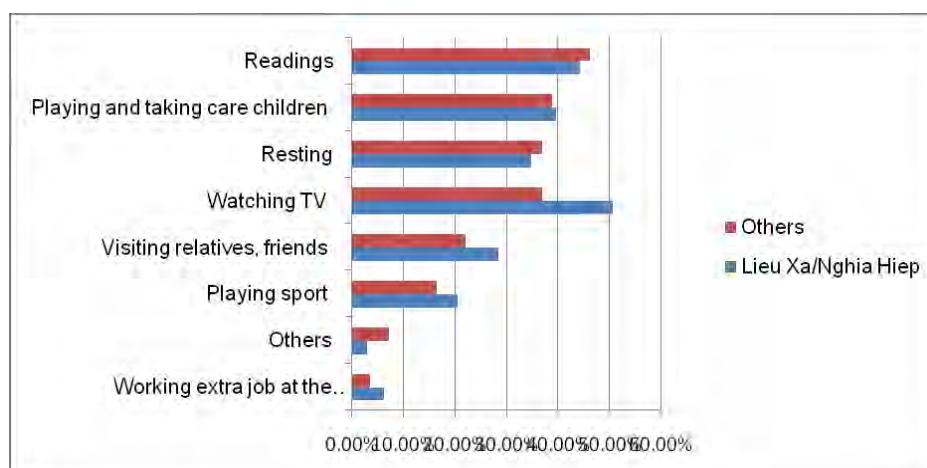


Figure 51 Differences in Activities after Work

Table 50 Differences in Activities after Work

Activities	Lieu Xa or Nghia Hiep Communes		Others	
	Frequency	Percentage	Frequency	Percentage
Watching TV	32	50.79	20	37.04
Playing Sport	13	20.63	9	16.67
Visiting Relatives, Friends	18	28.57	12	22.22
Working Extra Job at the Company for More Money	4	6.35	2	3.70
Playing and Taking Care Children	25	39.68	21	38.89
Readings	28	44.44	25	46.30
Resting	22	34.92	20	37.04
Others	2	3.17	4	7.41

1.11. Activities at the Weekend (Q23)

At the weekend, respondents in Lieu Xa & Nghia Hiep communes often have the following activities as order of the most common: “Resting at home”, “Visiting family”, “Visiting friends”, “Shopping”, “Gathering with friends”, “Playing sport” and others (do the gardening, help parents house work) (see more in Table 51).

In comparison, respondents in other communes often “Visiting family”, “Resting at home”, “Shopping”, “Visiting friends”, “Gathering with friends”, and others (do the gardening, study/study English), “Playing sport” (see more in Table 51).

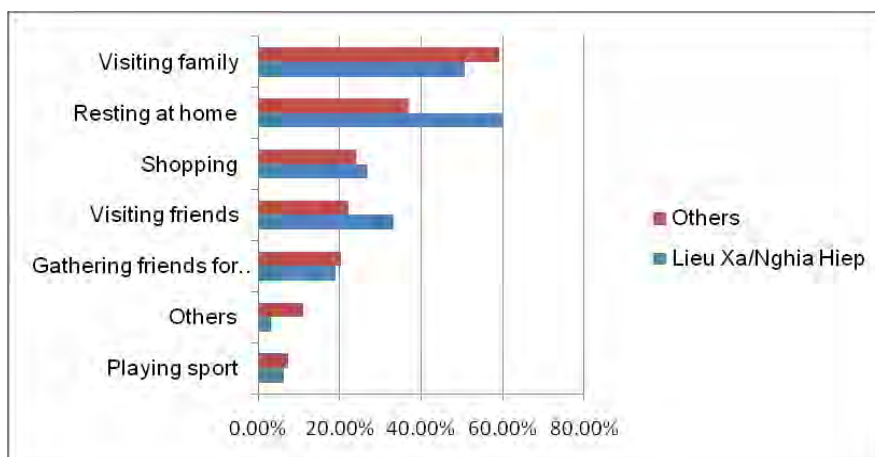


Figure 52 Differences in Activities at the Weekend

Table 51 Differences in Activities at the Weekend

Activities	Lieu Xa/Nghia Hiep Communes		Others	
	Frequency	Percentage	Frequency	Percentage
Resting at Home	38	60.32	20	37.04
Visiting Family	32	50.79	32	59.26
Visiting Friends	21	33.33	12	22.22
Shopping	17	26.98	13	24.07
Gathering Friends for Coffee/Drinking	12	19.05	11	20.37
Playing Sport	4	6.35	4	7.41
Others	2	3.17	6	11.11

1.12. Type of Accommodation Possession in Industrial Park Urban (Q31)

There are 4/54 respondents in other locations prefer to buy property in the industrial park urban.

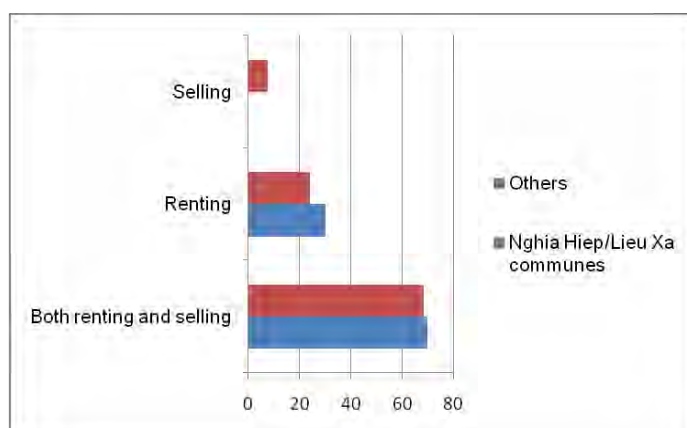


Figure 53 Differences in Accommodation Possession in Industrial Park Urban

Table 52 Differences in Accommodation Possession in Industrial Park Urban

Type of Accommodation	Lieu Xa/Nghia Hiep Communes		Other	
	Frequency	Percentage	Frequency	Percentage
Renting	19	30.16	13	24.07
Selling	0	0.00	4	7.41
Both Renting and Selling	44	69.84	37	68.52

1.13. Point of View of Respondents on Sharing Public Services Between Urban for Industrial Park and Local Community (Q33)

When expressing personal ideas on sharing public services between urban for industrial park and local community, the percentage of respondents in both two areas ranges from 20.37% up to 44.44%. “Disagree” in Lieu Xa & Nghia Hiep communes is given by bigger percentage of the respondents than in other communes, 25.40% compared to 20.37%.

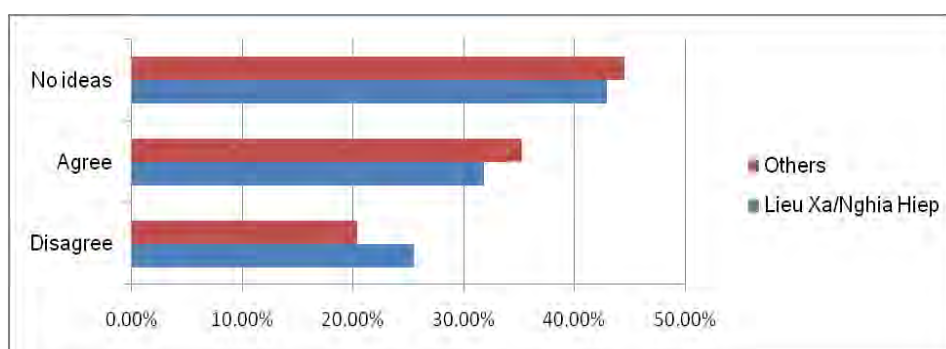


Figure 54 Differences in Ideas of Sharing Public Services

Table 53 Differences in Ideas of Sharing Public Services

	Ideas	Agree	Disagree	No Ideas
Lieu Xa or Nghia Hiep Communes	Frequency	20	16	27
	Percentage	31.75%	25.40%	42.85%
Other	Frequency	19	11	24
	Percentage	35.19%	20.37%	44.44%

1.1.2. 2. Differences in Types of Accommodation

In this part, results of data analysis on the differences in types of accommodation are described.

In the questionnaire, the accommodation is divided into 8 different types. Actually, “Living in house of parents” and ‘Living at relative’s house” have similar condition and they are both living with family, also data analyzed doesn’t show they have typical differences, therefore we combine these into one category “Living in parents’ house” (at home). Besides, in the “other” option, the answers are not typical, so that this option is not in the analysis. Moreover, there is no one answers for the option:

“Sharing rent room with more than 5 persons”, then it is not included in the analysis.

Thus, the items on types of accommodation put in difference analysis are the following:

- A rent room on your own.
- Sharing a rent room with 2 – 4 other.
- A rent room with family.
- Living in parents’ house (or own house) and Living at relative’s house (at home).

2.1. Types of Accommodation and Work Duration at Present Company

In the group of “Rent own room”, it is noticeable that respondents who work for current company less than a year take the most frequency (14/33), following by the one who work for company in 1- 2 year (8/33).

However, data of the group “At home” shows that, over two years of working for current company is the most common, such as 2 – 3 year (15/56), 3 – 4 years (16/56) and > 5 years (14/56).

Table 54 Types of Accommodation and Work Duration at Present Company

Types of Accommodation	Length of Time Working for Current Company	Frequency	%
Rent Own Room	< 1 year	14	
	1 – 2 years	8	
	2 – 3 years	6	
	3 – 4 years	4	
	> 5 years	1	
Total		33	
Sharing a Rent Room with 2 – 4 Other	< 1 year	5	
	1 – 2 years	5	
	2 – 3 years	2	
	3 – 4 years	0	
	> 5 years	1	
Total		13	
Rent Room with family	< 1 year	2	
	1 – 2 years	2	
	2 – 3 years	3	
	3 – 4 years	4	
	> 5 years	0	
Total		11	
At home	< 1 year	7	
	1 – 2 years	4	
	2 – 3 years	15	
	3 – 4 years	16	
	> 5 years	14	
Total		56	

2.2. Types of Accommodation and Room Acreage

In the group of “Rent own room”, 10 m² - 15m² room is the most popular (14/32), following by less than 10m² room (11/32).

However, in the group of living in private house, over 20 m² room is the most popular. This can be explained that when the local people build the house for rent, the rooms are designed smaller than the house that the house to living, so that the landlord can have more rooms to rent.

Table 55 Types of Accommodation and Room Acreage

Types of Accommodation	Room Area	Frequency	%
Rent Own Room	<10m ²	11	
	10 m ² - 15m ²	14	
	15 m ² - 20 m ²	6	
	>20m ²	2	
Total		33	
Sharing a Rent Room with 2 – 4 Others	<10m ²	5	
	10 m ² - 15m ²	5	
	15 m ² - 20 m ²	3	
	>20m ²	0	
Total		13	
Rent Room with Family	<10m ²	2	
	10 m ² - 15m ²	4	
	15 m ² - 20 m ²	3	
	>20m ²	2	
Total		11	
At Home	<10m ²	2	
	10 m ² - 15m ²	5	
	15 m ² - 20 m ²	8	
	>20m ²	40	
Total		56	

2.3. Types of Accommodation and Living Condition

2.3.1. Water Heater

Data in the Table 56 shows that, living in the room without water heater is popular to the survey workers because the proprietors do not equip them with, also they don't want to spend money on buying electric water heater for the accommodation and extra fee of power for the electric water heater every month at the rent accommodation.

However, in the private house, many survey workers use electric water heater (35/56).

Table 56 Types of Accommodation and Water Heater

Types of Accommodation	Water Heater	Frequency	%
Rent Own Room	Having own water heater	1	
	Shared with others	0	
	Self – provided	0	
	None	32	
Total		33	
Sharing a Rent Room with 2 – 4 Others	Having own water heater	0	
	Shared with others	1	
	Self – provided	0	
	None	12	
Total		13	
Rent Room with Family	Having own water heater	0	
	Shared with others	0	
	Self – provided	0	
	None	11	
Total		11	
At Home	Having own water heater	35	
	Shared with others	18	
	Self – provided	0	
	None	3	
Total		56	

2.3.3. Air Conditioner

The data in Table 57 reveals that the air conditioner is not a must living facility of people living at the survey locals. Indeed, in the group of “Rent own room”, almost of survey workers live without air conditioner (32/33 answers); in the group of “At home” (living in their family’s house), living without air conditioner takes almost 50 % of the answers (34/56).

Table 57 Types of Accommodation and Air Conditioner

Types of Accommodation	Air Conditioner	Frequency	%
Rent Own Room	Having own air conditioner	1	
	Shared with others	0	
	Self – provided	0	
	None	32	
Total		33	
Sharing a Rent Room with 2 – 4 Others	Having own water heater	0	
	Shared with others	0	
	Self – provided	0	
	None	13	
Total		13	
Rent Room with Family	Having own air conditioner	0	
	Shared with others	0	
	Self – provided	0	
	None	11	
Total		11	
At Home	Having own air conditioner	20	
	Shared with others	1	
	Self – provided	1	
	None	34	
Total		56	

2.3.4. Internet

Table 58 presents the differences between each type of accommodation and the conditions of internet facility.

People live in private house (house of their family) use internet more than other types of accommodation.

In all types of accommodation, the number of people who self – provided the internet facility is more than the other living facility (water heater, air conditioner).

Table 58 Types of Accommodation and Internet Facility

Types of Accommodation	Internet	Frequency	%
Rent Own Room	Having own internet line	3	
	Shared with others	2	
	Self – provided	10	
	None	18	
Total		33	
Sharing a Rent Room with 2 – 4 Other	Having own internet line	0	
	Shared with others	3	
	Self – provided	4	
	None	6	
Total		13	
Rent Room with Family	Having own internet line	1	
	Shared with others	1	
	Self – provided	4	
	None	5	
Total		11	
At Home	Having own internet line	22	
	Shared with others	2	
	Self – provided	4	
	None	35	
Total		63	

2.3.5. Kitchen

Living without separated kitchen, thus the survey workers have to cook in the living room, this case is quite common for “Rent own room” (27/33), “Shared with 2-4 other” (8/13), “Rent room with family” (8/11). However, there are only 3/56 in the group of “Living in parents’ house” have to cook in the room.

This can be understood that in the rent room, kitchen condition is not paid proper attention by providing an area for cooking that is separated from living/sleeping room.

Table 59 Types of accommodation and kitchen condition

Types of accommodation	Kitchen	Frequency	%
Rent Own Room	Having own kitchen	5	
	Shared with others	1	
	No kitchen (cooking in the room)	27	
	Cooker provided by the home owner	0	
	Self - provided	0	
	No cooking	0	
Total		33	
Sharing a Rent Room with 2 – 4 Other	Having own kitchen	2	
	Shared with others	0	
	No kitchen (cooking in the room)	8	
	Cooker provided by the home owner	0	
	Self - provided	1	
	No cooking	0	
Total		13	
Rent Room with Family	Having own kitchen	2	
	Shared with others	0	
	No kitchen (cooking in the room)	8	
	Cooker provided by the home owner	0	
	Self - provided	1	
	No cooking	0	
Total		11	
At Home	Having own kitchen	51	
	Shared with others	4	
	No kitchen (cooking in the room)	3	
	Cooker provided by the home owner	0	
	Self - provided	1	
	No cooking	0	
Total		59	

2.3.6. Refrigerator

Table 60 presents the differences between types of accommodation and

refrigerator condition.

In the type of rent room, there are no refrigerator provided to the tenants. Although refrigerator is an essential living facility, the survey workers around TLIPIL, especially the one who are living in rent rooms don't use refrigerator, while the one who cook in the room are 35/46 (for both group of "Rent own room" and "Sharing a rent room with 2 – 4 other").

However, in the group of living in their home using refrigerator, using own refrigerator is the most popular (77%, 46/56 answers, Table 60).

Table 60 Types of accommodation and refrigerator condition

Types of accommodation	Refrigerator Condition	Frequency	%
Rent Own Room	Having own refrigerator	1	
	Shared with others	0	
	Self - provided	0	
	None	32	
Total		33	
Sharing a Rent Room with 2 – 4 Others	Having own refrigerator	0	
	Shared with others	0	
	Self - provided	0	
	None	13	
Total		13	
Rent Room with Family	Having own refrigerator	0	
	Shared with others	0	
	Self - provided	7	
	None	4	
Total		11	
At Home	Having own refrigerator	43	
	Shared with others	2	
	Self - provided	4	
	None	7	
Total		56	

2.3.6. Washing Machine

Table 61 shows the differences between types of accommodation and washing machine condition.

Similar to the results of air conditioner and refrigerator condition, the one who live in rent room are not provided with washing machine, it means that they live without this kind of facility.

However, people live in their family or private houses do use washing machine.

This result is found as same as the wardrobe condition.

Table 61 Types of Accommodation and Washing Machine Condition

Types of Accommodation	Washing Machine Condition	Frequency	%
Rent Own Room	Having own washing machine	1	
	Shared with others	0	
	Self - provided	0	
	None	32	
Total		33	
Sharing a Rent Room with 2 – 4 Other	Having own refrigerator	0	
	Shared with others	0	
	Self - provided	0	
	None	13	
Total		13	
Rent Room with Family	Having own refrigerator	0	
	Shared with others	0	
	Self - provided	2	
	None	9	
Total		11	
At Home	Having own refrigerator	32	
	Shared with others	0	
	Self - provided	4	
	None	20	
Total		56	

2.4. Reasons to Stay at Current Accommodation

The differences between types of accommodation and reasons to choose current accommodation are shown in the Table 62.

The differences of reason to choose the current accommodation can be seen clearly between group of survey workers living in rent room and group living in their own house/parents house.

In the rent room, the most frequent reasons are “Rental fee” and “Distant to work” (see Table 62). While, the most popular reasons in the “At home” are “House of parents”.

Table 62 Types of Accommodation and Reasons to Move

Types of Accommodation	Reasons to Choose Current Accommodation	Frequency	%
Rent Own Room	Rental fee	14	
	Distance to work	21	
	Having own room	6	
	Room quality	3	
	Facilities (power, water...)	9	
	To living with friends	3	
	House of parents	0	
	Other reasons	2	
Total		58	
Sharing a Rent Room with 2 – 4 Other	Rental fee	5	
	Distance to work	8	
	Having own room	1	
	Room quality	1	
	Facilities (power, water...)	3	
	To living with friends	2	
	House of parents	0	
	Other reasons	0	
Total		20	
Rent Room with Family	Rental fee	5	
	Distance to work	7	
	Having own room	2	
	Room quality	1	
	Facilities(power, water etc.)	0	
	To living with friends	0	
	House of parents	0	
	Other reasons	1	
Total		16	
At Home	Rental fee	1	
	Distance to work	11	
	Having own room	2	
	Room quality	3	
	Facilities (power, water etc.)	4	
	To living with friends	2	
	House of parents	49	
	Other reasons	1	
Total		73	

In general, the data analysis results show common direction of the different between types of accommodations regarding the living conditions that rooms for rent often have smaller acreage compared to room in the private house/family house, are not equipped enough facilities; almost the tenants don't invest money in buying facilities (air conditioner, water heater...). The room/house of family often has larger rooms with more essential furniture.

The distant from accommodation to company is the reason for most of survey workers to choose their current accommodations.

APPEDIX Questionnaire Paper to be used for the survey

SURVEY

**STUDY FOR IMPROVEMENT OF LIVING CONDITIONS FOR
WORKERS AROUND INDUSTRIAL ZONES**

Dear participants,

Greetings from Survey group!

In within activities of the study for improvement of living conditions for workers around industrial zones in The Socialist Republic of Vietnam, a survey is conducted for investigating current living condition of workers in the industrial parks and their recommendations or expectations regarding accommodation.

Please, read the questions carefully and complete the Questionnaire. All information provided by you will be confidential and only used as inputs for studying purposes.

Thank you for your cooperation.

Survey group

Answer Instruction:

** Selecting the answer option that best describes your ideas and tick (✓ or X) in the circle.*

** There three types of questions that should be different ways of answers: - Question requires only one answer option. With this type of question, you can select only one option to answer; - Question does not limit the answer options. With this type of question, you can select more than one answer options. There is a note under of each question; - Question requires the open answer. With this type of question, you can write down your own ideas in the given lines.*

PART 1: PERSONAL ATTRIBUTES

Q1. Gender

1. Female

2. Male

Q2. Age

1. ≤ 20

2. From 21 to

25

3. From 26 to 30

4. From 31 to

35

5. From 36 to 40

6. ≥ 41

Q3. Marrital status

1. Single
child/children

2. Single with

3. Married without child

4. Married with

child/children

Q4. Educational background

1. Junior secondary school or below
2. Secondary school
3. 2-year vocational school
4. 3-year college
5. 4 – 5 year university
6. Others (please specify): _____

PART 2: WORK STATUS

Q5. How long have you been working for this company?

1. < 1 year
2. 1 - 2 years
3. 2 - 3 years
4. 3 - 4 years
5. > 5 years

Q6. How many times have you changed your job?

1. Never
2. 1 – 2 times
3. 3 – 4 times
4. > 5 times

Q7. Why do you chose a job at the industrial park?

(You can select more than one answer options)

1. Suitable to my qualification
2. Good salary/good pay
3. Close to my home family
4. Stable job
5. Good working conditions
6. Cannot find

better alternative

7. Others (please specify): _____

Q8. How much time do you spent for extra working in a week?

1. < 6 hours
2. 6 – 12 hours
3. 12 – 20 hours
4. > 20 hours
5. Never work extra time

Q9. What kind of shift do you work currently?

1. Regular shift
2. First shift
3. Second shift
4. Third shift

PART 3: LIVING CONDITIONS

Q10. Where are you living?

1. Nghia Hiep commune
2. Lieu Xa commune
3. Van Nhue commune
4. Ban – Yen

Nhan town

5. Others (please specify):

Q11. How long have you been living in current accomodation?

- | | |
|---|---|
| 1. <input type="radio"/> < 6 months | 2. <input type="radio"/> 6 – 12 months |
| 3. <input type="radio"/> 13 – 24 months | 4. <input type="radio"/> 25 – 36 months |
| 5. <input type="radio"/> > 36 months | |

If you have lived in the current accommodation for more than 12 months, please indicate why you don't change your accommodation.

Q12. What kind of current accomodation are you living ?

1. A rent room on your own
2. Sharing a rent room with 2 – 4 other
3. Sharing rent room with more than 5 persons
4. A rent room with spouse with/without child/children
5. A rent room in company's gues house or house provided by company
6. Living in parents' house (or own house)
7. Living at relative's house
8. Others (please specify):

Q13. How large is your current accommodation?

- | | |
|---|--|
| 1. <input type="radio"/> < 10m ² | 2. <input type="radio"/> 10m ² - 15m ² |
| 3. <input type="radio"/> 16m ² - 20 m ² | 4. <input type="radio"/> > 20m ² |

Q14. What are facilities and services at your current accomodation?

1. Toilet or bathroom

<input type="radio"/> Have your own toilet and bathroom	<input type="radio"/> Shared toilet
<input type="radio"/> Shared bathroom	
2. Water heater

<input type="radio"/> Have your own (provided by landlord)	<input type="radio"/> Shared (provided by landlord)
<input type="radio"/> Buy your own	<input type="radio"/> None
3. Air conditioner

- Have your own (provided by landlord) Shared (provided by landlord)
 Buy your own None
4. Electric fan
- Have your own (provided by landlord) Shared (provided by landlord)
 Buy your own None
5. Internet
- Have your own (provided by landlord) Shared (provided by landlord)
 Buy your own None
6. Kitchen/cooking area
- Have your own kitchen shared
kitchen/cooking area
 None (no cooking)
7. Fridge
- Have your own (provided by landlord) Shared (provided by the
landlord)
 Buy your own None
8. Washing machine
- Have your own (provided by landlord) Shared (provided by landlord)
 Buy your own None
9. Loft/storage
- Have your own (provided by landlord) Shared (provided by the
landlord)
 None
10. Closet/Wardrobe
- Have your own (provided by the landlord) Buy by own
- None

Q15. What are reasons for you to chose this accommodation?

(You can select more than one options)

1. The rental (rental fee)
2. Distant to work
3. Own room
4. Nice room
5. Good facilities (power and fresh water,...)
6. To living with friends

7. House of parents
8. Others (please specify):

Q16. What environmental factors surrounding your current accommodation are you satisfied with?

(You can select more than one options)

1. Convenient market (place for buying food)
2. Supermarket
3. Recreation facilities (TV, karaoke, discotheque etc.)
4. Sport facilities
5. Fresh environment
6. Religious facilities (pagoda, temple, churches etc.)
7. Convenient coffee shop/restaurant
8. Others (please specify):

Q17. What are facilities at your current accommodation need to be improved?

(You can select more than one option)

1. Room quality
2. Room space
3. Toilet and bathroom
4. Kitchen (cooking area)
5. Housing stuffs (Washing machine, fridge and gas/electric cooker provided)
6. Others (please specify):

Q18. What is surrounding environmental factors that need to be improved?

(You can select more than one options)

1. Public market
2. Supermarket
3. Recreation facilities (TV, karaoke, discotheque etc.)
4. Sport facilities
5. Fresh environment
6. Religious facilities (pagoda, temple, church etc.)
7. Convenient coffee shop/restaurant
8. Others (please specify):

Q19. How do you go to work everyday?

1. Walking
2. Bicycle
3. Motor bicycle
4. Public bus
5. Company's bus
6. Others (please specify):

Q20. How long does it take for you to travel to work? (in average by motor bike)

- | | |
|--|---------------------------------------|
| 1. <input type="radio"/> < 15 minutes | 2. <input type="radio"/> 15 – 30 |
| minutes | |
| 3. <input type="radio"/> 31 – 60 minutes | 4. <input type="radio"/> > 61 minutes |

Q21. If you have relocated after started the current job, what are your reasons for moving?

(You can select more than one option)

1. Never moving
2. Problem related to the landlords (stop renting room, do not like the landlord.)
3. Rental fee
4. Because the roommate wants to change the room
5. Move to room with better conditions/facilities
6. Reasons related to the family
7. Others (please specify):

Q22. What do you often do at free time?

(You can select more than one option)

1. Watching TV
2. Playing sport
3. Visiting relatives, friends
4. Working extra job at the company for more money
5. Playing and taking care children
6. Readings (newspapers, web surfing)
7. Resting
8. Others (please specify):

Q23. What you often do at the weekend?

(You can select more than one options)

- | | |
|---|---|
| 1. <input type="checkbox"/> Shopping
friends for coffee/eating | 2. <input type="checkbox"/> Gathering with |
| 3. <input type="checkbox"/> Playing sport | 4. <input type="checkbox"/> Resting |
| 5. <input type="checkbox"/> Going home (home village) | 6. <input type="checkbox"/> Visiting relative/friends |
| 2. <input type="checkbox"/> Others (please specify): | |

Q24. How much are you satisfied with current accommodation?

1. Very unsatisfied
2. Unsatisfied
3. No idea/no answer
4. Satisfied
5. Very satisfied

PART 4: PERSONAL ECONOMIC CONDITIONS

Q25. What is your income monthly (including salary, earning from extra working, support from family)?

- | | |
|--|--|
| 1. <input type="radio"/> 2,000,000 - 4,000,000 VND | 2. <input type="radio"/> 4,000,000 - 5,000,000 VND |
| 3. <input type="radio"/> 5,000,000 - 6,000,000 VND | 4. <input type="radio"/> 6,000,000 - 7,000,000 VND |
| 5. <input type="radio"/> > 7,000,000 VND | |

Q26. What is average of your monthly spending on housing and related facilities (rental, power, water, internet...)?

- | | |
|--|--|
| 1. <input type="radio"/> < 500,000 VND | 2. <input type="radio"/> 500,000 - 750,000 VND |
| 3. <input type="radio"/> 750,000 - 1,000,000 VND | 4. <input type="radio"/> 1,000,000 - 1,500,000 VND |
| 5. <input type="radio"/> 1,500,000 - 2,000,000 VND | 6. <input type="radio"/> > 2,000,000 VND |

Q27. How much is the company's support for accommodation?

- | | |
|--|--|
| 1. <input type="radio"/> < 200,000 VND | 2. <input type="radio"/> 200,000 - 500,000 VND |
| 2. <input type="radio"/> > 500,000 VND | 4. <input type="radio"/> None |

Q28. According to you, which of the rentals bellowing is best suitable to your expectation?

- | | |
|--|--|
| 1. <input type="radio"/> < 500,000 VND | 2. <input type="radio"/> 500,000 - 750,000 VND |
| 3. <input type="radio"/> 750,000 - 1,000,000 VND | 4. <input type="radio"/> 1,000,000 - 1,500,000 VND |

VND

5. 1,500,000 -2,000,000 VND

6. > 2,000,000 VND

PART 5: OTHER INFORMATION

Q29. What you future plan related to your career?

1. Continuing current job and work hard for promotion or higher salary
2. Looking for better job in another company in the industrial park
3. Further studying for better job
4. Going to home village
5. Others (please specify): _____

Q30. If there is a urban for workers near the industrial park, do you move there to live?

1. Certainly yes
2. Certainly not
3. Consider if it is suitable

Q31. What kind of bellowing offers regarding the possession of accommodation for industrial park workers do you prefer?

1. For rent
2. For selling
3. Both renting and selling

Q32. According to you, which of following facilities are necessary to the urban for industrial park live?

1. Kindergarten
2. Primary school
3. Park
4. Supermarket
5. Bank services
6. Laundry service
7. Hairdresser or beauty salon
8. Separating area of families and area of singles living
9. Security guard 24/24 with barriers
10. Fence to separate with local community
11. Others (please specify): _____

Q33. What do you think about sharing public services between urban for industrial park and local community?

1. Agree 2. Not agree 3. No ideas

Q34. Do you have any other expectation or recommendation related to the accommodation, urban environment and commuting?

Annex 5 - Process of Affordability Analysis

Annex-5 Process of Affordability Analysis

Annex 5 shows the calculation process and results of worker's affordable housing cost used by existing documents. In addition, the minimum wage is regulated in each region. Based on the sizes of city and economic activity, they are divided into four regions, and the higher minimum wage region is categorized as Region I.

(1) Common Setting

The transition of a regional minimum wage of Vietnam is as follows.

Table 1 Minimum Wage Change from 2012 to 2016

Year	Unit	Region I	Region II	Region III	Region IV
2012	million VND	2.00	1.78	1.55	1.40
2013	million VND	2.35	2.10	1.80	1.65
2014	million VND	2.70	2.40	2.10	1.90
2015	million VND	3.10	2.75	2.40	2.15
2016	million VND	3.50	3.10	2.70	2.40

Source: Minimum Wage 2012 to 2015

The minimum wage in 2012 is set as reference (1.00), and the minimum wage of each year was calculated. The increase rate of 2015 is 1.54.

Table 2 Minimum Wage Increase Rate from 2012 to 2016

Year	Region I	Region II	Region III	Region IV	Average
2012	1.00	1.00	1.00	1.00	1.00
2013	1.18	1.18	1.16	1.18	1.17
2014	1.35	1.35	1.35	1.36	1.35
2015	1.55	1.54	1.55	1.54	1.54
2016	1.75	1.74	1.74	1.71	1.74

Source: Minimum Wage 2012 to 2015

The precondition used for the calculation of affordable housing cost was set as following.

Table 3 Conditions for Analysis

Item	Case 1 15% Affordable Ratio	Case 2 20% Affordable Ratio	Unit
Down Payment Rate for Income for 1st and 2nd Quintile	0	0	%
Down Payment Rate for Minimum Wage for 3~5 th Quintile	20	20	%
Interest Rate	5	5	%
Repayment Period	10	10	Year
Affordable Rate	15	20	%
Exchange Rate (VND)	21,623	21,623	1USD

Source: JST

(2) Case1 15% Affordable Rate

The housing cost affordability corresponding to the 15% of affordable rate to the income is as follows.

Table 4 Affordability Analysis Case 1 for Minimum Wage (Single Person)

Item	Year	Unit	Region I	Region II	Region III	Region IV
Minimum Wage	2012	million VND	2.000	1.780	1.550	1.400
	2013	million VND	2.350	2.100	1.800	1.650
	2014	million VND	2.700	2.400	2.100	1.900
	2015	million VND	3.100	2.750	2.400	2.150
	2016	million VND	3.500	3.100	2.700	2.400
Monthly Maximum Payment		million VND	0.465	0.413	0.360	0.323
Annual Maximum Payment		million VND	5.580	4.950	4.320	3.870
Total Payment		million VND	55.800	49.500	43.200	38.700
Maximum Size of Home Mortgage		million VND	43.087	38.223	33.358	29.883
Down Payment		million VND	0.000	0.000	0.000	0.000
Affordable Price for Housing		million VND	43.087	38.223	33.358	29.883
Monthly Maximum Payment		USD	22	19	17	15
Maximum Size of Home Mortgage		USD	1,993	1,768	1,543	1,382
Down Payment		USD	0	0	0	0
Affordable Price for Housing		USD	1,993	1,768	1,543	1,382

Source: JST

Table 5 Affordability Analysis Case 1 for 5 Quintiles¹ (Household)

Item	Year		Unit	1st Quintile	2nd Quintile	3rd Quintile	4th Quintile	5th Quintile	Average
Monthly Salary	2010		million VND Per Person	0.633	1.153	1.611	2.268	4.985	2.13
	2012			0.952	1.672	2.333	3.198	6.794	2.989
Average Household Size	2010		Person	4.14	4.1	3.92	3.71	3.34	3.82
	2012			4.05	4.13	3.97	3.74	3.36	3.83
Average Income	2010		million VND Per Household	2.621	4.727	6.315	8.414	16.650	8.137
	2012			3.856	6.905	9.262	11.961	22.828	11.448
	2015 (Estimation)	a		5.956	10.667	14.308	18.476	35.264	17.684
Monthly Maximum Payment		$b = a * 15\%$	million VND	0.893	1.600	2.146	2.771	5.290	2.653
Annual Maximum Payment		$c = b * 12$	million VND	10.721	19.201	25.754	33.257	63.474	31.832
Total Payment		$d = c * 20$	million VND	214,415	384,017	515,073	665,141	1,269,488	609,627
Maximum Size of Home Mortgage		e Calcula tion by PV funcio n of Excel	million VND	135,372	242,451	325,194	419,941	801,498	384,891
Down Payment		f	million VND	0.000	0.000	65,039	83,955	160,300	61.865
Affordable Price for Housing		$g = e+f$	million VND	135.372	242.451	390.233	503.929	961.798	258.732
Monthly Maximum Payment			USD	41.3	74.0	99.3	128.2	244.6	122.7
Maximum Size of Home Mortgage			USD	6,261	11,213	15,039	19,421	37,067	17,800
Down Payment			USD	0.0	0.0	3,008	3,884	7,413	2,861
Affordable Price for Housing			USD	6,261	11,213	18,047	23,305	44,480	20,661

Source: JST

¹ In Vietnam Household Living Standard Survey, the income level is divided into five categories and estimated by each level. Quintile 1: lower income level of 0 to 20 %, Quintile 2: lower income level of 20 to 40 %, Quintile 3: lower income level of 40 to 60%, Quintile 4: lower income level of 60 to 80 % and Quintile 5 lower income level of 80 to 100 %.

(3) Case2 20% Affordable Rate

The housing cost affordability corresponding to the 20 % of affordable rate to the income is as follows.

Table 6 Affordability Analysis Case 2 for Minimum Wage (Single Person)

Item	Year	Unit	Region I	Region II	Region III	Region IV
Minimum Wage	2012	million VND	2.000	1.780	1.550	1.400
	2013	million VND	2.350	2.100	1.800	1.650
	2014	million VND	2.700	2.400	2.100	1.900
	2015	million VND	3.100	2.750	2.400	2.150
	2016	million VND	3.500	3.100	2.700	2.400
Monthly Maximum Payment		million VND	0.465	0.620	0.550	0.480
Annual Maximum Payment		million VND	5.580	7.440	6.600	5.760
Total Payment		million VND	55.800	74.400	66.000	57.600
Maximum Size of Home Mortgage		million VND	43.087	57.450	50.963	44.477
Down Payment		million VND	0.000	0.000	0.000	0.000
Affordable Price for Housing		million VND	43.087	57.450	50.963	44.477
Monthly Maximum Payment		USD	22	29	25	22
Maximum Size of Home Mortgage		USD	1,993	2,657	2,357	2,057
Down Payment		USD	0	0	0	0
Affordable Price for Housing		USD	1,993	2,657	2,357	2,057

Table 7 Affordability Analysis Case 2 for 5 Quintile (Household)

Item	Year	Unit	1st Quintile	2nd Quintile	3rd Quintile	4th Quintile	5th Quintile	Average
Monthly Salary	2010	million VND Per Person	0.633	1.153	1.611	2.268	4.985	2.13
	2012		0.952	1.672	2.333	3.198	6.794	2.989
Average Household Size	2010	Person	4.14	4.1	3.92	3.71	3.34	3.82
	2012		4.05	4.13	3.97	3.74	3.36	3.83
Average Income	2010	a million VND Per Household	2.621	4.727	6.315	8.414	16.650	8.137
	2012		3.856	6.905	9.262	11.961	22.828	11.448
	2015 (Estimation)		5.956	10.667	14.308	18.476	35.264	17.684
Monthly Maximum Payment		b = a * 20%	1.191	2.133	2.862	3.695	7.053	3.387
Annual Maximum Payment		c = b * 12	14.294	25.601	34.338	44.343	84.633	40.641
Total Payment		d = c * 20	285.887	512.022	686.764	886.855	1,692.651	812.836
Maximum Size of Home Mortgage		e Calcula tion by PV funcio n of Excel	180.496	322.268	433.593	559.921	1,068.665	513.188
Down Payment		f	0.000	0.000	65,039	83,955	160,300	61.865
Affordable Price for Housing		g = e+f	180.496	322.268	520.311	671.905	1,282.397	595.676
Monthly Maximum Payment		USD	55.1	98.7	132.3	170.9	326.2	156.6
Maximum Size of Home Mortgage		USD	8,347	14,950	20,052	25,895	49,423	23,733
Down Payment		USD	0.0	0.0	4,010	5,179	9,885	3,815
Affordable Price for Housing		USD	8,347	14,950	24,063	31,074	59,307	27,548

Source: JST

**Annex 6 - Foreign Direct Investment to Vietnam and
ASEAN Countries**

Annex-6 Analysis of Foreign Direct Investment to Vietnam and ASEAN Countries

6-1. Vietnamese Development Situation of Industrial Fields

This study investigates the FDI impact on Vietnam. On the first half section, it covers the economic policy reform related to FDI over decades, and it measures the historic FDI impact at national and international level. The second half section studies the current FDI situation in Vietnam and analyses the reasons that make Vietnam became one of attractive FDI destination and not. This section is not directly related to the theme of this study because the FDI impact in Vietnam does not influence the availability or improvement of worker's housing. However, at the end of the section, it suggests some policies need to be included for industrial development by FDI.

(1) FDI Current Situation and Issues in Vietnam

1) FDI History in Vietnam

The major historic policy reforms in Vietnamese economy are summarized below.

a. Doi Moi Policy (1986)

From changing the strict communist party view, the *Doi Moi* (open door) policy has started the fundamental changes to cause the structural transformation for creating a socialist-oriented market economy in Vietnam.

After experiencing the Sino-Vietnamese War during the 1970s, it has been initiated by the 6th National Congress of the party to save Vietnam from crucial poverty. The inflation rate before mandating the Doi Moi policy scored 700%. Addition to the negative economic impact from the long war period, the national economy avoided having the relationship with foreign companies or foreigners except the Soviet-Union. Therefore, the policy had been taken as a trigger to cause the significant structure reform to impact on the state of Vietnam.

The Doi Moi policy has established the mixed market economy with an emphasis on broadening opportunities and choices for everyone. It launched four major initiative goals, such as 1) transformation from communist perspective, 2) reformation of industrial policy, 3) establishment of market-oriented economy and 4) encouragement on participations of international players. The framework of state regulations has liberalized to focus the market-oriented economy and created the investment environment where the foreign companies and private owners to enter. The market institutions were established to promote the national and provincial development. In addition, the state abolished to control on domestic trade and enhanced the autonomy of state-owned enterprises to enjoy autonomy in production and business activities and independent accounting. This reform process has resulted to increase the standard of living in Vietnam and Gross Domestic Product (hereinafter referred to as "GDP") per capita.

b. ASEAN (1995)

On July 28th, 1995, Vietnam has become a part of Association of Southeast Asian Nations (hereinafter referred to as "ASEAN"). This membership made the positive impact on Vietnamese economy and accelerated the global integration and FDI growth within the country.

After adapting the Doi Moi policy, Vietnam put many efforts to increase the international participation and national economic enhancement. As a result, the number of FDI project rose from 37 in 1988 to 415 in 1995. Many legislative barriers have been removed after 1986, but Vietnam

1 Anwar, Sajid & Lan Phi Nguyen. "Foreign direct investment and export spillovers: Evidence from Vietnam". *International Business Review* 20 (2011): 171-193.

still needed to push up their international representation for further economic development. Therefore, to become a member of ASEAN had the important meaning that Vietnam was ready to join the international community. It did not only encourage the diplomatic relations with ASEAN members and non-ASEAN members, but also motivate international economic players to invest in Vietnam. The newly opened market always seems attractive for the international market like how Myanmar is currently recognized. Moreover, the ASEAN entrance provided the opportunity to Vietnam to sign the ASEAN Free Trade Area (hereinafter referred to as "AFTA" in 1996 as the seventh member of AFTA. The Common Effective Preferential Tariff (CEPT) was applied and decreased the tariff rate within the ASEAN area to be 0 to 5%. Additionally, the Free Trade Agreements between specific countries and ASEAN have been taken and impacted on Vietnam. The major agreements are listed below:

- ASEAN-China Free Trade Area (ACFTA) in 2004
- ASEAN-Korea Free Trade Area (AKFTA) in 2006
- ASEAN-Japan Comprehensive Economic Partnership in 2008

The decision to join ASEAN strongly expanded the economic opportunities not only with countries in ASEAN, but also with many international players, and it provided the bright possibility of new FDI and business chances.

This big economic movement of Vietnam positively influenced the economy as FDI expansion and further ASEAN and international integration to cause various later reforms. It might indirectly improve the living environment of local citizens by pushing up the economy at the macro level.

c. WTO (2007)

The association to World Trade Organization (hereinafter referred to as "WTO") in 2007 made a clear recognition of Vietnam's economic reform policies and engagement with the global economy.

Vietnam was the 150th member of WTO association after 12 years since WTO received the application from Vietnam. It implies that Vietnam became one of international economic players in the global market. Even though Vietnam welcomed more foreign companies, investments, and business, and associated with ASEAN, Vietnam needed to deal with many difficulties due to the late entry to international communities compared to other developing countries. It went through the disaster of Asian Financial Crisis (1999), which decreased the FDI inflows to Vietnam and financial struggles. For overcoming the historical financial damages, the WTO Association reformed the various policies for putting Vietnam on the global standard.

i) Lowering Down the Tariffs

Vietnam had promised to lower down tariffs on 3,800 items out of 10,000 items. Many domestic businesses were protected by the high tariffs, but the tariffs on many items needed to lower down from zero to 35%. It increased the competition between domestic and international companies in the same industry. However, it also decreased the cost imports, such as many raw materials and capitals. It made the foreign companies easier to enter the Vietnam business.

ii) Opening up the Service Sector

Vietnam had opened 11 categories of WTO service sector. Especially, it allowed 100% foreign investment from 2009 and liberalized the foreign players to participate in the economy. While some areas, such as telecommunication and trading were restricted the percentage of investment up to 49 - 65, many service businesses including legal, financial, engineering, Information Technology (hereinafter referred to as "IT") and so on have been deregulated. It increased the motivation of foreign investors for entering this market.

iii) Abolishing Subsidies for Agricultural Sector and Protecting Intellectual Property

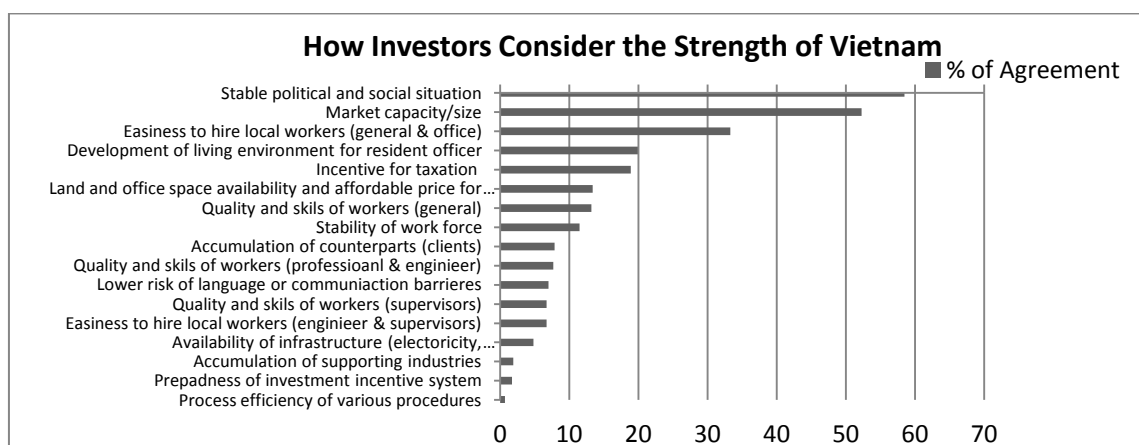
Vietnam had agreed to abolish or limit the subsidies on agricultural export, and the intellectual property needed to be protected after joining WTO. It was considered to weaken the Vietnamese agricultural economy because it was not strong enough to compete with international players. However, it helped to proceed the machinery in agriculture and to expand the market size of agriculture by foreign investment.

This event brought the excellent economic result to people in Vietnam for increasing the number of jobs and income levels. However, the influence of the social housing policy at this period is unknown and immeasurable.

2) **Current FDI Situation in Vietnam**

a. **Becoming an Attractive Investing Destination**

Nowadays, Vietnam is one of the popular destinations to invest because they have some strength compared to other countries. Figure 1 shows the survey results by the foreign companies who invest in Vietnam, and some components are discussed below.



Source: JETRO “Business Environment in ASEAN • Southwest Asia”

Figure 1 How Investors Consider the Strength of Vietnam

i) Political and Social Stabilization

While the market system has been liberalized after mandating the Doi Moi policy, the socialism system still has been taken as the political standard in Vietnam. It is the strong socialist country and keeps the single-party socialism republic framework. In this global society, the socialism country is often criticized due to the lack of democracy and freedom of speech. On the other hand, it brings the political stabilization of the society. The demonstrations at Bangkok in Thailand are one of most famous civil confusions in Asia. Compared to these incidents, Vietnam has less possibility to occur social and political confusion, such as protests against religious or ethnic issues and boycott for increasing the labour right. Vietnam has established the high credit and trust by many foreign investors. High political instability would risk that many foreign investors avoid investing and give negative impact on the economic growth.

ii) Market Capacity and Growth Potential

Another strength of Vietnam is the expected market capacity and its potential. It is estimated to growth and expand the market even more in the future. First of all, the population itself continuously increase and expand the labour power and market consumption. On the current study, Vietnam has the third largest population in ASEAN after Indonesia and Philippines. The GDP per capita in 2013 is about 1,902 USD, and it is much lower, but it is 4,519 USD around Ho Chi Minh City (hereinafter referred to as “HCMC”) because many FDI and capitals concentrate in this area.

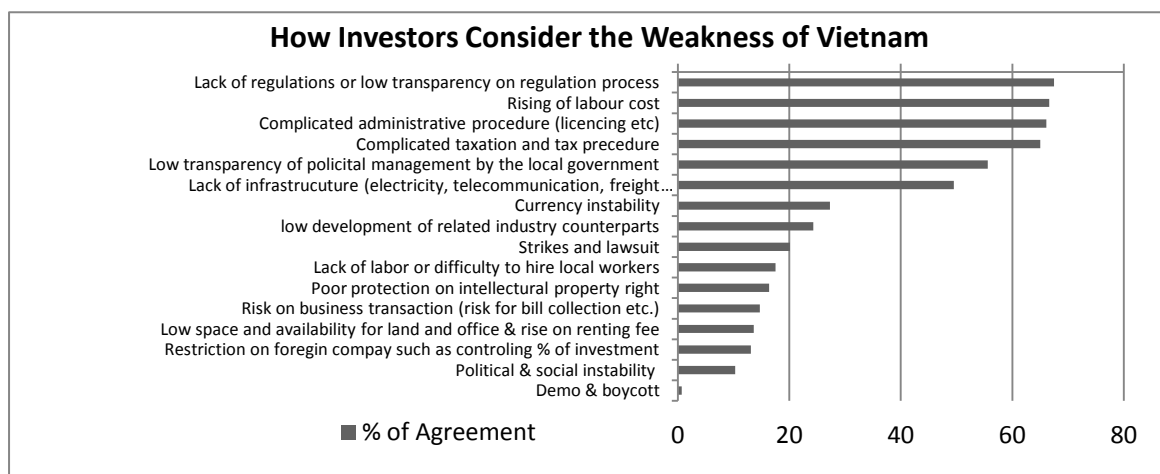
Therefore, the area of Ho Chi Minh city may have the high potential further consumption. Cheap labours in local areas are still available. The balance of cheap labour and infrastructure establishment in Vietnam is highly valued by the foreign investors, especially who invest in IPs.

iii) Living Infrastructure for Resident Officers

Many foreign investors consider of the living infrastructures for resident officers who came from the head offices. Vietnam is rated as the quite comfortable place to live for foreign officers. The infrastructures of land and office space availability need to be improved, but they are not considered as acceptable. However, the living environment for workers is discussed at all because it is not big interest for foreign investors. The report, “Business Environment in ASEAN • Southwest Asia” explains that it is easy to hire Vietnamese domestic workers without providing dormitories. Since the big labour forces are available in the rural areas, wherever the foreign investors go, potential workers are available. Therefore, the worker’s living environment is not directly related to the foreign investors’ interests. It might become the part of their interests when the labour force availability is decreased by the high labour needs. It was a temporary wave to improve the living environment of workers and not the long-term interest for them.

b. Risk of Being Less Fascinated

Vietnam is alerted to be optimistic about future FDI amount because they are some weaknesses of investing in Vietnam compared to other investment recipients. Figure 2 summarizes the weakness of Vietnamese investing environment.



Source: JETRO “Business Environment in ASEAN • Southwest Asia”

Figure 2 How Investors Consider the Weakness of Vietnam

i) Lack of Regulations or Low Transparency on Regulation Process

The poor regulation establishment is not only the part of compliments by the foreign investors, but also the unclear setting of regulation becomes an issue for investing. Vietnam is often criticized for the lack of regulations to support investors or the top-down approach. In addition, some of the newly established regulations are always unclear. For example, when they announce the new tax break regulations in the IT sector, it does not mention exactly what kind of IT business can be applied. Even if the investors make an inquiry, the government servants in the local tax bureau are not aware of the new regulations or having different understanding of them. As a result, even if Vietnam establishes new policies or regulations, the investors will consider that they may not be conducted as they say.

Moreover, some ineffective policy reformations are negatively discussed. The Corporate Income Taxation Law of 2003 had been applied to set corporation tax 28% to make it fair for both domestic

and foreign companies. However, the tax rate used to be 15 % for foreign companies that invested on IP. Later only R&D industries receive such incentives and not manufacturing IP while many FDI investments go to those IP and create many job opportunities. The rate has been revised several times for lowering to 22% from 2014, and it will be 20% on 2016. However, many investors complain that it used to be even cheaper.

ii) Low Political Transparency

The corruption issue in Vietnam provides the negative image for investors to avoid investing. Paying bribes and commissions are known as very common in Vietnamese political process. The foreign-based companies are not exceptions to be asked during their business. Vietnam is ranked as the 119th for the ranking of Transparency International. Many international investing companies have a high compliance policy that they must follow, and it makes them hesitate to invest in Vietnam.

iii) Bad Debt and Domestic Companies

Many Vietnamese public companies still dominate the market under the socialism regime. The human and material resources are used inefficiently and 70% of bad debt that the state of Vietnam is caused by domestic companies. The government has reported that the number of domestic companies is decreased to less than half, but it does not let them become private and instead groups and converting to stock. The terrible national economic management effects on the domestic economic circulation and increase labour cost.

(2) **Future Direction of the FDI in Vietnam**

Since the FDI attraction needs to compete with neighbourhood countries, it is important to discuss the similarities and differences on their policymaking. This comparison may initiate the solutions for Vietnam to improve their FDI attraction strategy and help their further economic development. From the studies in parts of 6-1(1)2) on this report, it is addressed that Vietnam has major issues on regulation process, industrial cluster and FDI concentration within the nation. Each topic is going to be covered below.

1) **Lack of Proper Regulation Process**

Many policy reformations and regulations to support investors are still in need in Vietnam, but the core issue is not missing a part of regulations itself; it is the way of applying them. Vietnam is criticized that their regulation process is unclear, and whenever the foreign investors need accurate information, they do not know how to obtain or where to refer the correct information. Singapore is the great example of Vietnam since they have established trust among foreign investors. Their one-stop service by Economic Development Board creates the trustful relationship between the states and investors. Vietnam needs the clear governmental body that the foreign investors can make inquiry and ask for advice and not only at the state level, but also the provincial and local stages. In this case, the foreign investors can make the strategic plan to take the full advantage of investing. It is stressful when their plan does not apply to receive the tax break or preferential benefits due to the different understandings on regulations. Not like Thailand or Indonesia, Vietnam has established the high trust on social stability. Vietnam has the potential to be high-secured country by improving the system to make sure that regulations are conducted accurately. As an evidence for this tendency, the Ascendas IP in Binh Duong Provide already established the inquiry counter for making easier the process to be one-stop.

2 Transparency International. "Corruption by County: Vietnam" (2014).
<http://www.transparency.org/country#VNM>

2) **Weak Industrial Cluster**

To survive in the ASEAN countries, Vietnam needs to consider the establishment of the industrial cluster. As many investors shift their FDI from China, the ASEAN region is always regarded as their next plan because the region has cheaper labour for various secondary sectors. Various topics, such as transportation network or political transparency are considered, but the priority comes on cost effectiveness, and the industrial cluster is absolutely a part of it. Vietnam is geographically at the suitable location in ASEAN to access other parts supply industries. Most of the parts are supplied from China or Thailand through marine transportation. However, Vietnam should not only consider improving the efficient transportation network to cut costs for importing them. Rather than that, they need to establish the industrial cluster within the country.

Thailand has the excellent example of the industrial cluster. Within one or two hours from the capital city, many IPs are available and covered the various levels of automobile production. More than 20 automobile assembling IPs are placed. The primary part of factories is about 700, and the secondary and tertiary part factories are located more than 1200 around Bangkok. Therefore, the whole production process for automobiles can be done in Thailand. It looks strongly positive to foreign investors because the transportation fees and tariffs for those parts and components will be deducted. In 2013, Vietnam has implemented the strategy that it will achieve their national industrialization in 2020, and they prioritize six main industries, such as 1) electronics, 2) agricultural machinery, 3) agricultural and fisheries processing, 4) shipbuilding, 5) environment and energy saving and 6) production of automobiles and automobile parts. It is a new challenge for Vietnam to accomplish the industrial cluster network and build the strong connectivity in the region like the case of Thailand.

3) **Balancing the Economic Developments in Urban and Local Areas**

For effective FDI investment, the investment gap within Vietnam needs to be considered. Current FDI investments are focused on the areas around Ho Chi Minh City and Hanoi where have good infrastructure, financial and education systems. More than 2/3 of all FDI goes to HCMC and their surrounding area, and 20% of the total FDI goes to Hanoi³ and its surrounding area. The two leading economic zones attract about 85% of total FDI in Vietnam.

The primary reason that every country wants to get more FDI is to developing its country, but in this case Vietnam is not taking the full advantage of FDI. It causes the technology and income gap among provinces. The economic gap within the country may indirectly affect to cause political and social instability that also degrade the impression of Vietnam.

The idea of Jokowi's Marine Doctrine approaches to the same issue in Indonesia. As increasing the marine connectivity within the country, the island where has the low economic development will receive the opportunity to expand its economy. Even if they have the rich raw materials, they did not extend the inter-island networks. When many raw materials are available to process, they did not have the way to support to send them to IP or export the products abroad efficiently⁴. Therefore, the IP establishment in the local islands had been hesitated. Instead, they have been invested in the city areas.

Thailand also works on economic gap within the state by initiating preferential treatments. By the Dual Track Policy, they consider to the importance of developing the local areas by providing the

3 Dang, Duc Anh. "How foreign direct investment promote institutional quality: Evidence from Vietnam". *Journal of Comparative Economics* 41 (2013): 1054-1072.

4 NHK BS1. "New Era of Indonesia (2): Marine Doctrine Idea has Moved" (2014): Web. 2. July. 2015.

<http://www.nhk.or.jp/kokusaihoudou/archive/2014/10/1021.html>

tax break for investors when they build IPs in the local area. The BOI divided the land into three zones: 1) the capital city area, 2) the surrounding areas and 3) the countryside area. When the foreign investors invest in the countryside areas, they can receive the better tax break rate or custom deductions.

(3) **Future Development and Issues of IPs**

Comparing with the FDI economic policies, Vietnam is missing the clear vision of FDI. At this moment, Vietnam is considered as attractive FDI target because of its cheaper labour and sufficient infrastructure. However, the labour wage is increasing every year, and the cheap labour is not sustainable. It seems that the Doi Moi Policy was the most successful policy in the Vietnam's FDI history, and significant policy implementation has not happened in recent years. Myanmar, which is at the behind of Vietnam, would take over the position when they could extended the infrastructure. If Vietnam is going to compete with Thailand and Myanmar in the secondary sector, they need to implement the direction of policy development before launching various tax breaks or deregulations on foreign investments. As an alternative, they can shift to the tertiary sector as Philippine does, but it would take too much time to shift in the sector. Then, Vietnam needs to consider how they can survive in the Mekong area and create the better strategic planning for further FDI development. The investment promotion, the enhancement of area connectivity and the industrial cluster development will be essential matters to compete with other countries. For developing the weakness in Vietnam, Vietnam should not ignore the power of small and medium sized businesses. It is not only the big investment or major international business players. When the small and medium entrepreneurs start many businesses in Vietnam, it is expected the overall improvements of those weaknesses. They may not be able to compete with the big players to call the local labours because local labours choose to work in the bigger IPs where the better living environment has. Therefore, improving their living environments needs to be discussed for both workers and Vietnam's economic growth. Based on this analysis if Vietnam would like to address FDI as the key factor to impact on social housing policies that this study focuses on, the following suggestions would need to be considered. First of all, if FDI positively impacts on local city development when it balances the development between urban and local areas, it would have the tendency to IPs parks in the areas where the potential working population are. Therefore, the housing provision for local cities needs to be considered. Secondary, when the industrial cluster is expended by FDI implementation, the housing policy for medium and small size developers are necessary. Especially, the small sized housings or apartments are key inclusive factors for the housing policies. For the third consideration, it is important to recognize that the provinces such Binh Duong is likely to be supportive for legal management of IPs operation. The sufficient regulation process is important for housing provision and FDI implementation.

6-2 FDI Situation in ASEAN Countries

This study investigates the FDI impact on ASEAN countries and creates the country profile including its policy history and current FDI situation. The major ASEAN countries are covered to discuss the policy reform tendency and the result of the reformation.

The countries have been selected by considering how their FDI profiles would benefit to studies for the improvement in Vietnam. The development of Brunei Darussalam was extremely different from the other ASEAN countries since their economy was fully supported by the productions and the processing of rich natural resources. The two countries in the Mekong region, Cambodia and Laos, are under economic development and working on more FDI attractions, and they have no significant policies that Vietnam can learn. Except these three countries, the FDI situations in ASEAN countries are discussed and profiled below.

Basic Social Economic Data for ASEAN Countries. The last 20 years of FDI and social economic data of ASEAN countries are shown below.

Table 1 Foreign Direct Investments, Net Inflows (% of GDP) No Data Available before 2001

	Units	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Brunei Darussalam	% of GDP	1.084	3.93	1.888	1.438	1.837	0.766	2.104	1.544	3.034	5.058	7.239	5.067	5.555
Cambodia	% of GDP	3.754	3.387	1.803	2.462	5.994	6.642	10.04	7.875	4.914	6.54	6.2	10.25	8.833
Indonesia	% of GDP	-1.856	0.074	-0.254	0.738	2.916	1.348	1.603	1.826	0.904	2.025	2.303	2.31	2.564
Lao P.D.R.	% of GDP	1.352	0.253	0.963	0.715	1.013	5.425	7.661	4.184	5.462	3.882	3.631	3.145	3.813
Malaysia	% of GDP	0.597	3.177	2.244	3.707	2.734	4.727	4.687	3.281	0.057	4.398	5.226	3.192	3.699
Myanmar	% of GDP	0.597	3.177	2.244	3.707	2.734	4.727	4.687	3.281	0.057	4.398	5.226	3.192	3.699
Philippines	% of GDP	0.256	1.895	0.585	0.753	1.614	2.215	1.954	0.769	1.226	0.536	0.895	1.285	1.374
Singapore	% of GDP	4.386	2.634	3.668	3.632	4.568	4.566	4.586	3.132	1.841	2.855	0.714	3.523	3.694
Thailand	% of GDP	3.684	3.689	3.394	3.258	3.39	3.616	8.655	9.663	7.169	6.901	5.482	5.37	5.198
Vietnam	% of GDP	16.9	6.963	12.31	18.41	14.2	24.98	26.52	6.347	12.38	23.3	17.43	19.54	21.44

Source: The World Bank, World Development Indicators (WDI), July 2015

Table 2 Foreign Direct Investments, Net Outflows (percentage of GDP) No Data Available before 2005

	Units	2005	2006	2007	2008	2009	2010	2011	2012	2013
Brunei Darussalam	% of GDP		0.152							
Cambodia	% of GDP	0.068	0.115	0.013	0.198	0.181	0.183	0.227	0.257	0.304
Indonesia	% of GDP	1.072	0.748	1.082	1.156	0.417	0.554	1.012	0.815	1.056
Lao P.D.R.	% of GDP									
Malaysia	% of GDP	2.042	4.695	6.105	6.672	3.333	6.201	6.259	5.536	4.151
Myanmar	% of GDP									
Philippines	% of GDP	0.77	0.874	3.597	1.131	1.127	1.359	1.048	1.668	1.402
Singapore	% of GDP	0.284	0.471	1.221	1.502	1.582	1.447	1.921	3.517	1.739
Thailand	% of GDP	0.113	0.128	0.238	0.303	0.66	0.776	0.701	0.77	1.142
Vietnam	% of GDP	9.095	12.61	20.5	3.54	13.64	14.12	8.531	4.643	8.922

Source: The World Bank, World Development Indicators (WDI), July 2015

Table 3 Current Account Balance, BoP (U.S. Dollars, Billions)

	Units	1995	1996	1997	1998	1999	2000	2001	2002	2003	
Brunei Darussalam	U.S. dollars (Billions)	1.595	1.502	1.399	0.825	1.624	2.998	2.602	2.347	2.904	
Cambodia	U.S. dollars (Billions)	-0.171	-0.247	0.045	-0.172	-0.169	-0.096	-0.039	-0.097	-0.166	
Indonesia	U.S. dollars (Billions)	-6.8	-7.3	-3.8	4	5.752	7.99	6.9	7.822	8.107	
Lao P.D.R.	U.S. dollars (Billions)	-0.124	-0.236	-0.185	-0.06	-0.059	-0.183	-0.239	-0.197	-0.292	
Malaysia	U.S. dollars (Billions)	-8.644	-4.462	-5.935	9.529	12.604	8.488	7.287	7.19	13.381	
Myanmar	U.S. dollars (Billions)				-1.101	-0.662	-0.609	-0.363	0.144	0.066	
Philippines	U.S. dollars (Billions)	-1.98	-3.953	-4.351	1.546	-2.875	-2.228	-1.75	-0.282	0.285	
Singapore	U.S. dollars (Billions)	14.417	13.879	15.257	18.443	14.487	10.158	12.06	12.257	21.899	
Thailand	U.S. dollars (Billions)	-13.582	-14.691	-3.021	14.242	12.428	9.313	5.101	4.654	4.772	
Vietnam	U.S. dollars (Billions)	-2.648	-2.02	-1.528	-1.373	1.177	0.85	0.92	-0.627	-1.931	
2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
3.325	4.507	5.752	5.857	7.056	4.32	5.623	6.075	5.773	5.558	3.558	-1.099
-0.116	-0.24	-0.047	-0.16	-0.685	-0.719	-0.769	-1.303	-1.547	-1.88	-1.987	-1.786
5.258	1.595	9.542	6.795	0.126	10.628	5.303	1.685	-24.418	-29.115	-26.233	-27.058
-0.41	-0.541	-0.427	-0.576	-1.016	-1.239	-1.369	-1.393	-2.838	-3.123	-2.907	-2.57
15.079	20.694	26.188	29.736	39.439	31.42	27.067	33.474	17.631	12.665	15.127	6.908
0.419	0.845	1.132	-0.157	-1.446	-0.489	-0.617	-1.091	-2.393	-2.888	-4.509	-4.832
1.625	1.986	6.963	8.075	0.147	8.444	7.182	5.645	6.948	11.384	12.645	16.954
20.506	27.868	36.884	46.749	27.742	32.36	55.943	60.561	49.774	54.084	58.806	61.172
2.759	-7.642	2.315	15.682	2.157	21.896	10.024	8.887	-1.47	-2.452	14.231	17.085
-1.591	-0.56	-0.164	-6.992	-10.787	-6.608	-4.276	0.233	9.267	9.471	10.074	9.816

Source: IMF World Economic Outlook (WEO), April 2015

Table 4 Total Value of Import (U.S. Dollars, Billions)

	Units	1995	1996	1997	1998	1999	2000	2001	2002	
Brunei Darussalam	U.S. dollars (Billions)	2.09	2.49	2.2	1.55	1.34	1.11	1.16	1.56	
Cambodia	U.S. dollars (Billions)	1.19	1.07	1.06	1.17	1.59	1.94	2.09	2.32	
Indonesia	U.S. dollars (Billions)									
Lao P.D.R.	U.S. dollars (Billions)	0.59	0.69	0.71	0.55	0.52	0.54	0.51	0.45	
Malaysia	U.S. dollars (Billions)	77.69	78.42	79.03	58.27	65.39	81.96	73.74	79.76	
Myanmar	U.S. dollars (Billions)	1.33	1.36	2.04	2.67	2.3	2.37	2.88	2.35	
Philippines	U.S. dollars (Billions)	28.34	34.13	38.62	31.5	32.57	37.03	34.92	41.09	
Singapore	U.S. dollars (Billions)	124.5	131.3	132.4	101.7	111.1	134.5	116	116.4	
Thailand	U.S. dollars (Billions)	70.79	72.33	62.85	42.97	50.35	61.92	61.96	64.64	
Vietnam	U.S. dollars (Billions)	8.16	11.14	11.62	11.53	11.62	15.64	16.22	19.75	
2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
1.33	1.42	1.49	1.68	2.1	2.57	2.45	2.54	3.63	3.57	3.61
2.56	3.19	3.93	4.77	5.44	6.51	5.83	6.79	9.3	11	13
42.2	54.88	75.72	80.65	93.1	127.5	93.79	135.3	176.2	190.4	187.3
0.46	0.71	0.88	1.06	1.07	1.4	1.46	2.06	2.4	3.06	3.02
83.3	105.2	114.3	130.4	146.2	156.4	123.8	164.6	187.5	196.4	206
2.09	2.2	1.93	2.56	3.31	4.29	4.35	4.76	9.02	9.18	12.04
42.58	46.1	49.49	54.08	58	60.42	45.88	58.47	63.69	65.35	65.1
136.2	173.6	200.1	238.7	263.2	319.8	245.8	310.8	365.8	379.7	373
75.82	94.41	118.2	128.8	140	179.2	133.7	182.9	228.8	250	250.7
25.26	31.97	36.76	45.01	62.68	80.71	69.95	84.84	106.8	113.8	132

Source: UNCTAD Statistics

Table 5 Total Value of Export (U.S. Dollars, Billions)

Units		1995	1996	1997	1998	1999	2000	2001	2002	
Brunei Darussalam	U.S. dollars (Billions)	2.4	2.48	2.47	2.06	2.58	3.9	3.64	3.7	
Cambodia	U.S. dollars (Billions)	0.86	0.64	0.74	0.8	1.13	1.39	1.5	1.92	
Indonesia	U.S. dollars (Billions)									
Lao P.D.R.	U.S. dollars (Billions)	0.31	0.32	0.36	0.37	0.31	0.33	0.32	0.3	
Malaysia	U.S. dollars (Billions)	73.91	78.33	78.74	73.26	84.62	98.23	87.97	94.06	
Myanmar	U.S. dollars (Billions)	0.85	0.75	0.87	1.07	1.12	1.62	2.38	3.05	
Philippines	U.S. dollars (Billions)	17.5	20.41	24.88	29.41	36.58	38.08	32.15	35.21	
Singapore	U.S. dollars (Billions)	118.3	125	125	109.9	114.7	137.8	121.8	125.2	
Thailand	U.S. dollars (Billions)	56.44	55.72	57.34	54.48	58.47	68.96	64.97	68.11	
Vietnam	U.S. dollars (Billions)	5.45	7.26	9.14	9.36	11.54	14.45	15.03	16.71	
2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
4.42	5.06	6.25	7.64	7.67	10.32	7.2	8.91	12.46	13	11.45
2.12	2.8	3.09	3.69	4.09	4.71	4.2	5.14	6.7	7.84	9.3
64.11	70.77	87	103.5	118	139.6	119.7	158.1	200.8	188.5	183.3
0.34	0.36	0.55	0.88	0.92	1.09	1.05	1.75	2.19	2.27	2.26
104.7	126.7	141.6	160.8	176	199.4	157.2	198.6	228.1	227.5	228.3
2.48	2.38	3.81	4.59	6.34	6.94	6.66	8.66	9.24	8.88	11.23
36.23	39.68	41.25	47.41	50.47	49.08	38.44	51.5	48.3	52.1	56.7
159.9	198.6	229.7	271.8	299.3	338.2	269.8	351.9	409.5	408.4	410.3
80.32	96.25	110.9	129.7	153.9	177.8	152.4	193.3	222.6	229.2	228.5
20.15	26.48	32.44	39.83	48.56	62.68	57.1	72.24	96.91	114.5	132

Source: UNCTAD Statistics

Table 6 Nominal GDP (U.S. Dollars, Billions)

Units		1995	1996	1997	1998	1999	2000	2001	2002	2003	
Brunei Darussalam	U.S. dollars (Billions)	4.73	5.12	5.2	4.05	4.6	6	5.6	5.84	6.56	
Cambodia	U.S. dollars (Billions)	3.42	3.51	3.44	3.13	3.5	3.67	3.99	4.29	4.67	
Indonesia	U.S. dollars (Billions)	244.23	274.72	260.68	115.32	169.16	179.48	174.51	212.81	255.43	
Lao P.D.R.	U.S. dollars (Billions)	1.88	1.96	1.85	1.3	1.42	1.57	1.57	1.66	2.03	
Malaysia	U.S. dollars (Billions)	88.83	100.85	100.17	72.18	79.15	93.79	92.78	100.85	110.2	
Myanmar	U.S. dollars (Billions)				7.45	9.79	10.28	7.48	7.82	12.08	
Philippines	U.S. dollars (Billions)	82.12	91.79	91.23	72.21	83	81.02	76.26	81.36	83.91	
Singapore	U.S. dollars (Billions)	87.89	96.4	100.16	85.71	86.29	95.84	89.29	91.94	97	
Thailand	U.S. dollars (Billions)	168.02	181.95	150.89	111.86	122.63	122.73	115.54	126.88	142.64	
Vietnam	U.S. dollars (Billions)	20.8	24.69	26.89	27.23	28.7	31.18	32.52	35.1	39.56	
2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
7.87	9.53	11.47	12.25	14.42	10.73	12.37	16.69	16.95	16.11	15.1	11.24
5.33	6.29	7.27	8.63	10.34	10.39	11.23	12.82	14.06	15.36	16.55	17.81
279.56	310.82	396.29	470.14	558.58	577.54	755.26	892.59	919	912.5	888.65	895.6
2.37	2.72	3.55	4.22	5.29	5.58	6.84	8.06	9.4	10.79	11.68	12.76
124.75	143.54	162.75	193.61	231.07	202.28	247.54	289.34	304.96	313.16	326.93	327.89
12.2	13.83	16.74	23.29	34.55	38	49.63	56.17	55.76	56.76	62.8	69.14
91.37	103.07	122.21	149.36	173.6	168.49	199.59	224.14	250.24	272.07	284.93	308.03
114.19	127.42	147.79	179.98	192.23	192.41	236.42	275.37	289.94	302.25	308.05	296.06
161.34	176.35	207.09	246.98	272.58	263.71	318.91	345.67	365.97	387.25	373.8	386.29
49.52	57.65	66.39	77.52	98.27	101.63	112.77	134.6	155.57	170.57	186.05	204.49

Source: IMF - World Economic Outlook Databases, April 2015

Table 7 Nominal GDP per Capita (U.S. Dollars)

		Units	1995	1996	1997	1998	1999	2000	2001	2002	2003
Brunei Darussalam		U.S. dollars	16,477.90	17,369.97	17,224.53	13,085.45	14,514.13	18,476.85	16,827.76	17,181.32	18,930.13
Cambodia		U.S. dollars	316.81	316.19	302.17	267.86	293.7	299.98	320.05	337.5	360.66
Indonesia		U.S. dollars	1,254.02	1,394.50	1,308.11	572.09	829.57	870.15	834.14	1,002.91	1,186.85
Lao P.D.R.		U.S. dollars	385.84	392.32	362.17	249.88	268.42	291.74	286.14	298.57	361.87
Malaysia		U.S. dollars	4,295.15	4,752.05	4,601.40	3,231.71	3,454.84	3,991.91	3,846.24	4,078.35	4,352.36
Myanmar		U.S. dollars				164.57	213.50	221.58	159.73	165.88	254.54
Philippines		U.S. dollars	1,200.43	1,311.13	1,273.33	960.71	1,080.95	1,055.12	970.38	1,014.94	1,024.77
Singapore		U.S. dollars	24,937.27	26,262.26	26,386.35	21,824.01	21,796.25	23,793.11	21,576.81	22,016.98	23,573.85
Thailand		U.S. dollars	2,825.72	3,026.60	2,481.11	1,819.86	1,988.75	1,983.32	1,835.78	1,999.30	2,228.26
Vietnam		U.S. dollars	288.87	337.52	361.91	360.93	374.72	401.57	413.34	440.21	489.03
2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
22,345.10	26,586.99	31,469.21	33,101.84	38,444.87	28,237.48	31,981.87	42,435.96	42,402.38	39,658.80	36,606.83	26,804.39
405.63	470.68	536.15	627.78	741.86	734.66	781.91	877.64	945.7	1,018.22	1,080.82	1,146.09
1,280.70	1,403.88	1,764.79	2,064.23	2,418.04	2,464.96	3,178.13	3,703.23	3,759.20	3,680.13	3,533.53	3,511.40
416.57	469.19	601.79	701.24	861.97	890.64	1,069.75	1,236.24	1,414.46	1,593.59	1,692.65	1,815.84
4,815.65	5,421.34	6,065.61	7,144.42	8,372.19	7,203.34	8,658.67	9,955.79	10,331.33	10,456.89	10,803.53	10,654.04
255.44	287.99	346.23	478.71	705.35	771.57	998.38	1,120.94	1,103.33	1,113.37	1,221.36	1,333.63
1,093.48	1,208.93	1,405.21	1,683.69	1,918.26	1,851.48	2,155.41	2,379.44	2,612.11	2,790.88	2,865.49	3,037.12
27,404.81	29,869.90	33,579.16	39,223.54	39,722.15	38,577.17	46,569.40	53,122.37	54,577.80	55,979.76	56,319.34	53,604.15
2,479.03	2,706.78	3,155.32	3,736.74	4,096.88	3,938.76	4,735.75	5,110.62	5,385.37	5,670.13	5,444.56	5,611.59
603.67	699.68	796.93	920.46	1,154.49	1,181.45	1,297.23	1,532.31	1,752.62	1,901.70	2,052.85	2,232.99

Source: IMF - World Economic Outlook Databases, April 2015

Table 8 Economic Growth Rate (% of GDP)

		Units	1995	1996	1997	1998	1999	2000	2001	2002	2003
Brunei Darussalam		% of GDP	4.477	2.881	-1.475	-0.56	3.053	2.853	2.745	3.872	2.903
Cambodia		% of GDP	6.443	5.412	5.62	5.009	11.91	8.767	8.148	6.579	8.506
Indonesia		% of GDP	8.22	7.818	4.7	-13.13	0.791	4.979	3.643	4.499	4.78
Lao P.D.R.		% of GDP	7.045	6.892	6.907	4.38	4.135	6.324	4.623	6.865	6.21
Malaysia		% of GDP	9.83	10	7.323	-7.359	6.138	8.68	0.518	5.391	5.789
Myanmar		% of GDP					10.95	13.75	11.34	12.03	13.84
Philippines		% of GDP	4.679	5.846	5.185	-0.577	3.082	4.411	2.894	3.646	4.97
Singapore		% of GDP	7.028	7.532	8.291	-2.225	6.095	8.898	-0.952	4.212	4.435
Thailand		% of GDP	9.237	5.901	-1.371	-10.51	4.448	4.75	2.167	5.318	7.13
Vietnam		% of GDP	9.54	9.34	8.152	5.765	4.774	6.787	6.895	7.08	7.341
2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
0.504	0.388	4.397	0.154	-1.938	-1.765	2.598	3.43	0.948	-1.75	-0.698	-0.47
10.34	13.25	10.77	10.21	6.692	0.087	5.963	7.07	7.313	7.428	6.966	7.203
5.031	5.693	5.501	6.345	7.442	4.702	6.378	6.17	6.03	5.579	5.025	5.199
7.021	6.767	8.645	7.843	7.785	7.502	8.131	8.04	7.898	7.968	7.406	7.314
6.783	4.976	5.585	6.299	4.832	-1.514	7.425	5.188	5.644	4.745	6.021	4.8
13.57	13.57	13.08	11.99	3.6	5.144	5.345	5.909	7.3	8.25	7.686	8.329
6.698	4.778	5.243	6.617	4.153	1.148	7.632	3.66	6.801	7.181	6.096	6.713
9.549	7.489	8.86	9.112	1.788	-0.603	15.24	6.207	3.414	4.443	2.918	3.031
6.315	4.642	5.093	5.044	2.484	-2.33	7.811	0.077	6.49	2.891	0.711	3.712
7.789	7.547	6.978	7.129	5.662	5.398	6.423	6.24	5.247	5.421	5.98	6

Source: IMF – World Economic Outlook Databases, April 2015

Table 9 Consumer Price Index

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Brunei Darussalam	91.068	92.858	94.441	94.041	94.033	95.138	95.711	93.522	93.802	94.644
Cambodia	61.297	65.678	72.576	81.937	83.573	82.883	82.786	82.756	83.606	86.887
Indonesia	17.567	19.039	20.218	31.948	38.578	40.033	44.638	49.896	53.276	56.505
Lao P.D.R.	12.042	14.348	17.152	32.613	74.492	91.81	98.983	109.52	126.469	139.693
Malaysia	68.913	71.311	73.204	77.078	79.184	80.412	81.56	83.022	83.913	85.105
Myanmar			160.629	239.555	265.665	261.086	351.17	555.212	693.726	719.793
Philippines	54.142	58.642	61.958	67.758	71.933	76.658	80.8	83	84.883	88.95
Singapore	71.543	72.53	73.997	73.797	73.814	74.809	75.568	75.272	75.639	76.903
Thailand	60.594	64.12	67.71	73.124	73.333	74.506	75.71	76.24	77.615	79.763
Vietnam	66.281	69.988	72.154	78.006	81.211	79.775	79.528	82.771	85.505	92.256
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
	95.673	95.82	96.746	98.763	99.793	100.008	100.15	100.258	100.642	100.4
	92.404	98.08	105.601	131.999	131.124	136.365	143.835	148.042	152.417	158.288
	62.415	70.593	75.296	82.658	86.829	91.293	96.171	99.999	106.413	113.218
	149.707	159.888	167.121	179.869	179.931	190.698	205.154	213.891	227.517	236.911
	87.692	90.867	92.708	97.742	98.325	100.017	103.192	104.908	107.117	110.483
	797.107	1,006.97	1,318.47	1,470.66	1,503.69	1,627.33	1,672.34	1,719.64	1,817.85	1,925.89
	94.817	100	102.942	111.367	116.058	120.45	126.133	130.133	133.95	139.542
	77.263	78.008	79.65	84.929	85.436	87.848	92.458	96.689	98.969	99.984
	83.386	87.259	89.208	94.075	93.275	96.334	100.003	103.018	105.269	107.264
	100	107.503	116.478	143.403	153.035	167.126	198.341	216.396	230.668	240.125
										246.128

The basic year = 100

Source: IMF – World Economic Outlook Databases, April 2015

Table 10 Fiscal Balance (National Currency, Billions)

	Units		1995	1996	1997	1998	1999	2000	2001	2002	2003
Brunei Darussalam	Brunei dollars (bn)		-2.01	-0.88	-1.23	-2.15	-1.79	0.79	0.29	-0.54	1.02
Cambodia	Cambodian Riel (bn)			-693.44	-377.79	-627.95	-508.62	-678.14	-804.55	-1,070.77	-1,143.35
Indonesia	Indonesian Rupiah (bn)		3,519.90	6,192.60	-7,840.20	-21,866.00	-12,748.00	-28,266.07	-31,572.70	-11,457.98	-23,582.32
Lao P.D.R.	Lao Kip (bn)							-573.5	-951.51	-399.66	-1,369.87
Malaysia	Malaysian Ringgit (bn)		3.68	5.11	11.2	-1.93	-9.84	-23.49	-16.75	-16.53	-20.97
Myanmar	Burmese Kyat (bn)					-91.27	-95.9	-210.86	-203.49	-196.73	-409.54
Philippines	Philippine Peso (bn)		-0.35	13.33	10.18	-39.86	-76.58	-121.05	-140.62	-161.27	-164.7
Singapore	Singapore dollars (bn)		15.04	11.69	14.13	2.25	8.29	15.03	6.43	7.32	10.38
Thailand	Thai Baht (bn)		124.78	124	-79	-293.64	-415.45	-86.91	-90.2	-359.37	122.03
Vietnam	Vietnamese Dong (bn)					-454	-6,327.00	-9,002.00	-13,397.00	-12,618.00	-19,928.60
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
	1.26	2.86	4.03	0.63	8.16	0.6	1.42	5.9	3.57	2.84	2.69
	-763.53	-98.96	-51.45	-254.08	115.98	-1,827.28	-1,340.38	-2,122.43	-2,150.31	-1,313.42	-565.31
	-6,497.47	12,779.72	13,528.49	-40,701.32	2,930.13	-98,833.94	-85,265.99	-46,688.54	-136,684.60	-190,143.96	-227,400.00
	-616.85	-1,238.28	-975.54	-1,058.32	-634.35	-1,957.82	-1,734.07	-1,081.36	-357.35	-4,514.33	-3,527.18
	-17.31	-16.13	-16.26	-17.92	-27.46	-48	-37.18	-32.99	-36.47	-43.62	-39.36
	-417.76	-395.09	-702.39	-876.07	-774.19	-1,722.92	-2,170.80	-2,007.21	-802.53	-1,115.46	-2,695.68
	-149.44	-96.13	-3.04	-20.51	1.33	-215.54	-212.83	-38.85	-68.2	-15.38	67.26
	11.66	16.93	16.99	32.71	17.26	-1.73	21.73	29.7	28.61	20.79	16.63
	74.74	103.75	168.23	19.46	12	-281.09	-79.71	-63.28	-196	-23.79	-220.82
	-1,484.00	-11,075.68	2,698.00	-25,041.18	-7,893.00	-108,929.19	-59,477.00	-29,494.00	-220,783.41	-210,653.45	-211,962.00
											-284,139.95

Source: IMF - World Economic Outlook Databases, April 2015

Table 11 Government Debt (National Currency, Billions)

Units		1995	1996	1997	1998	1999	2000	2001	2002	2003	
Brunei Darussalam	Brunei dollars (Billions)	0	0	0	0	0	0	0	0	0	
Cambodia	Cambodian Riel (Billions)		2,774.46	3,203.51	4,358.00	4,646.44	4,961.96	5,451.12	6,669.98	7,988.55	
Indonesia	Indonesian Rupiah (Billions)						1,321,664.26	1,319,703.22	1,235,243.74	1,218,649.90	
Lao P.D.R.	Lao Kip (Billions)						-573.5	-951.51	-399.66	-1,369.87	
Malaysia	Malaysian Ringgit (Billions)	92.48	90.56	90.91	103.77	112.56	125.85	145.79	164.99	188.79	
Myanmar	Burmese Kyat (Billions)				3,144.76	3,162.95	4,308.41	8,835.38	10,497.10	11,041.59	
Philippines	Philippine Peso (Billions)	1,324.43	1,316.94	1,577.79	1,507.63	1,738.34	2,104.53	2,287.81	2,655.70	3,094.33	
Singapore	Singapore dollars (Billions)	86.51	94.83	102.37	115.18	125.78	134.37	149	156.75	169.33	
Thailand	Thai Baht (Billions)		685.23	1,901.36	2,327.84	2,607.06	2,804.28	2,934.43	2,943.01	2,930.04	
Vietnam	Vietnamese Dong (Billions)							155,345.74	188,511.87	232,387.38	
2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
0	0	0.12	0.14	0.21	0.19	0.21	0.5	0.5	0.5	0.5	0.5
8,930.73	9,290.06	9,759.82	10,742.54	11,536.44	12,478.45	13,699.54	14,938.16	16,368.23	17,732.08	19,742.15	21,684.46
1,281,670.37	1,285,763.62	1,301,930.66	1,389,400.00	1,638,100.00	1,592,000.00	1,683,400.00	1,809,600.00	1,978,200.00	2,371,900.00	2,638,541.16	3,069,407.58
-616.85	-1,238.28	-975.54	-1,058.32	-634.35	-1,957.80	-1,734.07	-1,081.36	-357.35	-4,514.33	-3,527.18	-4,792.30
216.64	232.18	247.93	274.22	317.44	376.39	426.65	479.9	529.83	569.42	609.37	646.01
12,469.13	15,641.72	17,590.43	16,809.89	16,818.21	19,256.39	19,775.51	21,418.32	22,985.45	22,347.56	24,813.92	30,273.28
3,369.45	3,359.46	3,234.79	3,076.89	3,410.11	3,559.04	3,913.07	4,020.39	4,288.80	4,514.60	4,711.74	4,887.31
186.6	200.01	206.44	234.09	255.47	291.5	321.18	354.02	385	390.41	387.25	398.2
3,126.55	3,277.50	3,233.12	3,183.42	3,408.23	4,001.94	4,230.75	4,448.30	4,937.24	5,430.56	5,690.81	5,948.51
303,563.42	345,878.82	407,714.01	509,893.13	637,028.12	848,447.90	1,043,380.58	1,298,685.16	1,574,889.31	1,868,880.31	2,317,737.25	2,739,000.95

Source: IMF - World Economic Outlook Databases, April 2015

Table 12 Foreign Exchange Reserves (U.S. Dollars, Billions)

Units		1995	1996	1997	1998	1999	2000	2001	2002		
Brunei Darussalam	U.S. dollars (Billions)					0.52	0.41	0.38	0.45		
Cambodia	U.S. dollars (Billions)	0.19	0.27	0.30	0.44	0.51	0.61	0.70	0.91		
Indonesia	U.S. dollars (Billions)	14.91	19.4	17.49	23.61	27.35	29.35	28.1	32.03		
Lao P.D.R.	U.S. dollars (Billions)	0.1	0.18	0.12	0.12	0.14	0.14	0.15	0.22		
Malaysia	U.S. dollars (Billions)	24.7	27.89	21.47	26.24	30.93	28.65	29.85	33.76		
Myanmar	U.S. dollars (Billions)	0.65	0.31	0.32	0.38	0.33	0.29	0.46	0.55		
Philippines	U.S. dollars (Billions)	7.78	11.78	8.74	10.84	15.07	15.07	15.68	16.32		
Singapore	U.S. dollars (Billions)	68.82	76.96	71.39	75.08	77.05	81.08	76.6	83.41		
Thailand	U.S. dollars (Billions)	36.94	38.64	26.9	29.54	34.78	32.67	33.04	38.9		
Vietnam	U.S. dollars (Billions)	1.32	1.74	1.99	2	3.33	3.42	3.67	4.12		
2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
0.47	0.49	0.49	0.51	0.67	0.75	1.36	1.56	2.58	3.45	3.58	3.65
0.98	1.12	1.16	1.41	2.14	2.64	3.29	3.82	4.06	4.93	5	6.11
36.26	36.31	34.73	42.6	56.94	51.64	66.12	96.21	110.14	112.8	99.39	111.86
0.26	0.27	0.31	0.46	0.71	0.88	0.92	1.1	1.18	1.27	1.06	1.22
44.31	66.39	70.46	82.88	101.99	92.17	96.7	106.53	133.57	139.73	134.85	115.96
0.65	0.77	0.89	1.38	3.28	3.92	5.51	6.05	7.36	7.35		
17.08	16.23	18.47	22.96	33.74	37.5	44.21	62.33	75.12	83.79	83.18	79.63
97.74	114.16	118.06	138.65	166.16	177.54	192	231.26	243.8	265.91	277.8	261.58
42.16	49.85	52.08	67.01	87.47	111.01	138.42	172.03	174.89	181.48	167.23	157.16
6.22	7.04	9.05	13.38	23.48	23.89	16.45	12.47	13.54	25.57	25.89	34.19

Source: World Bank Data Indicators

Table 13 ODA Inflow (U.S. Dollars, Millions)

		Units	1995	1996	1997	1998	1999	2000	2001	
Brunei Darussalam		U.S. dollars (Millions)	4.29							
Cambodia		U.S. dollars (Millions)	551	416.53	335.33	337.44	277.22	395.72	420.88	
Indonesia		U.S. dollars (Millions)	1,301.19	1,070.62	805.52	1,254.14	2,122.66	1,653.00	1,464.81	
Lao P.D.R.		U.S. dollars (Millions)	306.91	331.01	328.68	275.43	294.36	280.64	244.84	
Malaysia		U.S. dollars (Millions)	108.1	-456.76	-240.51	201.73	144.46	45.67	30.7	
Myanmar		U.S. dollars (Millions)	150.16	38.92	49.38	72.14	81.05	105.64	125.67	
Philippines		U.S. dollars (Millions)	902.33	898.15	679.87	613.92	686.18	571.72	568.91	
Singapore		U.S. dollars (Millions)	16.66							
Thailand		U.S. dollars (Millions)	837.05	828.14	623.23	698.15	1,013.58	696.63	280.36	
Vietnam		U.S. dollars (Millions)	834.8	936	998.25	1,177.33	1,428.58	1,681.36	1,431.95	
2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
485.24	518.31	485.37	535.6	529.37	674.58	742.84	721.43	733.73	790.94	807.41
1,304.65	1,771.57	131.87	2,533.99	1,318.32	903.87	1,230.62	1,046.53	1,392.51	419.27	67.81
278.48	301.06	269.9	301.94	363.71	396.12	495.59	418.98	413.79	392.48	408.92
86.77	106.68	305.81	26.15	238.71	200.13	154.51	142.96	2.06	32.1	15.37
119.03	125.02	123.45	144.83	145.71	195.89	534.46	355.83	355.08	374.29	504.05
569.24	721.94	449.01	567.12	564.91	610.06	47.99	309.27	531.19	-180.52	5.12
293.32	-943.15	47.33	-167.66	-217.04	-310.99	-618.51	-77.76	-11.4	-153.67	-134.79
1,280.22	1,771.91	1,846.31	1,913.46	1,844.54	2,510.94	2,551.93	3,731.69	2,940.08	3,595.51	4,115.78

Source: OECD Aid Statistics

Table 14 Population (Millions)

		Units	1995	1996	1997	1998	1999	2000	2001	2002	2003
Brunei Darussalam		Millions	0.287	0.295	0.302	0.31	0.317	0.325	0.333	0.34	0.346
Cambodia		Millions	10.791	11.091	11.396	11.685	11.96	12.223	12.473	12.709	12.934
Indonesia		Millions	194.755	197.004	199.28	201.581	203.909	206.265	209.206	212.19	215.216
Lao P.D.R.		Millions	4.871	4.987	5.097	5.201	5.298	5.388	5.47	5.545	5.619
Malaysia		Millions	20.682	21.223	21.769	22.334	22.91	23.495	24.123	24.727	25.32
Myanmar		Millions	n/a	n/a	n/a	45.296	45.874	46.379	46.801	47.153	47.455
Philippines		Millions	68.41	70.01	71.65	75.16	76.78	76.79	78.59	80.16	81.88
Singapore		Millions	3.525	3.671	3.796	3.927	3.959	4.028	4.138	4.176	4.115
Thailand		Millions	59.46	60.116	60.816	61.466	61.662	61.879	62.936	63.461	64.014
Vietnam		Millions	71.996	73.157	74.307	75.456	76.597	77.635	78.686	79.727	80.899
2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
0.352	0.359	0.365	0.37	0.375	0.38	0.387	0.393	0.4	0.406	0.413	0.419
13.149	13.356	13.555	13.747	13.941	14.144	14.365	14.605	14.864	15.087	15.313	15.543
218.285	221.398	224.555	227.758	231.006	234.3	237.641	241.03	244.468	247.954	251.49	255.077
5.699	5.791	5.896	6.013	6.139	6.268	6.396	6.521	6.646	6.77	6.898	7.029
25.905	26.477	26.832	27.1	27.6	28.082	28.589	29.062	29.518	29.948	30.262	30.776
47.74	48.033	48.338	48.653	48.983	49.334	49.708	50.11	50.537	50.979	51.419	51.846
83.56	85.26	86.97	88.71	90.5	91	92.6	94.2	95.8	97.484	99.434	101.423
4.167	4.266	4.401	4.589	4.839	4.988	5.077	5.184	5.312	5.399	5.47	5.523
65.082	65.152	65.632	66.094	66.533	66.953	67.341	67.638	67.956	68.297	68.657	68.838
82.032	82.392	83.311	84.219	85.119	86.025	86.933	87.84	88.762	89.691	90.63	91.578

Source: IMF, World Economic Outlook Database, April 2015

Table 15 Area (Km²)

	Units	
Brunei Darussalam	km ²	5,765.00
Cambodia	km ²	181,035
Indonesia	km ²	1,904,569
Lao P.D.R.	km ²	236,800
Malaysia	km ²	329,847
Myanmar	km ²	676,578
Philippines	km ²	300,000
Singapore	km ²	697
Thailand	km ²	513,120
Vietnam	km ²	331,210

Source: The World Bank, World Development Indicators (WDI), July 2015

Table 16 Employment Rate (percentage of Population)

	Units	1995	1996	1997	1998	1999	2000	2001	2002	
Brunei Darussalam	% of Population	64	64	65	65	65	65	65	65	
Cambodia	% of Population	79	78	78	78	77	77	78	78	
Indonesia	% of Population	64	65	63	62	63	63	62	61	
Lao P.D.R.	% of Population	79	79	79	79	79	78	78	78	
Malaysia	% of Population	60	60	60	60	60	61	60	60	
Myanmar	% of Population	73	73	73	73	74	74	74	74	
Philippines	% of Population	61	62	61	61	60	58	60	59	
Singapore	% of Population	63	64	63	62	62	63	62	61	
Thailand	% of Population	73	74	74	71	70	71	71	72	
Vietnam	% of Population	77	77	76	76	76	76	76	76	
2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
65	65	64	64	64	63	63	63	62	62	62
78	79	80	81	82	82	82	82	82	82	82
61	61	60	61	62	62	63	63	63	64	64
77	77	77	77	77	77	77	77	77	77	77
59	59	59	58	58	58	57	57	57	58	58
75	75	75	75	75	75	76	76	76	76	76
60	59	60	59	59	59	60	61	61	61	61
61	61	62	64	64	65	64	65	66	66	66
72	72	73	72	73	73	72	72	72	72	72
76	76	76	75	75	75	75	75	75	76	76

Source: IMF, World Economic Outlook Database, April 2015

Table 17 Unemployment Rate (percentage of Population)

	Units	1995	1996	1997	1998	1999	2000	2001	2002	2003	
Brunei Darussalam	% of Population	4.9	3.345	1.745	0.738	4.523	4.72	7.196	3.463	4.468	
Indonesia	% of Population	7.42	4.998	4.77	5.46	6.36	6.08	8.1	9.06	9.5	
Malaysia	% of Population	3.143	2.516	2.445	3.225	3.425	3.1	3.675	3.475	3.6	
Myanmar	% of Population				4	4	4	4	4	4	
Philippines	% of Population	9.525	8.525	8.675	10.05	9.725	11.18	11.13	11.4	11.4	
Singapore	% of Population	1.75	1.65	1.425	2.5	2.8	2.675	2.65	3.55	3.95	
Thailand	% of Population							1.8	1.4	1.5	
Vietnam	% of Population	5.82	5.88	6.01	6.85	6.74	6.42	6.28	6.01	5.78	
2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
3.5	4.1	4	3.4	3.7	3.5	2.7	2.7	2.7	2.7	2.7	2.7
9.86	11.24	10.28	9.11	8.39	7.87	7.14	6.56	6.14	6.25	6.1	5.8
3.55	3.55	3.325	3.225	3.325	3.675	3.3	3.05	3.025	3.1	2.9	3
4	4	4	4	4	4	4	4	4	4	4	4
11.83	11.35	7.95	7.325	7.4	7.475	7.325	7.025	6.975	7.075	6.8	6.2
3.35	3.125	2.65	2.125	2.225	3.025	2.175	2.025	1.95	1.9	1.95	2
1.5	1.858	1.517	1.364	1.372	1.5	1.05	0.658	0.675	0.736	0.841	0.8
5.6	5.31	4.82	4.64	4.65	4.6	4.29	4.513	2.74	2.75	2.45	2.45

Source: IMF, World Economic Outlook Database, April 2015

(1) **Singapore**

1) **Historical Background**

After independent from the United Kingdom and Malaysia, Singapore faced on the ethnic civil conflict within the country and experienced the high unemployment rate, which is up to 14% in 1965. However, the struggling situation had been changed by taking the Development Dictatorship Policy. It is the policy that leader takes the decision to proceed the economic development without the democratic process, and Mr. Lee Kuan Yew, the former Prime Minister of Singapore, had taken the policy method to bring the country out of poverty. He particularly focused on the industries on R&D, IT, services and finances. It resulted incredible high FDI amount compared to the other ASEAN countries. At the current moment, the foreign companies still cause 50% of Singapore GDP.

2) **Current FDI Situation**

Singapore is recognized as one of the top investing environment in the world. Some reports criticize the poor development of private domestic companies, and it may be true that strong domestic companies in Singapore are government-owned companies. Moreover, the CEOs of major companies like Temasek Holdings and Singtel are from his family. However, the international community regards Singapore as good model, instead of giving applauses. This is because Singapore has such high flexibility on laws and policy-making. As an example, it provides the second lowest corporation tax in Asia after Hong Kong. The pioneer incentive is the excellent level to fascinate many foreign investors. Maximum 15 years of free corporative tax is applied when the foreign companies make investments in the fields, which Singapore wants. The establishment of Economic Development Board (EDB)⁵ is another successful trigger. A governmental agency provides one-stop service. They assist foreign investors from establishment of company to a land reservation. Moreover, the additional tax treatment is applied. Singapore extents the clear and trustful regulation systems to assist foreign investors once they come to Singapore while Vietnam may not able to give the sense of such security.

(2) **Indonesia**

1) **Historical Background**

Compared to other ASEAN countries, Indonesia has the numerous great values in various categories including GDP, population and land area. The amount of GDP is the highest in the ASEAN countries, and the amount equals to more than double of Thai's GDP. The major industries are focused on production and processing of primary industries rather than secondary industry because they have rich raw materials. As having many advantages, Indonesia proceeded their development and attracted more FDI, but not as successful as Singapore did. Mr. Suharto, the former President during 1967 to 1998, has tried to lead the country with his development dictatorship, and the industry in Indonesia challenged to change the major industries from primary to secondary stage by attracting much investments. The 100% foreign investment became to allow in 1994, and FDI and financial investment to Indonesia have significantly increased during 1995-97. Before achieving this goal, it failed due to the Asian Currency Crisis in 1997 and caused the anger of unsatisfied citizens⁶. The development dictatorship policy was pointed as the cause of failure, but subsequent leaders who have followed the democratic policies also could not control the political stabilization and economic development because they could not launch the consistent economic policies until now.

5 Economic Development Board of Singapore. "Future Ready Singapore" (2015): Web. 25. June. 2015.

<https://www.edb.gov.sg/content/edb/ja.html>

6 Mizuho Research Institute. Analysis on the ASEAN Potential: 46 themes to understand ASEAN (2014): Tokyo, Japan.

2) **Current FDI Situation**

The past economic policy reforms had not worked well, even if Indonesia has a great potential to be the bigger investment recipient. However, it improved the image of its political and social instability. 67% of investment companies used to consider that Indonesia was high instability in 2004, but the rate has decreased to only 5% in 2011⁷. In addition, there were strong protectionism and government intervention. The development dictatorship did not work well to improve infrastructure and taxation. It still takes more than two hours to move 100km by car. The slow return of corporation tax and VAT damage the corporate finance. Moreover, Indonesia restricts the raw material export even if it has one of the richest amounts of raw materials in the world. Therefore, the current President, Mr. Joko, announced the new economic standard called Marine Doctrine. It focuses on marine connectivity and commences since Indonesia is an inter-islands country, and it expected to decrease the economic gap among islands and to enhance the secondary industry using the raw material in Indonesia. This doctrine includes 24 hours open ports and expansion of 23 ports in Indonesia. The President believes that marine network expansion will strengthen the road network and attract more industrial park to develop. It may be too early to assess this new policy, but Indonesia has started the new economic development, which is suitable for its geographic and material conditions.

(3) **Thailand**

1) **Historical Background**

Thailand is called as “Asian Detroit” by the successful shift from agricultural-oriented and manufacturing oriented-country. The tremendous increase of GDP per capita is recognized as the successful example of ASEAN countries. While the GDP per capita was 1,500 USD in 1990, it has increased 6,000 USD after 20 years (2012). They started to focus on the economic development and FDI attraction around 1960 by establishing the Board of Investment (BOI)⁸. It had provided various investing benefits, such as taxation benefit, to import machinery, which is no tax for importing raw material. It will be manufactured and exported in Thailand. These treatments were applied to both domestic and foreign investors. Many private investments were attracted by the other private investments and helped to establish the Thai economic basement.

2) **Current FDI situation**

In spite of the issues in Thai, they are expanding the market and getting more attentions from global investors. The productive population growth rate has been getting lower since 1985, and it is expected to be minus in 2018. This society has a risk to be first aging society in ASEAN countries. Furthermore, the populism policy has been criticized because of spending much money to attract common people during the Inlack regime. It rose up the minimum wage on average 40% based up and hits companies causing bankruptcy or pushing them to the countryside area. Even though it faces on some issues, it is still ranked as the 26th place of the Ease of Doing Business in 2015, and it is the result of the Dual Track Policy (2000)’s success. The policy focuses on two targets: the expansion of domestic demand and the increase of export power. While it encourages the local private companies and farming villages on local business, it strengthens the particular fields and provides high investing incentives and lowering regulations for investors. Especially, the automobile industry is the great example that many big foreign investors are pleasant to invest in

7 Japan External Trade Organization. Business Environment in ASEAN. Southwest Asia (2014): Tokyo, Japan.

8 Ishii, Yuko. “Consideration on the Meaning of Dual-Track-Policy in Regional Development Policy of Thailand” Report of Nittu Research Institute and Consulting (2007): 55-66. Web. 1. July. 2015.

https://www.nittsu-soken.co.jp/report/thesis/file/02_05_ishii.pdf

Thai. The focus of investments have matched well the characteristic of industries with investors' interests and caused the current dramatic success story.

(4) **Malaysia**

1) **Historical Background**

Malaysia has various industrial transformations through its history, and the positive reforms have helped Malaysia to develop and obtain many foreign investments in different sectors. From the beginning, Malaysia was the country depended on resources since it had rich natural resources, which are enough to export. The industrialization by the foreign investment has been processed during the 1970s, and it has become the export-oriented country focusing on the electronics industries in late 1980s. At last Malaysia became IT oriented country to develop the economy even more.

2) **Current FDI Situation**

The efforts of Malaysian government are magnificent to support the economic development, and the strong political leadership is the cause of issues. The infrastructure development is ranked at the top 30 countries in the world, and the transportation network and integration to the economy make increased the trust among investors. The regulations are very clear and correspond to various investors' requests, such as reducing the processing time of ownership registration from 41 to 7 days . The biggest negative concern in Malaysia is the Bumiputera policy, which prioritizes Malay ethnic. It put the ethnic rate to control university entrance and job opportunity to protect Malay population from the smart Chinese minority. Foreign companies also need to convey the policy. The state of Malaysia is democratic but still has poor media freedom within the country. It does not let the media criticized the Bumiputera policy. Overall, Malaysia has high economic standard and FDI in ASEAN but not higher than these of Singapore. This is because some political interventions are not suited to survive in the international community.

(5) **Philippine**

1) **Historical Background**

Philippine has the different theme of economic development compared to the other ASEAN countries. It had ended the Marcos dictatorship period in 1987 and established the constitutional registration government. The state takes the Economic Nationalism that the country controls the economic activities and far from the real free market. Every natural resource except farming land has been under the control of the government, and restricted the FDI to get in this field. Therefore, Philippine has not connected to the secondary industry. Instead, it has increased the tertiary industry because they have the large English speaking human resource to develop outsourcing business to receive orders from all over the world. Historically, Philippine has not put a focus to attract FDI like other ASEAN countries.

2) **Current FDI Situation**

Compared to the FDI amount in 2012, it has increased the six times of amount, 2 billion USD, in 2013. However, it equals less than 10% of FDI amounts in Malaysia or Indonesia in the same year. Philippine started to attract FDI under the Aquino regime, and the fields of infrastructure, manufacturing and real estate became popular for foreign investors. The high corruption rate was the issue for investors, but Aquino started to work on those issues by applying anti-corruption policies and increasing the transparency¹⁰ . The Aquino regime will be ended in 2016 for completing his full period. Many investors are worried that his policies will continue to improve the investing

9 Mitsubishi UFJ Bank International Division. Global Business Handbook for Asia (2014): Tokyo, Japan.

10 Mizuho Research Institute. Analysis on the ASEAN Potential: 46 themes to understand ASEAN (2014): Tokyo, Japan.

environment after his leaving from the position. Philippine needs to work on building trust toward foreign investors.

(6) **Myanmar**

1) **Historical Background**

Myanmar has experienced the specific economic development history, and real development era is proceeding now. When Myanmar was named as Burma, they have had the Burmese way as socialism, and planned economy has been applied. All foreign investments have been prohibited and not even let foreigners stay in the country longer than 24 hours to protect the economy and culture of Burma. The military regime has not provided the opportunity to shift on the secondary industry. When Myanmar decided to come back to the market economy in 1988, they got economic sanctions due to the military regime. As it accepted democracy in 2011, the investment situation in Myanmar has totally changed and started to receive FDIs¹¹.

2) **Current FDI Situation**

Investing in Myanmar is the exclusive trend in ASEAN countries, but they need to establish a plan not let the trend be temporary. The total amount of FDI has scored more than 8 billion USD in 2014 by increasing activities in the energy, manufacturing and telecoms sectors. With having the large population of the cheapest labour in ASEAN, the attention to Myanmar keeps on increasing. It does not mean that they have the best investing environment or regulations to support investors, but the investors are focusing on its potential. Many foreign investments still have difficulties to establish new business smoothly since it is difficult to obtain the long land ownership or the permission of 100% foreign investment. The political transparency is low and religious, and ethnic minority issues are available that risks are causing social instability. In addition, the infrastructure establishment is very poor, and the usage of electricity is much expensive. The tread heat of Myanmar overcomes those issues because of its future market potential. It is geographically easy for Myanmar to access not only ASEAN countries, but also India, Bangladesh, and Sri Lanka. The 60 million working population is cheap, high literacy and good English speaking. This is similar to the trend that Vietnam used to be when the market became open or even more.

11 Ishikawa, Koichi et al., ASEAN Economic Community and Japan: Provision of Huge Shared Market (2013): Tokyo, Japan

**Annex 7 - Policy Review for Living Environment
Improvement in ASEAN and
Neighbors Asian Countries**

Annex-7 Policy Review for Living Environment Improvement in ASEAN and Neighbours Asian Countries

7-1. Policy Review for Living Environment Improvement in ASEAN and Neighbours Countries

(1) Singapore

1) General Situation

Singapore is a famous country in Asia, which makes a good development and problem solution of social housing for employees. Since the 1960s, Singapore has established several institutions in planning and developing low cost housing.

- i) Since 1960, Singapore has established development agency, it takes a roles of housing, in charge of land planning funds, construction and loans for buyers of low prices housing.
- ii) The government established the central government savings funds (Housing Saving Fund). These funds direct the organization of employer, to contribute 13 %, and employees contribute 20 % of the monthly salary to the fund as a savings amount to buy houses.
- iii) The private organizations are involved in construction of housing for low-income people, which often receive support from the state. These administrative procedures are clear and implemented quickly.
- iv) Land fund are critical for the real estate business for low income. In order to develop housing of low-income people, the government plans to use wasted public land for housing development to exempt land use fees and taxes. As a result of these measures, lower investment cost and housing cost to meet the housing needs of people.
- v) Singapore government has deployed multiple mitigations in parallel to reduce the risk of housing, which may cause a financial sector instability as follows:
 - Careful segmentation and regulation on housing markets
 - Contribution to the development of the mortgage sector, in 1970, shortly after the implementation of the CPF
 - Increase in saving rate: at the inception of the CPF home ownership in 1968, the ratio of gross national saving to GNP was less than 20 %. The CPF contributed to a significant leap in the rate, 44 % of GNP by 1990¹
- vi) There are several elements in Singapore's housing system that can provide helpful pointers for housing policy makers:
 - First, efficient real estate markets are a very important aspect of the housing policy.
 - Second, government's involvement is quite important for providing timely real estate market information by establishing sustainable housing supply regimes and mortgage institutions.
 - Third, retirement savings may be mobilized for housing mortgage payments
 - Fourth, the government regulates the housing markets and has a set of instruments to reduce speculative demand.

1 Singapore's Housing Policies:1960-2013 World Bank institute – KDI SCHOOL

2) **Key Financial Support System-HDB: Housing and Development Board and CPF: Central Provident Fund**

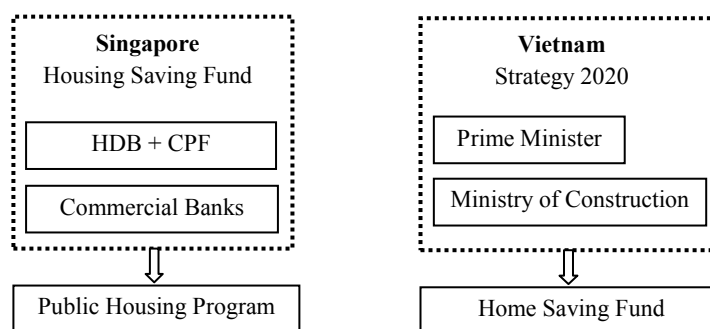
Providing new subsidized flats by HDB in addition to CPF Housing Grant (40,000 USD extending to over 80 % of Singapore citizen households), which allowed the HDB to offer better price discrimination based on household income, became a feature of the HDB pricing policy.

- Housing grants were introduced in 2006-2007-2009 to allow families with lower income to receive a higher amount of grant, depending on the average gross monthly income.
- Special Housing grant was introduced in 2011-2012-2013 to help households to buy 4-rooms or smaller flats directly from HDB.
- The authorities are allowed to acquire land quickly and cheaply for public housing purposes. The Land Acquisition Act of 1966 gave the government increased powers regarding compulsory land acquisition. In 1970, the land Acquisition Act was passed in order to curb speculation on land and to limit the cost of land acquisition. The compensation was fixed at the market value.
- HDB keeps the cost of production for housing lower by technical innovation and prefabricated system.
- The government arranges CPF for financing of HDB’s public housing programme.
- Subsidizations and long-term loans under the government support make the housing cost and housing price well below the market rate.
- Its housing policy aims at increase ownership of public housing in order to achieve fully home-owning society by assisting the people to purchase low-cost flats.

3) **Recommendation for Vietnam:**

In decision no 2127/QD-TTg in 2011(approving the national strategy on housing development through 2020, with a vision toward 2030), Vietnamese government concentrates on formulate appropriate mechanisms for implementing housing development programs targeted at social policy beneficiaries and low-income earners and houses for industrial park workers. One of the implementation solutions is to improve the finance-credit and tax policies by directing the formation of local housing development funds according to the housing law; to formulate a scheme to set up home savings funds to increase financial resources for investors of social-house building projects and persons facing housing difficulties.

Otherwise, Singapore established housing saving fund by create working matrix among HDB, CPF and the commercial banks. The figure 1 shows the comparison result of Singapore and Vietnam.



Source: JST

Figure 1 Comparison of Concept of Housing Saving Fund in Singapore and Vietnam

To achieve good housing financial system it is necessary to control the housing market by establishing sustainable housing supply regimes and mortgage institution. HDB can maintain the low cost housing by taking proper correspondence.

(2) **Malaysia**

1) **General Situation**

Malaysia housing policy is geared towards the provision of adequate housing especially for the lower income group. The policy intends "Shelter for all". The formal housing program outlines the total housing supply defined by the housing category in terms of high cost, medium cost and low cost houses to be provided by private and public sectors in five-year period within a development plan .

- In 1957, the government has assumed a leading role through public low cost housing program.
- Until the early 1980s the government sought direct private participation through the involvement of private developers to build low cost housing
- In the fourth Malaysia plan (1981-85) the private sector has played a role as main housing provider
- In 1997, Malaysia highlighted as a best practice model and most successful program of housing for poor at UN-HABITAT II conference.
- The Ministry of Housing and local government are the responsible for the housing policy. Under the ministry, several departments, such as housing department and country planning department take a role of housing policy.
- Finance Ministry has controlled over property valuation and foreign investment approval.
- State's responsibilities are land management and approval of land conversion, subdivision of a housing project, allocation, pricing low cost housing, and levy on foreign ownership.
- After 1980, low cost houses were added as a new housing type to the commonly medium cost housing (single or double storey terrace house 100-200 m²) and high cost (semi-detached or detached more than 200 m²).
- In the rural area, plantation owners build villages in the plantation areas consisting of living quarters for the workers. The living quarters are subjected to meet the requirement of the workers minimum standard housing and amenities act 1990.

2) **Definition of Low Cost Housing:**

The criteria of the low cost housing in Malaysia are described as follows:

- Unit housing price as RM 25,000 - 42,000 / unit (federal government guideline)
- Total building area is not more than 52-60 m²
- Sold to low income population with monthly salary less than RM 750
- Type of housing unit may be in the form of apartments, row houses or cluster linked houses with minimum 2 bed rooms with kitchen and bath room
- Private developers are required to have a minimum of 30 % of total housing units to be allocated for low cost housing
- Exemptions are allowed by the state authorities for small projects of less than 1 ha or project with total units of less than 10 houses.

3) **Five-Year Plans:**

The government of Malaysia has focused on more low cost housing in the 6th and 7th Malaysia plan. The achievement of the low cost house has improved to more than 75 %. In addition, the 9th Malaysia plan gave special attention to low cost housing by encouraging with 200,513 units and 51 % built by the public sector. For about 70 projects, the federal government provided loans, and it is mainly concentrated in small town and sub urban areas.

The impact of government intervention in low cost housing provision has contributed to a large group of social housing. Some of housings locate in townships with large employment areas. This enables a symbiosis on racial harmony also the mixture of the low and medium income people.

Table-1 shows the improvement of the low-income houses in the housing policies in Malaysia since 1976.

Table 1 Housing Target Construction in Five Year Plans from 1976 to 2005

Year	Plan name	Target Construction	Completed %	Low income houses	
				Target %	Completed %
1976-1980	MP-3	482,800	100.3	-	-
1981-1985	MP-4	923,300	44	54.6	33.3
1986-1990	MP-5	701,500	43	40.4	33.2
1991-1995	MP-6	573,000	113	60	76
1996-2000	MP-7	800,000	107	29.4	88.4
2001-2005	MP-8				86.4
2006-2010	MP-9				

Source: UN-HABITAT 2008

4) **Housing for Workers in Malaysia**

Housing in Malaysia concerns both the federal and state governments:

Federal entities set housing policies, strategies, housing targets, define licensing, enforcement regulations, guide financial institutions in providing bridge, and end-financing. The state governments and local authorities play a primary role in physical planning and housing investments. Local authorities require all housing developments to prepare their plans and utility connections for its approval.

New housing policies included regulations to protect house buyers, control errant developers, housing finance reforms, and emphasis on workers' housing in agricultural and industrial sectors.

The general policy statement supports the development in agricultural and industrial sectors. Then, housing programmes will accord priority to suitable and adequate housing for workforce in these sectors. The required actions are:

- To facilitate the housing developers to provide housing in industrial zones
- To locate housing estates in the proximity of industrial estates

In plantation estates, housing for workers was regulated by laws, such as the Rump Labour Code, workers minimum standards of housing Act 1966, and Workers Minimum Standard housing and Amenities Act 1990 (Navamukundan,1993).

In the manufacturing sector, workers' housing is not bound by legal requirements. It is under balance of supply and demand. However, government has promoted market responses through allowing housing projects to be implemented in industrial estates or nearby. Such a strategy might encourage labour's mobility. Housings close to workplaces might be an advantage for women, lessening time spent on travel, but housing in industrial areas might face on potential health problems.

5) **Role of Employees Provident Fund (EPF)**

The role of the EPF in housing finance has introduced complementary to the former finance systems. EPF has supplied “bridging loans” for part of housing cost. Social security was the primary objective as instituted in the Employees Provident Fund Ordinance 1951.

The new EPF act 1991 (which substituted for the 1951 Ordinance), allowed the EPF to diversify its sources of incomes (capital investment, lending to companies, etc.). The new act seems to have enabled the EPF to play more effective role as a promoter of home ownership.

(3) **Thailand**

1) **General Situation**

Thailand has provided a great deal of experience during the long period of housing development. The followings provide chronological sequences of housing strategies for low-income groups:

- i) Social Welfare Policy (1948-1958)
- ii) Slum improvement (1970’s)
- iii) Land for Housing the poor (1980’s)
- iv) Recognition/enabling Policies (1990’s)
- v) The million Housing Units “Bann Eua- Arthorn” low-cost housing program (2000’s)

The following table shows a large number of changes in the housing markets and provisions.

Table 2 Housing Development History

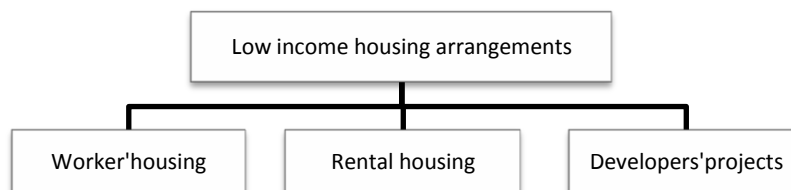
Housing policy, event	Period	Aim	Result	Note
The public welfare housing division (Ministry of Interior)	1940	Providing housing to the general population	Building housing according to rural resettlement schemes	1950 started to build urban social housing
Establishing the public housing office	1951	Building rental social housing		
Establishing the Government Housing Bank (GHB)	1953	Developing housing units for sale on a hire purchase	Unit price 56,000 THB with repayment of 15-20 years	Providing housing loans for owner-occupied housing to the general public
Draft a city structure plan for Bangkok	1958	Respond to the increasing housing needs	Not enforced	
Revolutionary party Decree 49 (B.E. 2502), Land Code 1954	1959	Attract investment for housing	Article 34-37 for the land code (limits of land ownership) was nullified	The land’s ownership that was made void to attract agricultural and industrial investments were limited. As a result, land speculation prevailed on the fringes of Bangkok
Establishing the slum improvement office	1960	Lean up the slum	One of the largest slums was demolished	The people migrated back to the cities in search of jobs
The form of “Walk up” apartments	1963	Social housing for low-income people	5-story apartments was built	Because of limited budget, the concept did not expand
Private land subdivisions (only form of private housing provision)	1960s	People built their own home on their private serviced land	Popular among middle income groups, private developers and many governmental agencies	The land sub division business was faded in 1986
The first period of formal and modern	1968-1985	Providing long-term loans for houses by	2-story detached houses for middle and high income groups	

housing provision “Turn the key” (Finished housing units so the buyer moves directly to the house)		commercial banks for home buyers		
Revolutionary Party Decree 286 (B.E 2515) on land sub-division	1972	Set rules on land subdivision practices due to a large number of private land subdivisions and turnkey detached housing estates	Helped to set standards for housing development which later proved beneficial to developer and buyer	
Merge of public welfare housing division, public housing office, slum improvement office	1973		Establish two major apparatuses GHB-NHA	
NHA (national housing authority)	1973	Provide housing and financial assistance to low and middle-income people	Also it was involved in upgrading slum and squatter housing environment	
First oil shock	1973- 1975		Slump time in housing market	Price of building material and cost of labour and houses increased
Recovery of housing market	1976- 1980	NHA announced the construction of many housing projects, activate the related industries townhouses and condominiums were built, liquidity in financial institutions		Housing loans for homebuyers at low interest rates (more intensive land uses in the cities)
Expansion of GHB loan service	1977	Housing growth	GHB interest rate is cheaper than commercial banks	Townhouses were in accessible locations minimizing transportation costs
Second oil shock	1980		Developers faced some difficulties	Price of building material and cost of labour and houses price increased
The first national housing policy	1983	Provided frameworks for the roles of government agencies and private developers in housing provisions, it specified roles for NHA and GHB to respond to this policy		
Big boom in the real estate business	1986- 1996	Improvement of the economy Cheap labour and natural resources became attractive for foreign investors	Down market trend to build cheaper housing units (low interest rates)	Land in the fringe areas had higher value (used for factories) inner city land rented to low income families resulting in slum area.
Gulf Ware	1990		Real market estate was ceased	
New housing development by 2 big public companies	1991- 1993	Housing units for low and middle income groups	1993-1995 many new developers followed 2 companies	
Board of investment	1993	Awarding 5 years income tax exemption to developers of low- income housing	Encouraged more speculation in the market	
Crisis in the real estate market	1995- 1999		Massive housing-unoccupied housing	
Recovery period	2000	Detached houses	Developer become more careful	
Project in the suburbs	2006		Projects are more smaller	

Source: JST

2) **Housing Provisions Major for Low Income Households**

Thailand has diversity of housing provisions for low-income groups as illustrated in the following figure:



Source: JST

Figure 2 Types of Low Income Housing in Thailand

Workers' housing encompasses the following large group of low-income housing:

- Itinerant construction workers
- Maids' living quarters
- Factory workers accommodation

3) **Finance for Low Income Housing**

The government of Thailand provides various subsidies to low-income households for housing finance. Moreover, many provisions and majors are formulated.

i) Finance Majors

- Adjustable Term Mortgage: Its mortgage term is adjustable in accordance with the economic situation. If interest rate were increased, term of payment would extend.
- Step up Payback: This system attempts to ease the burden of payment on the buyers of houses by allowing them to pay less in the beginning.
- Hire Purchasing and Mortgage: The programme aimed to assist low-income groups and those with poor creditworthiness. Homebuyers are allowed to finance through hire purchase for approximately 3-5 years. If they could prove their creditworthiness through the ability to pay monthly hire-purchase instalments regularly, they will be mortgagers. Then, they could own houses.

ii) Provisions

- Rollover Mortgage Loan Program: the loan relied mainly on bond finance, instead of short-term deposits. This helped to prevent from mismatching in maturity between long-term mortgages and short-term deposits.
- Mortgages for Thai Government Officials: Government Housing Bank (GHB) provides a higher loan to value ratio up to 100 %. Government officials could borrow up to 65 times of their monthly income. Government pension fund carried out a home loan programme to stimulate the real estate sector.
- Housing Finance to support "Bann Eua-Arthorn": GHB provides affordable housing mortgage to buyers (loan up to 30 years, ratio 100 %, the interest rates were fixed for 5 years at 4 % for the first 3 years, 5 % for years 4 to 5 and floating afterwards).

4) **Self-Help Housing**

Self-help housing is renewal-housing programme for slum area. Local authorities provide the residence with materials and basic infrastructure, such as electricity, water and sewerage system to improve their existing houses. Residents are encouraged to set up local community schemes to improve medical facilities and education.

In Southeast Asia, slum upgrading become the mainstream of shelter development from 1970s onwards especially in the rural area.

In collaboration with the Government Housing Bank and some international development agencies, Thailand set up housing scheme for 200 families to create a new community of low-income housing in 1970.

(4) **Indonesia**

1) **General Situation**

The formal housing policy in Indonesia has started about 40 years ago with establishing National Housing Authority in 1974. In 1974, the government created three important institutions to address housing problems:

- i) National Housing Authority, which is responsible for formulating the overall housing policy
- ii) National Urban Development Corporation (Perumnas), which is responsible for providing houses particularly for low-income people.
- iii) State Saving Bank (BTN), which was responsible to provide mortgage finance

The creation of these institutions was response to the ever-increase demand for housing particularly for low-income people because the private sector already had started to provide houses since 1971. For further coordination among the various agencies, which involved in housing productions, the Ministry of Public Housing has created in 1977.

2) **Historical Review of Housing Policy**

The government of Indonesia two policy tools to readdress housing shortages since 1974;

- i) Direct government intervention by providing housing through the development of new houses by Perumnas.
- ii) Indirect intervention by encouraging peoples to build or upgrade their own houses through some programmes like KIP and BTN and the Housing Finance Corporation (PTP-PT Papan Sejahtera)

Another indirect policy for low-income housing is an application of requirement to have a ratio among small houses, medium houses, luxury houses of six small houses, and three medium houses for every large or luxury houses built by private developers, which become known as 1:3:6 ratio.

From 1974 to 1998 several housing schemes have developed:

a. **KPR (Kredit Perumahan Rakyat) Housing Loan:**

It is a form of subsidized housing loan for low-income groups. Financed by the state and managed by BTN bank, the KPR program aims to increase the supply of housing finance to low income households.

b. **KASIBA_ LISIBA:**

KASIBA (Kawasan Siap Bangun: district to be developed) is a specific housing district based on spatial housing plan to promote urban development and large housings, and it follows the contents of the Law No.4/1992 about Housing and Settlement. For aiming to regulate orderly development of housing, the processes of planning and business promotion within the district became systematized.

- Definition of KASIBA:

KASIBA means the land for housing and building construction prepared by local government (for minimum 3,000 households). Under KASIBA, the spatial regulations (the limitations on urban development areas and the restrictions to prevent urban sprawls), the business supports for land owners (the land transfers for KASIBA development) and the coordination with LISIBA (Lingkungan Siap Bangun: area to be developed) developers (the coordination's with private operators by the KASIBA management board) are established.

- Each development district under the KASIBA system is divided into a number of LISIBAs
- Management of KASIBA should be conducted by the management board in the form of municipal governments
- KASIBA management board is a non-profit organization established by provincial or municipal governments.
- KASIBA management board has to plan and manage the development of KASIBA
- KASIBA management board has to acquire the land for development
- By subdividing a KASIBA into several LISIBAs, the KASIBA management board will process the development business with the involvement of other entities from public or private organizations
- KASIBA contains 3,000 to 10,000 housing units
- KASIBA management board provide land acquisitions and infrastructure constructions within the targeted districts
- Definition of LISIBA:
 - In the development district of KASIBA, it is divided into some areas (LISIBA) developed by individual development operator. The basic infrastructure facilities in LISIBA are established and provided within the framework of KASIBA. In each LISIBA, many houses are built by private public partnership scheme between KASIBA management board and other entities, such as developer, cooperative, CBO, NPO, and NGO.
- LISIBA BS (LISIBA outside of KASIBA, a stand alone area to develop)
 - For a smaller area (up to 50 ha)
 - It could only applied to developed or urbanized areas that already equipped with infrastructure.
 - LISIBA BS contains 1,000 to 3,000 housing units.
- c. **1-3-6 and 1-2-3 Rules:**

It is legally based on mutual decree between Minister of Internal Affairs, Minister of Public Works and State Minister of Social Housing, which was enacted in 1992. Its purpose is to guide housing development by private developers to develop harmonized mix settlements for various social and economic classes. Private sector developers have to build low and middle standard housings in the ratio of six units of simple housing, three units of mid-standard housing, and one unit of luxury housing.
- d. **Kampung Improvement Program (KIP):**

For urban slum areas, the program was addressed issues of urban poverty. It includes supports for city economic development through participating city planning processes.
- e. **CoBILD (Community based Initiative for Housing and Local Development):**

It brought a model of neighbourhood-based finance mechanism for housing improvement.
- f. **Rural Growth Center (DPP, Des Pusat Petrum-Buhan):**

It aims to provide improved shelter for the poor in rural area.
- 3) **Entities for Housing:**

Followings are main entities, who take important roles in housing construction and supply:

- The State Ministry of Housing: In 1978, the junior Ministry of Housing was established in order to formulate housing policy in national level. Its role was formulated as the State Ministry of Housing in 1983. The department of public works and the State Ministry of Housing were merged to form the Department of Human Settlements and Regional Infrastructure.
- National Housing Corporation: It has a responsibility for public housing. In addition, it is required to build up the capital to support its development.
- BTN Bank: It has started as postal saving office into postal saving bank. Then, it functions as housing bank to finance the development of housing for low-income people as saving bank and housing bank.
- Cooperative Housing Association (ASPEK): It is a voluntary housing movement in the form of housing association to provide houses as affordable price for the low-income groups. It has established by scholars and NGO activists in cooperating with State Ministry of Housing and BTN bank.

(5) **India**

1) **Industrial Location Policy of India**

Regarding the location of industries in the cities of less than 1 million populations, no industrial approval is required from the centre. In the cities, with more than 1 million populations, industries other than those of non-polluting in nature will be located outside 25 km of its periphery. Due to this policy, most of the new industrial development is taking place at the periphery of metropolitan areas or in smaller cities or in industrial estates/parks/SEZ, which are away from large metropolitan areas as measures for supporting balanced regional development.

2) **Industrial Development and Housing Policies**

While Industrial development and housing issues are guided by the national policies, these are state/provincial responsibility. Most states have industrial and infrastructure development corporations, which are public sector corporations to support industrial development. A few of these corporations also have built some housing for the industrial workers of medium and small-scale industries. In addition, all states have Development Authorities and Housing Boards, which construct housing units for all income groups. As per Housing and Habitat Policy of India 2007, housing projects of all public and private sector have to reserve: 10-15 % land or 20-25 % of FAR /FSI for Economically Weaker Section/Lower Income Groups housing. However, even the housing built for Economically Weaker Section/Lower Income Groups is generally beyond the reach of industrial workers.

Housing is not a responsibility of local government in India, except in the case of new city development where a special public body plan and develop the city, such as; (i) New Okhla Industrial Development Authority to develop NOIDA near Delhi, and (ii) City and Industrial Development Corporation to develop New Mumbai in Maharashtra.

7-2. Sample of Living Environment Improvement for Industrial Workers

Studying the current living environment for workers in the industrial zones is so important to understand the situation and to find the suitable standards for creating a sustainable living environment inside and outside of the IZs.

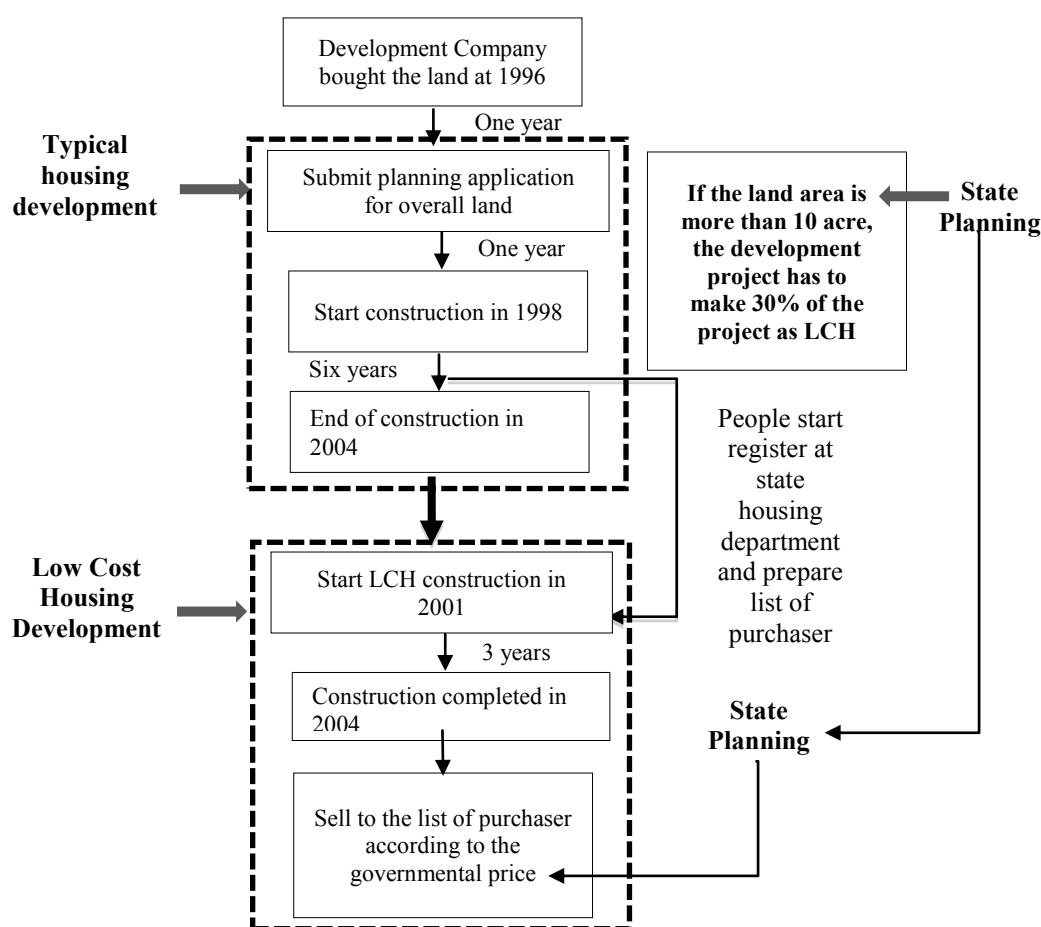
The study includes four case studies from three countries, which are Malaysia, Thailand and Indonesia.

(1) **Malaysia**

1) **Pangsapuri Belimbing Height (PBH), Low Cost Houses (LCH) Case Study**

PBH is good example to understand Malaysia’s low-income housing process and its regulations. A private company in an industrial district constructed it for middle and low-income people. The definition of the project is as follows:

- Project name: Low cost houses building PBH in Balakong district of Selangor
- Construction company name: Tan & Tan
- Facilities: playground, mini market, Badminton court, children playground, car park, mini market
- Total area: Total area of 17,000 sq.ft, tow attached buildings, 11-storeys, 242 units.
- In 2004 the developer completed PBH’s LCH. In addition, sold each unit in fixed governmental price and the following figure shows the process of this LCH.



Source: JST

Figure 3 Process of PBH LCH

2) **Strong Points in Malaysia Projects**

Following points are strength in Malaysia projects.

- Special attention to mixed development and mixed income housing
- Special attention to the low income people
- State government and local authorities play primary role in physical planning and housing investment
- Promote greater community participation
- Enhancing the quality of life in the urban area

Malaysia has Act 1990 for Workers' minimum standards of housing and amenities, which require employers to allot land for cultivation and to graze place for employment, in addition to providing medical and social amenities.

(2) **Thailand**

1) **Industrial Zone in Lamphun**

Lamphun is the province has many industrial estates. There are plenty of workforce including young single women as employees. As a result, the demand on accommodation has also increased. The important things for employees' accommodation are its location near their work place, affordable price, and safety due to the working shift.

The dormitories are located in Muang Nga sub district, Muang district, lamphun province.

Dormitory is convenient for single person, student, young, officer and foreigner who come to work from Thailand.

a. **Classification of Dormitory:**

- Dormitories building: self-contained residential unit that occupies only part of building
- Accommodation type: Dormitory is separated into units. Each unit has rooms or is divided into sections, which may have 1-4 rooms.

b. **Location, Size, Quality Service of the Dormitories:**

- Low-level dormitory has its price range from 1,500 to 5,000 Baht per month with the area of 5-10 square wah. (1 square wah = 4 m²)
- Middle level dormitory has its price range from 5,500 to 30,000 Baht per month with the area of 7.5-15 square wah.
- High-level dormitory has its price more than 30,000 Baht per month with the area of 10 square wah.
- Other type of dormitory is called as "service dormitory". It is for administrators and foreigners who have high income. The room is fully finished with fitness room, sauna, swimming pool, cleaning service and good security system. The price is usually cheaper than middle class hotels. It was designated in terms of duration of leasing (daily, weekly, or monthly).

2) **Housing Women Factory Workers in the Northern Corridor of Bangkok Metropolitan Region (Pathum Thani- Navakorn Industrial Zones)**

It focuses on three distinct issues: housing for migrant workers, housing for women, and housing in Desakota regions

a. **Industrialist' Housing Options**

Because housing conditions affect the health and the productivity of the workers, operators of factories have an interest in providing housing for their workers.

Several types have been built. 1) Dormitories inside the factory' compound, 2) Dormitories outside the factory compound but inside the IZ for low-income workers, 3) Housing outside the factory compound but inside the industrial estate for middle and high incomes, 4) Companies' rental housing outside the IZ, 5) Rental rooms and apartments in concrete structures, 6) Rental rooms in wooden structures, 7) Slum dwellers, 8) Low cost condominiums, shop houses, public housing.

Case 1) Dormitories on the Factory Compound

The advantage of on-site dormitory is the short distance between residence and workplace, lower levels of absenteeism, controlled by the factory, possibility to engage in overtime, and shift work. The following table illustrate the criteria of this type of dormitory

Table 3 Case of Dormitories in the Factory Compound

Name	Dormitories on the factory compound
Area	Pathum Thani
Location	Inside the factory complex
Build by	Industrial company
Type and number of dormitories, workers	4, three –storey wooden dormitories, 26 rooms, 4women/room
	1, double storey wooden dormitories,10 rooms, 2 or 3 men/room
	1, three-storey concrete dormitory,13 rooms by floor, 2 or 3 men/room
Type of payment	Free
Facilities	Cafeteria, telephone booth, sport fields, free water and electricity, cleaner employed by the company to clean the rooms
Advantages for the factories	Short distance between residence and workplace, greater punctuality, lower levels of absenteeism, greater control by factory, possibility to engage the workers in overtime and shift work
Disadvantages for the factories	The investments in buildings and land are cost, problems of managing dormitories

Source: JST

Case 2) Housing Outside the Factory Compound but Inside the Estate (Low-Income)

The factories are located inside the industrial estate where all the necessary infrastructures are available, but the land is more expensive or there is not enough land in the zone to build workers' housing. The following table illustrates the criteria of this type of dormitory.

Table 4 Case of Dormitories Outside the Factory Compound, but Inside the IZ for Low-Income Workers

Name	Housing outside the factory compound but inside the estate
Area	Nava Nakorn
Location	Outside the factory complex
Build by	National Housing Authority
Type and number of dormitories, workers	4, five –storey walk-up apartment, 756 units, for rent
	2, new blocks,324 units, for sale
Type of payment	Rent (700- 850 Baht/month/unit), Sale (300,000-400,000 Baht/unit)
Facilities	Multipurpose room, toilet/bathroom, balcony
Industrial Estate responsibility	Cleaning the Estate
National housing authority responsibility	Collecting the rent, carrying out the maintenance

Source: JST

Case 3) Housing Outside the Factory Compound, but Inside the Estate (Middle and High Income)

This type is prepared for middle and high-income workers who prefer to live outside the factory compound. The following table illustrates the criteria of this type of dormitory:

Table 5 Case of Dormitories Outside the Factory Compound, but Inside the IZ for Middle and High-Income Workers

Name	Housing outside the factory compound but inside the estate
Area	Nava Nakorn
Location	Outside the factory complex
Build by	Private companies
Type and number of dormitories, workers	Row houses, town houses, shop houses, semi-detached houses
	For renting and selling
Note	The owners and the main renters of the houses have built temporary structures behind the houses for rent to factory's workers

Source: JST

Case 4) Company Rental Housing Outside the Estate

The developers have started to build large numbers of shop houses and low cost condominiums in order to prepare rent houses for workers outside the estate. The following table illustrate the criteria of this type of dormitory:

Table 6 Case of Rental Workers Housing Outside the IZ

Name	Company rental housing outside the estate
Area	Klong Luang
Location	Outside the estate
Build by	Private companies
Type and number of dormitories, workers	Shop houses, 3 or 4 workers /unit 6-five storey walk-up (Low-cost condominiums) ,4 or 6 workers /unit
Type of payment	Rent (1,500- 1,800 Baht/month/unit), Sale (250,000-450,000 Baht/unit) The company pays the rent for the workers or the workers pay (50 to 100 Baht) to the company for the accommodation
Facilities	Multipurpose room, toilet/bathroom, balcony
Industrial estate responsibility	The factory company rents a building including its management as a dormitory, The manager is the owner of the building or a separate company

Source: JST

b. Factory Workers' Housing Options

Workers have to find their own house if they are not provided housing by the factory, or they do not willing to live in factory's dormitory. In this case, they have to consider about the cost and proximity to work. In this case, the structure of the rooms has many kinds:

Case 5) Rental Rooms and Apartments in Concrete Structures

Table 7 Case of Rental Room and Apartment in Concrete Structure

Name	Rental rooms and Apartments in Concrete Structures
Area	Bang Khan
Location	Outside the estate
Build by	Private
Type and number of dormitories, workers	Concrete structures , 2 storeys 8-16 units Area 12-40 m ²
Type of payment	Rent ~800 Baht/month/unit), (~1,200 Baht/apartment)
Note	Average income of the workers ~Baht 4,250/month

Source: JST

Case 6) Rental Rooms in Wooden Structures

Table 8 Case of Rental Room Wooden Structure

Name	Rental rooms in wooden structures
Area	Bang Khan (informal subdivisions, slum and squatter areas)
Location	Outside the estate
Build by	Private
Type and number of dormitories, workers	Single – storey wooden structures Area ~ 9-15 m ²
Type of payment	Rent ~500-600 Baht/month/unit), Sale (250,000-450,000 Baht/unit) Rent ~ 800 Baht/month/unit)
Facilities	Water come from deep well, toilet is a soak pit
Note	Average income of the workers ~Baht 2,750/month

Source: JST

Case 7) Slums and Squatter Settlements

Table 9 Case of Slums and Squatter Settlements

Name	Slum dwellers
Area	Pathum Thani
Location	Informal settlements
Build by	Extended family member who are workers
Type and number of dormitories, workers	Wooden structures with several rooms
Note	Average income of the household ~Baht 7,000/month

Source: JST

Case 8) Low-Cost Condominiums, Shop Houses, and Public Housing

Table 10 Case Low-Cost Condominiums, Shop Houses, and Public Housing

Name	Low-cost condominiums, shop houses , public housing
Area	Pathum Thani
Location	Outside the industrial estate
Build by	Private-Public sector
Type and number of dormitories, workers	Low-cost condominiums, shop houses , public housing Some shop house owners subdivide their property and rent it directly to workers
Type of payment	Rent ~1.420 Baht/month
Note	Average income of renter ~Baht 4,430/month

Source: JST

(3) Indonesia

1) The Riau Islands and the Economic Cooperation between Singapore-Indonesian Border Zone (Batam Indo IZ)

This section treats this example because this economic cooperation agreement includes housing construction for workers.

a. Outlines of the Agreement

It is an agreement for economic cooperation, promotion, and protection of investments, for the development of Riau province. It was signed between Singapore and Indonesia in August 1990. The agreement included the following provisions:

- Simplification of product distribution, payment and delivery procedures between Singapore and Riau Province
- Joint tourism promotion and development
- Cooperation in water supply and transportation to Singapore
- Cooperation in development and maintenance of infrastructure for joint development projects
- Cooperation in industrial and technological development in Riau Province, including trade agriculture and warehousing
- Exchange of visits by advisers, specialists and trainees
- Simplification of the tax system to facilitate investments
- Simplification of entry and exit procedures

Along with the development project, Singapore's political leaders secured changes in the investment rules and administrative procedures for foreign investors in Batam economic zone.

The marketing strategy was to promise the efficiency of Singaporean infrastructure and management combined with the much lower operating costs of Indonesia.

b. Batam Indo Industrial Zone

The IP is joint venture between Singapore Technologies Industrial Corporation, Jurong Environmental Engineering and Indonesian investors led by the Salim Group. The Singapore contributors took control of the design, physical development and management of estate, while Salim Group subsidiary took responsibility for labour recruitment.

The industrial park was designed to be self-contained area, and it includes as followings;

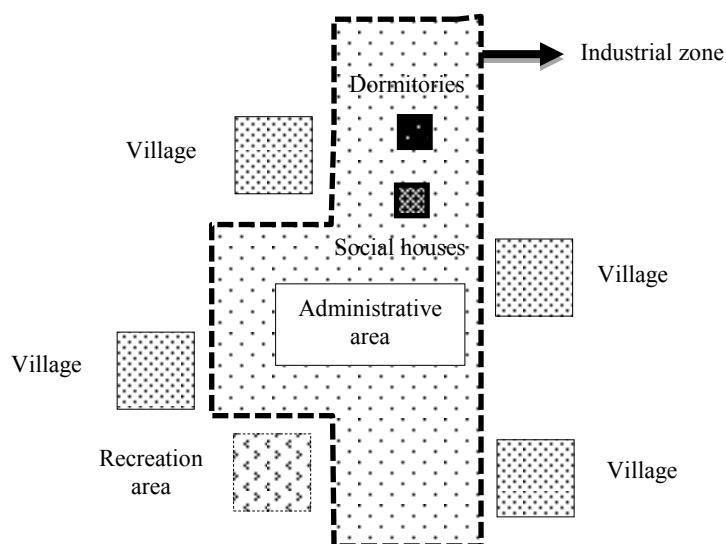
- Power supply, water treatment plant, sewerage system, telecommunication facilities, commercial area, religious buildings, and medical centre
- Four types of factories (three-storey buildings, two-storey detached factories, single-storey detached factories, terrace type factories).
- Three types of workers' housing includes:
 - Dormitory accommodation within the estate
 - Superior housing for supervisory staff
 - Executive village includes houses and golf course outside the estate

c. Private Investment in Batam Island

- Outside Batam Indo foreign investment has been directed mainly industry, tourism, and real estate.
- Eight industrial estates have been approved.
- The tourist sector attracts significant investment mainly in Singapore market.

d. Comparison between Batam IZs in Indonesia and Binh Duong in South Area of Vietnam

- Both of two cases create new urban area. It includes number of industrial parks with good infrastructure system, commercial and administrative facilities, recreation area, social houses and dormitories, and surrounding executive villages.



Source: JST

Figure 4 Spatial Model of Industrial Area

- Both of them have verity workers accommodation for workers inside of the IZs and outside of the industrial zone.

- One of the strong points in Batam Indo industrial zone is allowing companies to train Indonesian workers in Singapore. This assists to make Singaporean agencies to move and invest in Batam area.
- The housing environment, which experienced by most of the low income migrants who came to the island, was weak point in Batam Indo. Those housing areas form incongruous presence next to the luxury housing areas. That made difficult for developers to market their properties.

(4) **India**

There are few examples of housing construction for industrial workers of medium and small industries by the public sector institutions or private industrialists and developers. Workers often rent accommodations of low-income housing areas in towns and villages. There are private dormitories, or squat around the industrial area that turns into a slum. There are some attempts to build housing for workers in a few of the industrial estates/parks by public and private agencies. Private housing construction around the industrial estates/parks mostly caters to industrial employees and not the workers. In some cases, small townships have emerged around the industrial estates/parks, mostly in the locations close to large metropolitan cities where housing is very expensive, such as Delhi, Mumbai, Chennai and Bangalore.

1) **Delhi State Industrial and Infrastructure Development Corporation (DSIIDC)**

DSIIDC aims to create balanced growth of the national capital. It is one of the agencies of Delhi Government that builds houses for the urban poor. 13,820 houses have been completed until date. The flats allotted by DSIIDC are provided with essential services like electricity, water and sewage disposal, besides other infrastructural facilities required to make them habitable.

3,164 houses have been successfully constructed by DSIIDC for industrial workers in Bawana, 480 have been constructed in Narela and 1,412 houses are in progress. With supporting from Central Government under the Jawaharlal Nehru National Urban Renewal Mission (JnNURM), about 9,660 houses have been constructed, while the remaining 4,144 houses are almost completed. There are other schemes under JnNRUM for construction of 18,760 houses in Pooth khurd, 3,600 houses in Kanjhawala, and 8,420 houses in Tikri Kalan, Delhi. Many sites are identified and acquired for the construction of such houses under JnNRUM. The projects will be implemented using eco-friendly materials, and conservation of natural resources will get priority. Fly-ash products will be used in order to make the technology's cost efficient.

2) **Rajasthan State Industrial Development and Investment Corporation (RIICO), Rajasthan St**

RIICO administers the development and management of industrial areas in the state. RIICO has developed 327 industrial areas. It provides physical infrastructures (roads, power, streets' lights, water supply and drainage) and some social infrastructures. It is not directly involved in housing for industrial workers, but it facilitates housing construction by allocating land and permitting housing for private industries.

Bhiwadi in Alwar District, Rajasthan, on Delhi – Jaipur highway has become new industrial hub. It is now turning into new township with several private housing projects. Some industries also build workers housing, such as Pathredi (Bhiwadi industrial area, which approved two plots for building dormitories for its workers under RIICO guidelines in 2011. However, many of the industrial workers rent places in the town or nearby villages.

Neemrana in Alwar District, Rajasthan is another major industrial hub for small and medium industries. Many of these are cooperate with Japanese and Korean companies. The housing situation is similar to Bhiwadi.

3) **Maharashtra Housing and Area Development Authority (MHADA)**

MAHADA has housing scheme for industrial workers and build 3,323 tenements/units, 3,274 units built for weaker section housing scheme, and 6,147 units build for low-income groups in Nagpur city. MHADA has built similar housing for industrial workers in few other cities in Maharashtra.

4) **City and Industrial Development Corporation (CIDCO), New/Navi Mumbai**

The Navi Mumbai project has begun in 1971 with the formation of City and Industrial Development Corporation (CIDCO). CIDCO was set up by Government of Maharashtra (GoM) as public limited company under Indian companies act, and it is wholly owned by the GoM.

CIDCO has constructed about 123,577 of housing stock in the city and 51 % of housing for low Income groups while 26 % was reserved for middle-income groups and 23 % for high-income groups.

The total housing stock created in Navi Mumbai is about 225,000 units. 123,577 units are built by CIDCO, and the rest has been built by private sector. About 50,000 houses are under construction of the private developers. About 74 % of the households owns their houses in Navi Mumbai.

CIDCO constructed houses for EWS under Bombay Urban Development Project (BUDP) I, II and III in Airoli, Kopar Khairane, Kharghar, Nerul, Kalamboli and New Panvel. Some ambitious housing projects were also undertaken by the corporation among different groups; i.e. Gharkul and Spaghetti for LIG, MIG, Millennium Towers for MIG and Selwood Estate for HIG like Non Resident Indians.

5) **State Industries Promotion Corporation (SIPCOT) of Tamil Nadu**

Industrial estates promoted by the Tamil Nadu Government will feature residential space for workers, facilities for education and healthcare. The objective is to support the housing needs of the industrial workers. The State-run agency is assembling land banks and developing them with basic infrastructure.

The first project would come up in Sriperumbudur with the joint venture expected to start in the next two-three months after the state government formally clear the project. Sriperumbudur (to the west of Chennai) has emerged a centre for automobile industries and electronic hardware. Even that the rough estimates indicate that over 20,000 residential units would be needed within a few years; this is the segment the state government hopes to target. SIPCOT, as an immediate measure, is in the process of setting up a dormitory to accommodate over 1,000 workers.

Down the line, similar housing projects would come up in other industrial towns, such as Tirupur, Perundurai and Hosur. The objective is to create 5,000-10,000 houses a year. These would be sold, rented or leased to large companies, which need housing facilities for their staff.

6) **Delhi Mumbai Industrial Corridor (DMIC):**

Delhi-Mumbai Industrial Corridor is a mega infra-structure project of 90 billion USD with financial and technical aids from Japan covering overall length of 1483 KMs between the political capital and the business capital of India, i.e. Delhi and Mumbai. This project incorporates Nine Mega industrial zones about 200-250 sq.km., high-speed freight line, three ports, and six airports; a six-lane intersection-free expressway connecting Mumbai & Delhi and 4000 MW power plant. Several industrial estates and clusters, industrial hubs with top-of-the-line infrastructures would be developed along this corridor to attract more foreign investment. A band of 150 km (Influence region) has been chosen on both sides of the freight corridor to be developed as the Delhi-Mumbai industrial corridor.

DMIC Development Corporation undertakes development services project for investment in regions /industrial areas/ economic regions/industrial nodes and townships for various central government agencies, also help in assisting state governments.

Twenty-four manufacturing cities are envisaged in the perspective plan of the DMIC project. In the first phase, seven cities are being developed; one is in the states of Uttar Pradesh, Haryana, Rajasthan, Madhya Pradesh and Gujarat and two in Maharashtra. The manufacturing cities will provide international and domestic investors with diverse set of vast investment opportunities. The initial phase of the new cities is expected to be completed by 2019. The manufacturing cities will have industrial workers housing near the industrial areas.

Government of India approved DMIC Plan in August 2007. The first industrial city called Dholera Smart City/Special Investment Region, Gujarat, has been prepared. It will take some time to be implemented. In addition, four similar industrial corridors are being planned and developed in India.

Annex 8 - Natural Environmental Situation

Annex-8 Natural Environmental Situation

The natural environmental situation is as following.

(1) Location and Current Condition of the Project Site

1) Location of Project Site

The project site situated at Phung Chi Kien commune, My Hao urban area. The total area is 18.2ha. Surrounding of the site is as follows.

- Adjacent to Di Su commune in the North;
- Adjacent to Thang Long IP II in the South;
- Adjacent to Pho Noi Textile and Garment IP in the West;
- Adjacent to Tu My village, Phung Chi Kien commune in the East.

2) The Current Condition of the Project Site

The project site has current conditions as below:

- Around the project site there is drainage ditch system of Thang Long IP II, which was built of stone block, irrigation canals and 24m wide asphalt concrete road lead to Thang Long IP II;
- Within the project site is mainly paddy land with some interspersed graves and aquaculture ponds of local residents. In the North - East corner is the 22kV electrical pole and power line system and communication cable lines of Voice of Vietnam's station.

(2) Natural Conditions

1) The Topography and Geomorphology

The project site is in the North Delta area, the terrain is flat with very small average ground slope (from 0.001% to 0.008%); the main slope direction is from Northwest to Southeast. The area with the highest altitude (from 3.5m to 5m) concentrates in the Northwest urban area of Ban Yen Nhan town; the areas with average altitude (from 2.5m to +3.5m) are in Nhan Hoa, Di Su, Bach Sam and Phung Chi Kien commune. The area with the lowest altitude (+1.6m to +2.5m) is in Minh Duc commune.

2) Climate

The project site is affected by the tropical monsoon climate, which is hot, humid, and rainy, and have four distinct seasons: spring, summer, autumn and winter. Average annual temperature is 24 - 25 Celsius, in summer and below 20 Celsius in winter. Total annual accumulation temperature is 8500 Celsius. Total average annual sunshine hours is about 1,320h, sunny days in the month are 24. The average humidity is 87.5%. Average annual rainfall is 1,500mm to 1,600mm. There are two main wind directions: Northeast wind in cold seasons and Southeast wind in the hot seasons. Hot dry winds appear in June and July. There are long cold wind in winter from December to February of the next year. However, My Hao's climate is still favourable for production and life activities.

3) Hydrology

Phung Chi Kien commune in My Hao urban area is influenced by the hydrological regime of Bac Hung Hai irrigational agriculture systems:

- Bac Hung Hai River run along the South boundary of My Hao district with the length of 6km, and the width of the river is from 70m to 100m.

- The river water levels are regulated and controlled to average level of +2.0m, and in the rainy season it can be up to +4.2m.
- Ban - Vu Xa River and Cau Dau River have important role in providing water for irrigation serving production and daily life activities in the region.

With hydrological conditions as above, the project site is rarely flooded because the irrigation system was completely constructed.

4) **Engineering Geology, Hydrological Geology and Seismic**

a. **Engineering Geology**

According to the geological data of the region of Hung Yen, the project site is the ancient alluvial zone formed by unconsolidated sediments of Quaternary Period with a thickness of 150m-160m, following the stratigraphic sequence, there are soil and rock type as follows:

- The Pleistocene sediment: thickness is 130m to 140m, with coarse sediments including grit, gravel, coarse sand, medium sand with interspersed silt clay lenses;
- The Holocene sediment: thickness is 5m to 30m and mainly composed of sandy clay, silty clay, clay contains organic. It distributed on the stratigraphic surface. With geological conditions as above, geological conditions of My Hao area is preliminary to be assessed as favourable for urban construction.

b. **Hydrological Geology**

With geological characteristics formed by unconsolidated sediments of Quaternary Period, mixed seawater source. Therefore, the groundwater storage capacity is very good, especially the sand and gravel aquifer at the depth of 80m to 120m, and the inner of My Hao urban area has hydrological stratigraphic units as follows:

- Holocene sediment aquifer (Qh): Petrography compositions are consisting of small to medium sand, sand - clay, silt - clay. Static water level ranges from 0.96m to 1.53m. This layer has a direct connection with the Red River. The Red River bottoms cut into aquifer layer at 11m depth. Water conductivity coefficient is 80m²/day; permeability coefficient is about 2.3m/day. The total dissolves solids and Cl content varies much.
- Pleistocene sediment aquifer (Qp): Petrographic composition consist mainly of sand and gravel, and a little of clay. The average thickness of this layer is 30m. Static water level ranges from 0.44m to 3.85m with average of 1.2m to 1.4 m. The water level changes following seasons and closely synchrony with rainfall. Fluctuation amplitude is around 2m. Water movement is in Northwest – Southeast direction.
- Water separation layer of Pleistocene sediments (QIIIvp): Qp layers is located directly under qh layer, the thickness changes from 1m to 1.6m, permeability coefficient changes from 0.026 to 0.08m/day, with average of 0.04m/day
- The reservoir crack complex of Neogene sediments (m): aqueous rocks and soils consists of sandstone, conglomerate and claystone, the flow achieved 4.3l/s, flow rate achieved 0.13l/s to 17.5l/s. Water quality meets standards for living activities, water levels varies so much (much different between the dry season and rainy season).

c. **Earthquake:**

The ground acceleration in the My Hao, Hung Yen area is 0.0725, and the area is included in the VII level earthquake area (based on MSK-64, TCVN 9386:2012)

(3) **Environment**

1) **Water Source**

a. **Surface Water**

Surface water mainly relies on sources in the urban rivers including Ban Vu Xa river, Tran Thanh Ngo channel , Bac Hung Hai River (South Urban) , An Cuu River (East Urban) and rainwater sources stored in ponds, canals, on-farm water supply for irrigation, drainage directly serving production and daily life of people around the district .

In general, surface water in the urban has no serious pollution. However, surface water in Phung Chi Kien Commune of My Hao urban is being polluted in some places where there are many industrial zones, craft village. According to reality survey results related to sanitation problem of villages in Hung Yen province, domestic water of craft villages is substandard in terms of microbiology due to Coliform bacterial infection. This was partly due to the slaughter area not hygienic; the wastewater is discharged into the drains freely. Besides, domestic water has higher manganese content than the allowance standard. The current status shows that the risk of water pollution in craft villages is quite serious and one of the causes leading to gastrointestinal disease; eye disease is common in the villages.

Domestic wastewater is quite large, the daily average directly discharged into the environment around 2,500m³ of untreated wastewater. In addition, storm drainage system in residential areas is not enough capacity causing to spill out of the surface and serious pollution. Measurement results of wastewater samples from producers, sewers, water reservoir of the village, aquaculture sector show that Coliform infection exceeds permitted health standards in several times.

b. **Underground Water**

Sources of underground water in My Hao is abundant, especially in areas along 5A nation highway area according to the Department of Geology and Hydrometeorology tests of wells in the Phung Chi Kien commune, neighbouring communes of My Hao urban. The analytical results of groundwater quality in the area is quite good for the physical and chemical indicators, reached the national technical standard (QCQG 09: 2008/ BTNMT) and clean water hygiene standards (attached to No. 09/ 2005/ QD - BYT dated 11/3/2005 of the Minister of Health) . Unpolluted water but iron content in the water is high, if handled well can be exploited serving for production and living in urban areas.

2) **Air Environment**

Overall, air environment of the project area of My Hao urban is quite good except a few polluted areas, such as industrial zone, areas of craft villages and areas along the QL5A route. Microclimate in the production base is around the allowance standard, but some areas do not reach indices, such as slaughtered area, process foods with humidity higher than the standard, uncertain hygiene and incurred some poison gas, such as ammonia, sulfureted hydrogen, ...etc. Slaughtering areas, which has food milling emit noise, reduce the levels of fresh air environment of residential areas and have negative impacts on public health. In terms of hygiene at workplace, most of the factories, the production area do not ensure ventilation, lack of air causing a negative impact on worker health.

3) **Soil Environment**

The project area in My Hao urban has two major soil groups, which are alluvial soils of the Red River and Thai Binh River without deposit annually. Overall, the remaining soils are not yet contaminated. Findings on physical and chemical indicators showed that Cadmium and Lead levels in soil samples was much lower than the limit value of QCVN 03:2008/ BTNMT (permissible limits of heavy metals in the soil)

4) **Ecosystem**

The project area in My Hao urban has ecosystems of northern delta. The flora includes primarily species, which serves agricultural production, such as rice, corn, and vegetables, no animals are subject for conservation. In the area, present flora is rapidly declining due to some agricultural land converted into land for urban construction and industry. Moreover, plant protective measures might be more crucial.

(4) **Status of Waste Collection and Management**

1) **Solid Waste**

Currently the collection, sludge from sewage treatment, solid waste in the urban reach approximately 80% of the waste generated. The specialized equipment that used for collection and transportation of garbage owes. Industrial waste increases rapidly, but processing capacity is limited. The technology has no full processing. The municipal waste from people, schools, and hospitals is being much more but no waste segregation measures.

2) **Waste Water**

Sewage systems of liquid waste are in shortage and deterioration. The sewer is the general integrated with drainage system here. The sources of receiving wastewater are the river systems, natural channel in the region and sewer system in the region. However, the drain quantity is small and downgraded, so the drainage level is limited.

Most of the amount of wastewater from industrial and handicraft production base has no sewage system or there is only preliminary treatment via septic tanks before being discharged directly into the sewers. Wastewater from these bases has organic content and suspended solid content, which are high if not treated. It will be a source of serious impacts on water resources and the environment in the area, such as increase turbidity of water resources, born stench, during decomposition, generate toxic and directly influence on the development of aquatic systems and polluted underground water resources in the region.

The amount of wastewater from industrial zones is invested and treated as follows:

- Pho Noi A IP: Investors have built wastewater treatment facilities first stage with capacity of 3,000m³ per day and has installed automatic monitoring systems for specific parameters, such as pH, Dissolved Oxygen (hereinafter referred to as "DO"), Total Suspended Solids (hereinafter referred to as "TSS"), Chemical Oxygen Demand (hereinafter referred to as "COD") to monitor quality of wastewater treatment system at the outlet of the zone. Currently there are 95 projects in the IPs in operation with a total amount of wastewater generated at about 8.800m³ per day (both domestic sewage and industrial wastewater.)
- At Pho Noi B Textile IP: Investors have built wastewater treatment facilities with a capacity of 10,000m³ per day with unique processing technology for the textile and apparel. Therefore, wastewater in the zone is not pre-treatment and collected directly on the wastewater treatment plant of IP for processing. Currently, there are 11 projects in the IPs in operation with a total amount of wastewater generated at about 1,550m³ per day of which about 1,500m³ per day are processed at wastewater treatment systems of the zone; In addition, wastewater volume of about 50m³ per day that generated during the operation of the 03 projects is not yet implemented thoroughly to be connected to the collection system, and the project owner has a pre-treatment before discharging into the environment.
- Thang Long IP II: Investors have built wastewater treatment facilities first stage with capacity of 3,000m³ per day and has installed automatic monitoring systems for specific parameters (such as pH, DO, TSS, COD) to monitor quality of wastewater treatment system at the outlet

of the park. February 2015, there were more than 36 tenants in the IP that went into operation, arising mainly domestic sewage wastewater with total average of about 300m³ per day, and collected directly on the wastewater treatment plant of IP for processing. However, due to the amount of wastewater is too little compared to the capacity of the treatment plant, it should not guarantee wastewater treatment facilities to be operated continuously.

Annex 9 - Set of Architectural Planning Condition

Annex-9 Set of Architectural Planning Condition

9-1. Calculation Idea/ Analysis for Target Residents Density in Land Lots

By setting the prospected land size as 1ha, the planning population is calculated to estimate the worker housing capacity. Also, the planning population unit is set as 4,000 people that is a minimum value of residential unit population (4,000 to 20,000 people) required to have urban infrastructure, and it is regulated on Clause 2), Section 1.2 in Decision No.04/2008/QĐ-BXD, Promulgating the Vietnam Building Code on Regional and Urban Planning and Rural Residential Planning. The corresponded land area is estimated to calculate for low-rise housing and medium-rise housing planning, and the planning requirements are analyzed for construction. The results of calculations are used as the references to determine the model site general plan.

The half of IP workers around model site commutes from their homes, and another half live in rental housing for single. Based on this situation, the residents who are expected to live in model site are estimated as a half for single workers and another half for workers with their families. The breakdown of 4,000 people population is assumed in 2,666 (a married worker couple: two people + their family members: two people) people as family people and in 1,334 people as single people. It assumes a 30 % ratio of road area for 1ha per all land lots. For housing targeted area would equals as $10,000 \text{ m}^2 - 3,000 \text{ m}^2 = 7,000 \text{ m}^2$. As assuming a minimum area of 8 m^2 per one person by the regulation, it estimates a family household for four people living and a minimum family household area of 40 m^2 and estimates a minimum room area of 18 m^2 for two industrial workers for single living.

For the allocation of the low-rise and medium-rise housing planning, there are three assumed patterns for housings. 1) A pattern for only low-rise housing in row housing of 2,666 people for family and in row housing of 1,334 people for single. 2) A pattern for only medium-rise housing in medium-rise housing of 2,666 family people, and in medium-rise housing of 1,334 single people to be estimated 3) A pattern for allocation of the medium-rise housing and low-rise housing, to assume medium rise- housing of 2,666 people for family, low-rise housing of 1,334 people for single. By calculating the number of people who can live in 1ha land lot within three patterns, it estimates to calculate the necessary numbers of each land lots area.

Table 1 Assuming Area for Housing

Dwelling type	Housing area (households/ rooms)	Number of residents
Households for family	40 m^2	4 peoples (include 2 children)
Rooms for single	18 m^2	2 people

Table 2 Allocation of Buildings

Item	Building type	Family type housing 2,666 people	Single type housing 1,334 People
1)	Low-rise building	Row housing	Row housing
2)	Medium-rise building	Apartments	Apartments
3)	Low-rise + Medium-rise building	Apartments	Row housing

(1) Idea for Allocation of Only Low-Rise Building

In the idea for planning only low-rise buildings, it would be assumed the low-rise row housing for family residents as 2,666 people and the low-rise row housing for single residents as 1,334 people.

As it would be assumed single-story low-rise row housing, necessary land lots area would be a half if the two-story building could be planning. For example, if the land lots area is required for 12ha for single-story building, the land lots area would be assumed only required 6ha for two-story building.

In case of the land lots area of 7,000 m² for low-rise housing, according to No.04 /2008/QD-BXD 2.8.6 as building coverage regulation, the land lots area of more than 7,000 m² would be required as building coverage 40%.

a. Basis Formula for Family Type Housing (per 1ha)

Table 3 Basis Formula for Family Type Housing (per 1ha)

Housing target area	7,000 m ² ×0.4 (building coverage) →2,800 m ²
Household numbers formula (per one building)	2,800 m ² ÷40 m ² (1household) →70 households
Resident numbers formula	70 households×4 people→280 people
Required land lots area	2,666 people÷280 people (1ha) →10ha (9.5ha)
Floor area ratio	40%

b. Basis Formula for Single Type Housing (per 1ha)

Table 4 Basis Formula for Single Type Housing (per 1ha)

Housing target area	7,000 m ² ×0.4 (building coverage) →2,800 m ²
Room numbers formula (per one building)	2,800 m ² ÷18 m ² (1 room) →155 rooms
Resident numbers formula	155 rooms×2 people→310 people
Required land lots area	1,334 people÷310 people (1ha) →5ha (4.3ha)
Floor area ratio	40%

2) Idea for Allocation of Only Medium –Rise Housing

In the idea for planning only medium-rise buildings, it would be assumed the medium-rise housings for family people as 2,666 people and the low-rise housing for single people as 1,334 people. While it would be planned motorcycle parking lots and common use facilities on the first floor in medium-rise housing, the JST proposes to plan both 3-storey housing and 5-storey housing.

In case of the land lots area of 7,000 m²for medium-rise housing, according to No.04 / 2008 / QD-BXD 2.8.6 as building coverage regulation, the land lots area of more than 7,000 m² would be required as building coverage 65%.

It configures 1.25 as a coefficient ratio, since it would be calculated on the ratio of public/private space in each floors based on past standard plans in medium-rise housing. The formula would be assumed each households units 40 m²× 1.25→50 m² per one households included private area and public area in each floor.

In the case of only medium-rise housing, the resident numbers of household/room for family people and single people are four people living for the same housing type. It would be assumed four people for family housing 40m² and single people housing 40 m².

a. Basis Formula for Family Type Housing (per 1ha)

- i) 5- Story building (1st floor ; Motor-cycle parking/common use facilities, 2-5thfloor; dwelling space)

Table 5 Basis Formula for Family Type Housing (per 1ha/5 Stories)

Housing target area	$7,000 \text{ m}^2 \times 0.65$ (building coverage) $\rightarrow 4,550 \text{ m}^2$
Household numbers formula (per one floor)	$4,550 \text{ m}^2 \div 50 \text{ m}^2$ (1household) $\rightarrow 91$ households
Households number formula (per one building)	$91 \text{ households} \times 4 \text{ floors} \rightarrow 364$ households
Residents number formula	$364 \text{ households} \times 4 \text{ people} \rightarrow 1456$ people
Required land lots area	$2,666 \text{ people} \div 1456 \text{ people}$ (1ha) $\rightarrow 2\text{ha}$ (1.8ha)
Floor area ratio	$4,550 \text{ m}^2 \times 5 \text{ floors} \rightarrow 22,750 \text{ m}^2 / 7,000 \text{ m}^2 \rightarrow 325\%$

- ii) 3- Story building (1st floor ; Motor-cycle parking/common use facilities, 2-3rd floor; dwelling space)

Table 6 Basis Formula for Family Type Housing (per 1ha/3 Stories)

Housing target area	$7,000 \text{ m}^2 \times 0.65$ (building coverage) $\rightarrow 4,550 \text{ m}^2$
Household numbers formula (per one floor)	$4,550 \text{ m}^2 \div 50 \text{ m}^2$ (1household) $\rightarrow 91$ households
Households number formula (per one building)	$91 \text{ household} \times 2 \text{ floors} \rightarrow 182$ households
Residents number formula	$182 \text{ households} \times 4 \text{ people} \rightarrow 728$ people
Required land lots area	$2,666 \text{ people} \div 728 \text{ people}$ (1ha) $\rightarrow 4\text{ha}$ (3.6ha)
Floor area ratio	$4,550 \text{ m}^2 \times 3 \text{ floors} \rightarrow 13,650 \text{ m}^2 / 7,000 \text{ m}^2 \rightarrow 195\%$

b. Basis Formula for Single Type Housing (per 1ha)

- i) 5- Story building 1st floor ; Motor-cycle parking/common use facilities, 2-5th floor; dwelling space)

Table 7 Basis Formula for Single Type Housing (per 1ha/5 Stories)

Housing target area	$7,000 \text{ m}^2 \times 0.65$ (building coverage) $\rightarrow 4,550 \text{ m}^2$
Household numbers formula (per one floor)	$4,550 \text{ m}^2 \div 50 \text{ m}^2$ (1household) $\rightarrow 91$ households
Households number formula (per one building)	$91 \text{ households} \times 4 \text{ floors} \rightarrow 364$ households
Residents number formula	$364 \text{ households} \times 4 \text{ people} \rightarrow 1456$ people
Required land lots area	$1,334 \text{ people} \div 1,456 \text{ people}$ (1ha) $\rightarrow 1 \text{ ha}$ (0.9ha)
Floor area ratio	$4,550 \text{ m}^2 \times 5 \text{ floors} \rightarrow 22,750 \text{ m}^2 / 7,000 \text{ m}^2 \rightarrow 325\%$

- ii) 3-Storey building (1st floor ; Motor-cycle parking/ common use facilities, 2-3rd floor; dwelling space)

Table 8 Basis Formula for Single Type Housing (per 1ha/3 Stories)

Housing target area	$7,000 \text{ m}^2 \times 0.65$ (building coverage) $\rightarrow 4,550 \text{ m}^2$
Household numbers formula (per one floor)	$4,550 \text{ m}^2 \div 50 \text{ m}^2$ (1household) $\rightarrow 91$ households
Households number formula (per one building)	$91 \text{ households} \times 2 \text{ floors} \rightarrow 182$ households
Residents number formula	$182 \text{ households} \times 4 \text{ people} \rightarrow 728$ people
Required land lots area	$1,334 \text{ people} \div 728 \text{ people}$ (1ha) $\rightarrow 2\text{ha}$ (1.8ha)
Floor area ratio	$4,550 \text{ m}^2 \times 3 \text{ floors} \rightarrow 13,650 \text{ m}^2 / 7,000 \text{ m}^2 \rightarrow 195\%$

3) Idea for Allocation of Low-Rise Housing and Medium-Rise Housing

It is assumed the idea of allocation for both low-rise housing and medium-rise housing; the family residents 2,666 people for medium-rise housing and the single residents 1,334 people for low-rise housing. While it would be planned motorcycle parking lots and common use facilities on first floor in medium-rise housing for family people, the JST proposes to plan for both 3-storey housing idea and 5-storey housing idea. It also would be planned single-story building for low-rise housing of single people.

In case of the land lots area of 7,000 m² for low-rise housing, according to No.04 / 2008 / QD-BXD 2.8.6 as building coverage regulation, the land lots area of more than 7,000 m² would be required as building coverage 40%.

In case of the land lots area of 7,000 m² for medium-rise housing, according to No.04 / 2008 / QD-BXD 2.8.6 as building coverage regulation, the land lots area of more than 7,000 m² would be required as building coverage 65% .

This idea would be combined ideas for both 1) Idea for allocation of only low-rise building and 2) Idea for allocation of only medium-rise building in previous clauses. It estimated to distinguish medium-rise housings for family people and low-rise housings for single people. In the future, it should be assumed to single residents for living in medium-rise housings and family residents for living in low-rise housing, the study shall not be considering ratio of both family residents and single residents in this clause yet, to be adjusted family/single people ratio more in the future.

a. Basis Formula for Family Type Housing (per 1ha)

- i) 5- Story building (1st floor; motorcycle parking/common facilities 2nd -5th floor; dwelling space)

Table 9 Basis Formula for Family Type Housing (per 1ha/5 Stories)

Housing target area	7,000 m ² × 0.65 (building coverage) → 4,550 m ²
Household numbers formula (per one floor)	4,550 m ² ÷ 50 m ² (1 household) → 91 households
Households number formula (per one building)	91 households × 4 Floors → 364 households
Residents number formula	364 households × 4 people → 1456 people
Required land lots area	2,666 people ÷ 1,456 people (1ha) → 2ha (1.8ha)
Floor area ratio	4,550 m ² × 5 floors → 22,750 m ² / 7,000 m ² → 325%

- ii) 3-Storey building (1st floor; motorcycle parking/common facilities 2nd -5th floor; dwelling space)

Table 10 Basis Formula for Family Type Housing (per 1ha/3 Stories)

Housing target area	7,000 m ² × 0.65 (building coverage) → 4,550 m ²
Household numbers formula (per one floor)	4,550 m ² ÷ 50 m ² (1 household) → 91 households
Households number formula (per one building)	91 households × 2 Floors → 182 households
Residents number formula	182 households × 4 people → 728 people
Required land lots area	2,666 people ÷ 728 people (1ha) → 4ha (3.6ha)
Floor area ratio	4,550 m ² × 3 floors → 13,650 m ² / 7,000 m ² → 195%

iii) Basis formula for single type housing (per 1ha)

Table 11 Basis Formula for Single Type Housing (per 1ha)

Housing target area	7,000 m ² ×0.4 (building coverage) →2,800 m ²
Room numbers formula	2,800 m ² ÷18 m ² (1 household) →155 households
Residents number formula	155 rooms×2 people→310 people
Required land lots area	1,334 people÷310 people (1ha) →5ha (4.3ha)
Floor area ratio	40%

4) **Building Rough Estimate in Regards to Assuming Land Lots Area**

As above-mentioned about combination patterns of the low-rise housing and medium -rise housings, one pattern in low-rise housing, four patterns in medium-rise housing, two patterns in the medium + low-rise building, it would be assumed for the combination of a total seven patterns in this case.

In the housing type, it can be assumed for low-rise housing, 3-storey medium-rise housing, and 5-storey medium-rise housing in three types.

About rough estimate, according to Table of Decision No.634 /QD-BXD/2014 issued by MOC, the cost estimation for low-rise housing as RC structure to be assumed 4,660,000VND / m². However, as long as it constructed by a brick wall, metal roof etc those are cheaper materials, it would be possible to build less than half of this cost estimation amount. It would be assumed the cost estimate for medium-rise housing to 8,450,000VND / m².

The grand floor area per 1ha of low-rise housing is 2,800 m², the grand floor area per 1ha of the 3-storey medium-rise housing is 13,650 m², It would be assumed the grand floor area per 1ha of 5-storey medium-rise housing as 22,750 m².

Therefore, it also would be assumed for low-rise housing to 13,048million VND / 1ha, medium-rise 3-storey housing to 115,342.5 million VND/² 1ha, medium-rise 5-storey housing to 192,237.5million VND / 1ha.

Table 12 Grand Floor Area of Low-Rise /Medium-Rise Housing Combination

Item	Building types	Housing for family 2,666 people	Grand floor area m ²	Required land lots Ha	Floor area ratio %	Housing for single 1,334 people	Grand floor area m ²	Required land lots ha	Floor area ratio %
1)	Low-rise housing only	Row housing	28,000	10	40	Row housing	14,000	5	40
2)-1	Medium-rise housing only	5-storey apartments	45,500	2	325	5-storey apartments	22,750	1	325
2)-2		5-storey apartments	45,500	2	325	3-storey apartments	27,300	2	195
2)-3		3-storey apartments	54,600	4	195	5-storey apartments	45,500	1	325
2)-4		3-storey apartments	54,600	4	195	3-storey apartments	27,300	2	195
3)-1	Low-rise housing + Medium-rise housing	5-storey apartments	45,500	2	325	Row housing	14,000	5	40
3)-2		3-storey apartments	54,600	4	195	Row housing	14,000	5	40

Table 13 Rough Estimate of Low-Rise/Medium-Rise Housing Combination

Item	Building types	Housing for family 2666 people	Rough estimate 1mill.VND	Housing for single 1,334 people	Rough estimate 1mill.VND	Total rough estimate 1mill.VND
1)	Low-rise housing only	Row housing (9.5ha)	130,480 (123,956)	Row housing (4.3ha)	65,240 (56,106)	195,720 (180,062)
2)-1	Medium-rise housing only	5-storey apartments (1.8ha)	384,474 (346,027)	5-storey apartments (0.9ha)	192,237 (173,013)	576,711 (519,040)
2)-2		5-storey apartments (1.8ha)	384,474 (346,027)	3-storey apartments (1.8ha)	230,684 (207,615)	615,431 (553,642)
2)-3		3-storey apartments (3.6ha)	461,368 (415,231)	5-storey apartments (0.9ha)	192,237 (173,013)	653,605 (588,244)
2)-4		3-storey apartments (3.6ha)	461,368 (415,231)	3-storey apartments (1.8ha)	230,684 (207,615)	692,052 (622,846)
3)-1	Low-rise housing + medium-rise housing	5-storey apartments (1.8ha)	384,474 (346,027)	Row housing (4.3ha)	65,240 (56,106)	449,714 (402,133)
3)-2		3-storey apartments (3.6ha)	461,368 (415,231)	Row housing (4.3ha)	65,240 (56,106)	526,608 (471,337)

9-2. Layout Planning

(1) Planning Concept

After studying Architectural planning for target population, it shall be designed architectural planning for summarized outline over all land lots. Corresponding to 8,000 of planning population in the site, 7,998 people are the planning population set in the framework at the previous section. Those consist of families, 5,332 people and single 2,666 people. As shown in the following figure, the development is planned to have apartment and row housing. The apartments are developed for family type housing and dormitory for single, while the row housing is developed for single type only.

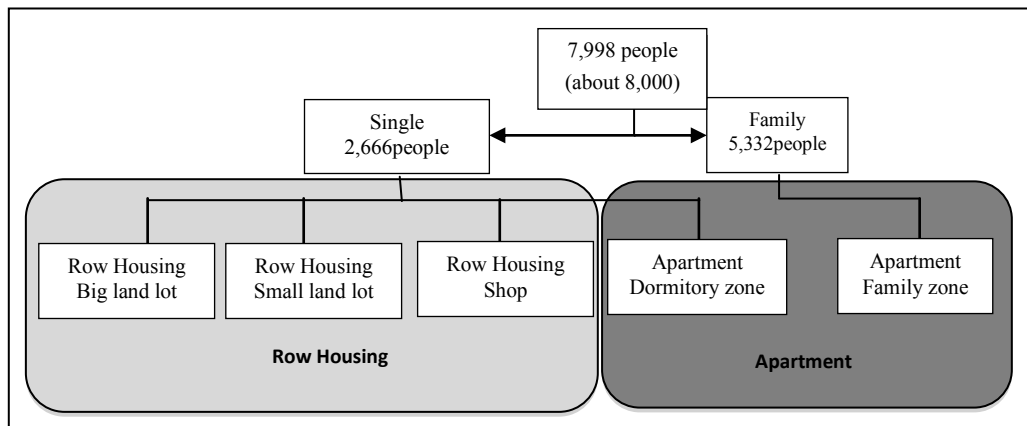


Figure 1 Matrix for Building Design Conditions

(2) **Calculation for the Architectural Planning Criteria**

The regulation of minimum dwelling area for one person would be 8 m² according to No.1245 / BXD-KHCN dated 24/06/2013. While keeping the minimum dwelling area for a household, it would estimate to calculate to family for 40m² households and single for 17m² households. The number of dwelling people would be four people for family type, and two people for single type. The calculation process temporally assumed to design three floors for one apartment. All kinds of design should allow implying into social housing instead of one type; room with loft, room with natural light, room with furniture, etc.

1) **Dwelling for Apartment**

Apartments cover both all family and single for dormitory. The number of family would be 1,325 families so that it estimates to live two adult and two children. Therefore, 5,300 people would divide by 4 people into 1,325 families. The numbers of room on each floor for one apartment are planned to 32 rooms.

Minimum gross land lots area estimation

$$1,333 \text{ families} \times 40\text{m}^2 = 53,320\text{m}^2 \text{ (required net floor area for total)}$$

$$53,320\text{m}^2 \times 1.25 \rightarrow 66,650\text{m}^2 \text{ (required gross floor area)}$$

$$66,650\text{m}^2 \div 1.5 \text{ (gross floor area ratio)} = 44,433\text{m}^2 \text{ for gross land lots area}$$

1.25: coefficient number as considering common area in an apartment

Table 14 Formula for Apartment Designs

Total land lots area estimation by building coverage
32 rooms for one floor \times 40m ² = 1,280m ² (Net floor area for one floor of apartment)
1,280m ² \times 1.25=1,600m ² (Gross floor area for one floor of apartment)
1,600m ² \times 3Floors=4,800m ² (Floor area for one apartment)
4,800m ² \div 1.5 (gross floor area ratio) =3,200m ² (a land lot for one apartment)
3,200m ² \times 14 land lots =44,8,00m ² > 44,433m ²
Gross floor area for apartments
32 rooms for one floor \times 40m ² =1,280m ² (Net floor area for one floor of apartment)
1,280m ² \times 1.25=1,600m ² (Gross floor area for one floor of apartment)
1,600m ² \times 3Floors=4,800m ² (Gross Floor Area for one apartment: 32 rooms \times 3Floors=96 rooms for apartment)
4,800m ² \times 14 apartments \rightarrow 67,200m ² (Total floor area for family type apartment)
Apartments may require to be designed to add one more floor for motorcycle parking lots in addition

(96 rooms \times 14 land lots) \rightarrow 1,344 rooms — 1,333 rooms for families \rightarrow 11 rooms.

These 11 rooms would be developed for dormitory for sharing by four people (industrial workers).

11 rooms for apartment \times 4 people \rightarrow 44 single people

2) **Dwelling for Row House**

The target number of single would be 2,622 people so that it would be subtract 2,666 of total from 44 people. The number of room for all row housing shall depend on the formation of land lots as below clause. One household would plan as shared two industrial workers.

Table 15 Formula for Row Housing Designs

Total land lots area simple estimation by building coverage
2,666people – 44 people =2,622 people
2,622people ÷ 2 people =1,311 households
1,311× 17m ² =22,287m ² (Net Floor Area)
22,287/ 0.5(Building Coverage)= 44,574 m ² (Net land lot area)
If land lots for row housing would be more than 1,000 m ² , maximum building coverage could be 50%.

(3) **Formation of Land Lots**

After figuring out land lots area and rooms, we shall consider of the formation /division of land lots. JST shall study the formation for land lots as much as possible alternatives in order to prepare better structure for housing complex development.

Based on the following representative dwelling lot patterns, the layout and the site plan shall be prepared according to land-use plan and shape of the land lot.

1) **Dwelling for Apartment**

The divisions/formations of land lots shall plan/design to provide the diversity of choices/patterns for landowners. The situation that provides many choices would cause to plan many types of buildings to residents/industrial workers, not only one types of a room.

Table 16 Shape Analysis for Apartment

Name	Shape	Land lots area	Number of rooms	The number of blocks
Square Type		60m×30m×2 →3,600 m ²	48 rooms x 2	2 Blocks
		Only one stair is required because the long side of the building is short. Efficiency is high Number of the land lot might increase in the vast target area.		
L Shape Type		(78×30)+(42×30) →3,600 m ²	96 rooms for one apartment	1Block
		Distance to the entrance will be minimum. An Open space can be planned inside corner of the building. Road area will increase due to number of the corners		
I Shape Type		120m×30m→3,600 m ²	96 rooms for one apartment	1Block
		There is Advantage in financial efficiently and easy increase of floor area. It is necessary to plan multiple stair case according to long distance of long side of the buildings		

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2) Dwelling for Row House

The division of land lots shall plan/design to provide the diversity of choices/patterns for owners. The situation that provides many land lot choices would cause to plan many types of buildings to residents/industrial workers, not only one types of a room. Followings are the alternatives of the layout for row houses. However, floor coverage ratio and floor area ratio in neighbouring area shall be taken into account at the actual planning stage for the better and contextual town development in Hung Yen Province.

Table 17 Shape Analysis for Row House

Name	Shape	Land lots area	Rooms and Number of People	The blocks of land lots	Building coverage
4 Land Lots		45m×45m→2,025 m ²	4 × 14 Rooms × 2 Persons → 112 Persons	4	50%
		Attractive external space can be designed because building coverage is low. Land lots can be divided for finding many investors. However, internal road ratio might increase, accordingly.			
16 Land Lots		45m×45m→2,025 m ²	16 Row houses × 5 Rooms × 2 Person → 160 Persons	16	80%
		Common Space is provided in the center as the oval indicated. Land and buildings can be divided into small land lots so that small-scale investors can invest. The density is high due to number of buildings.			
1 Land Lots		45m×45m→2,025 m ²	20 Row House × 4 Rooms × 2 Persons → 160 人	1	75%
		Various space and buildings can be planned. Limited investors can participate because number of the building is large and land lots cannot be divided.			
16 Land Lots 2 Stories		45m×45m→2,025 m ²	16 Row House × 10 Rooms 2 Floors × 2 Persons → 320 人	16	80%
		Number of the population is the largest among the layouts. Density is also high compared with above-mentioned 16 land lots plan. Common Space is provided in the center as the oval indicated. Land and buildings can be divided into small land lots so that small-scale investors can invest.			

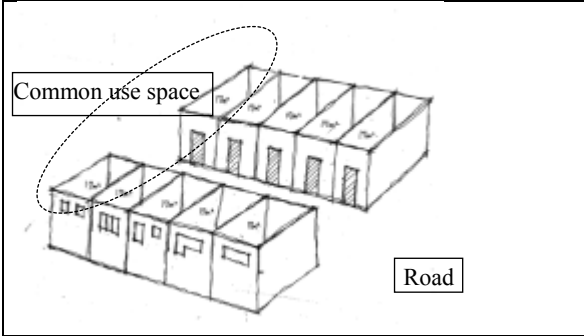


Figure 2 Image of Row Housing 2

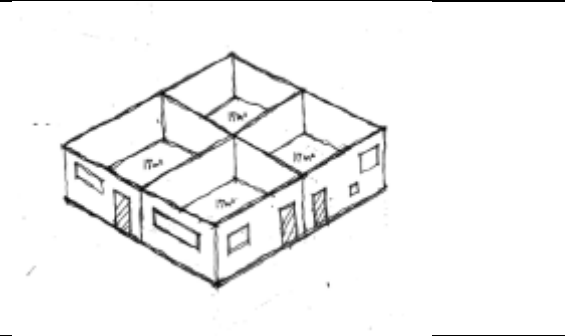
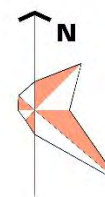


Figure 3 Image of Row Housing 3

DETAILED PLAN/ QUY HOACH CHI TIẾT
**PERSPECTIVE DRAWING - EAST-NORTH/
PHỐI CẢNH TỔNG THỂ - HƯỚNG ĐÔNG BẮC**

NOTE



IMPLEMENT OF ELEVATION FOR EAST-NORTH/ MẶT ĐỨNG TRIỂN KHAI HƯỚNG ĐÔNG BẮC

CƠ QUAN PHÊ DUYẾT:

KÈM THEO VẤN ĐÁP SỐ.....NGÀY.....THÁNG.....NĂM 2015

CƠ QUAN THẨM ĐỊNH:

CƠ QUAN CHỦ ĐẦU TƯ:

KÈM THEO VẤN ĐÁP SỐ.....NGÀY.....THÁNG.....NĂM 2015

CÔNG TRÌNH - ĐỊA ĐIỂM

TÊN BẢN VẼ

**PERSPECTIVE DRAWING - EAST-NORTH/
PHỐI CẢNH TỔNG THỂ - HƯỚNG ĐÔNG BẮC**

BẢN VẼ: QH-10 GHEP: A0 TỶ LỆ: 1/10/2015

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Figure 4 Bird's Eye View



Figure 5 Image of Land Use Distribution Map

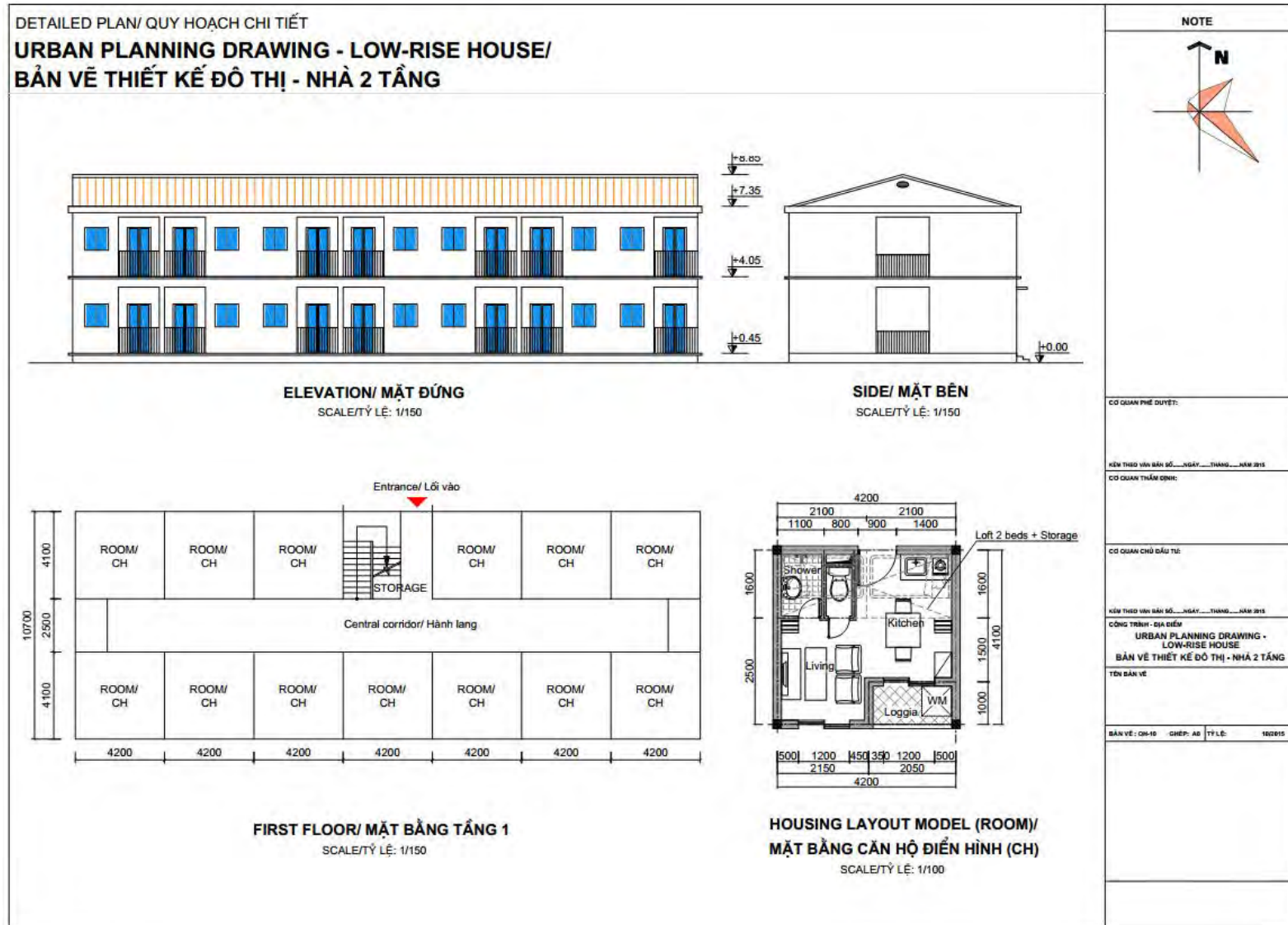
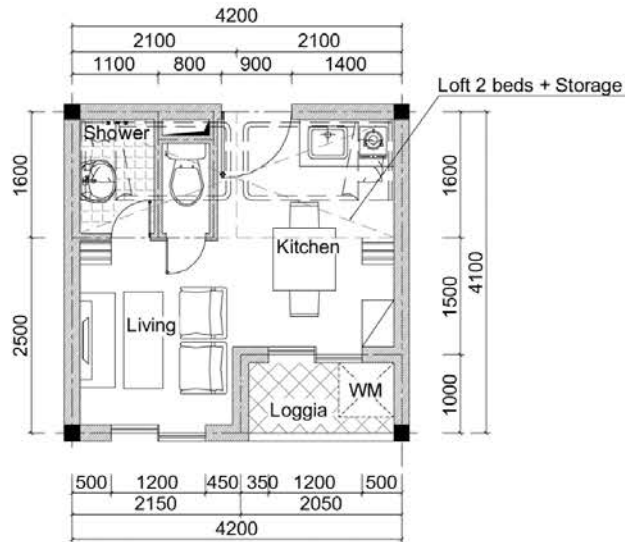


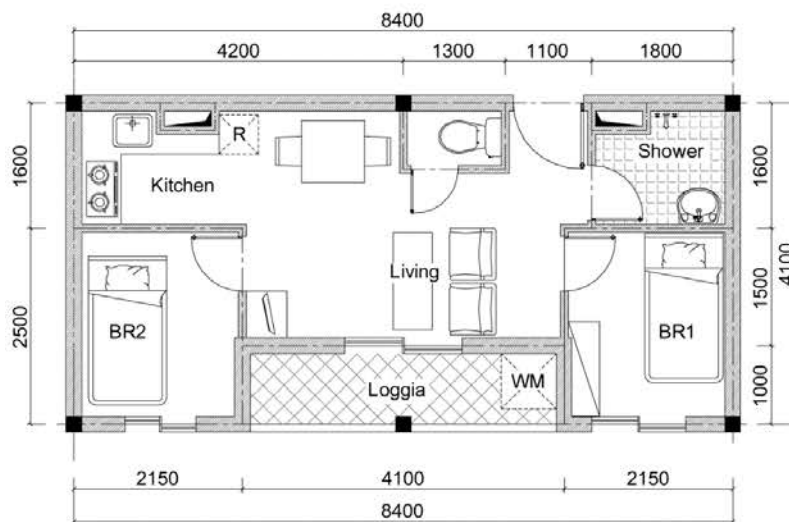
Figure 6 Design for Planning of Low Rise Housing

LOW-RISE HOUSING



PRESENT HOUSING

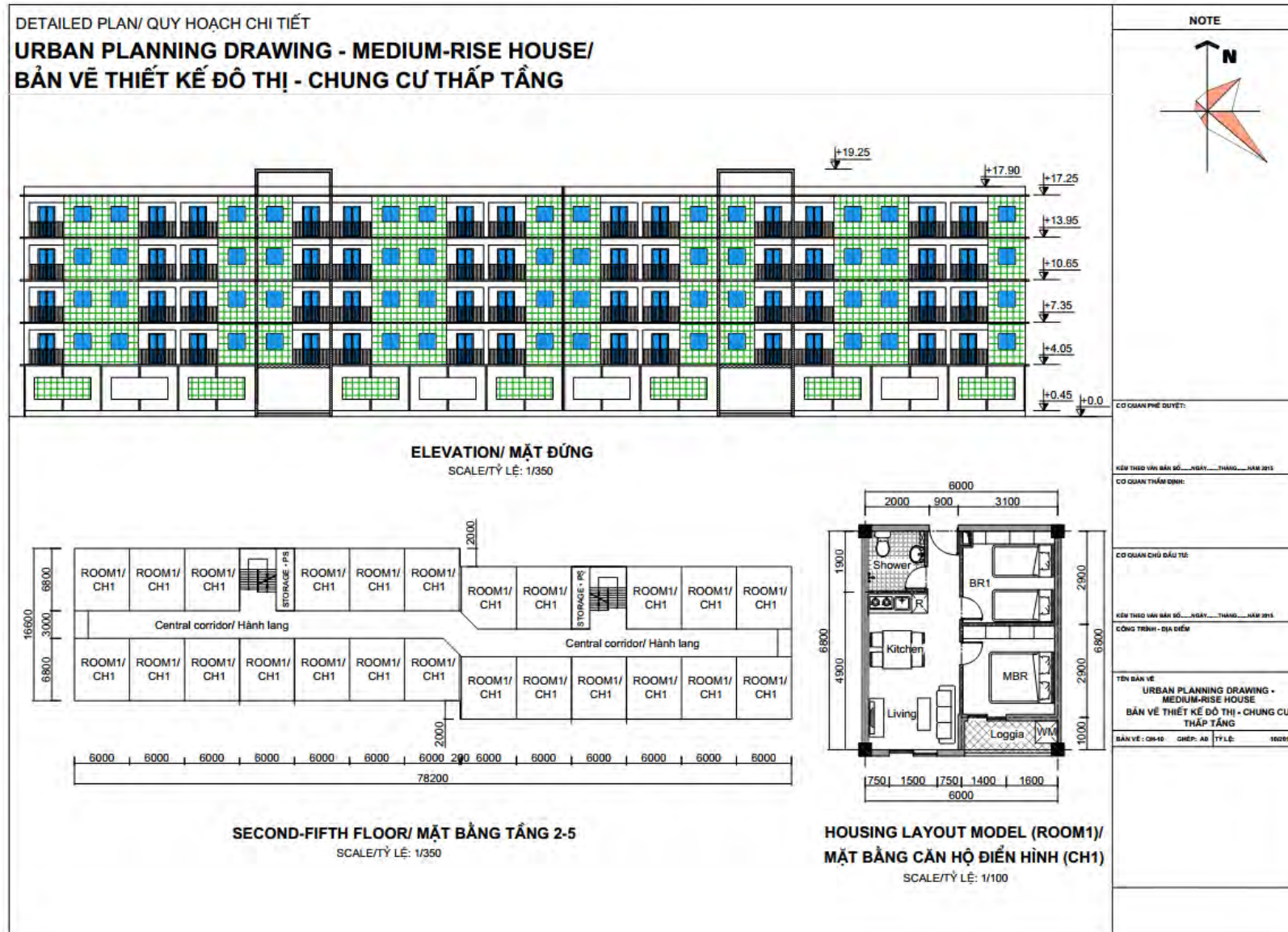
UNIT FLOOR AREA: 17.22M²



FUTURE HOUSING

UNIT FLOOR AREA: 34.44M²

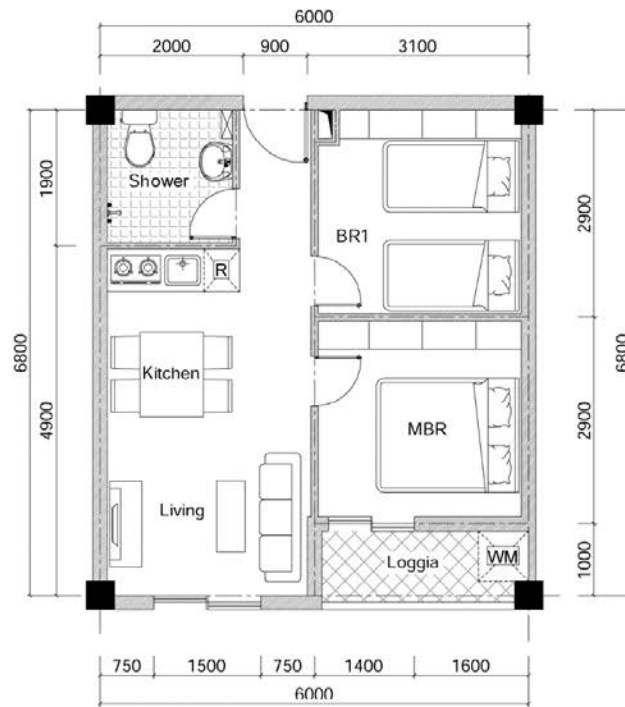
Figure 7 Ground Plan of Low Rise Housing (The Future Improvement)



A9-16

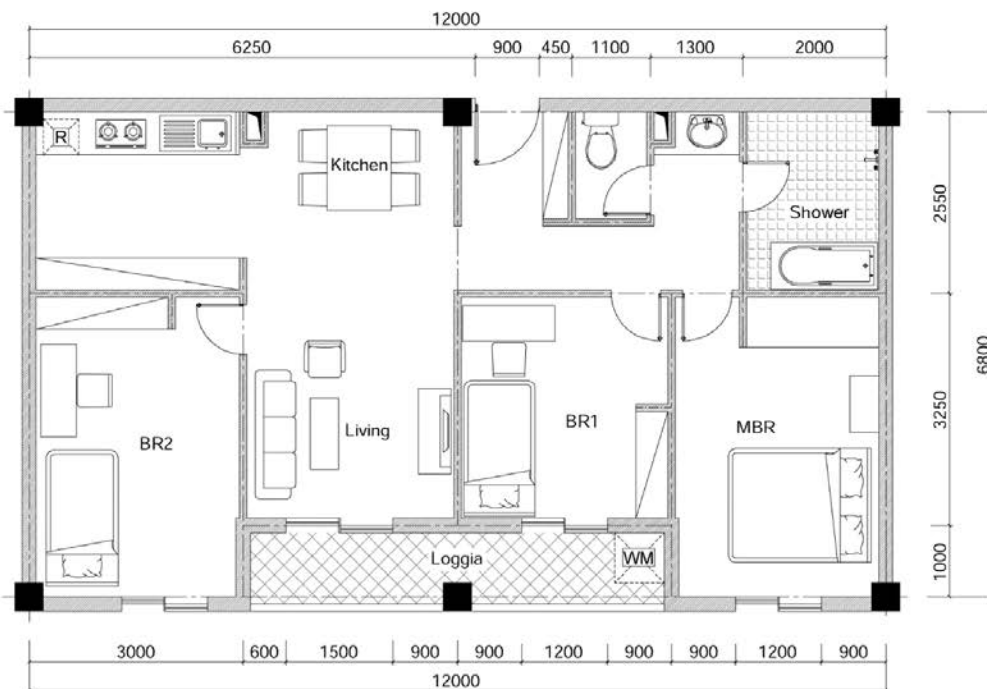
Figure 8 Planning and Design for Medium-Rise Housing

MEDIUM-RISE HOUSING (FAMILY TYPE)



PRESENT HOUSING

UNIT FLOOR AREA: 40.8M2

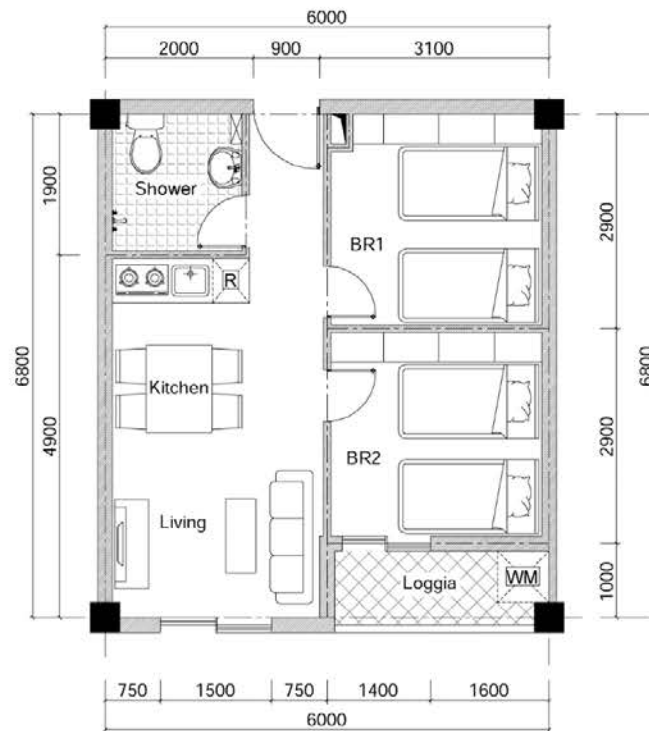


FUTURE HOUSING

UNIT FLOOR AREA: 81.6M2

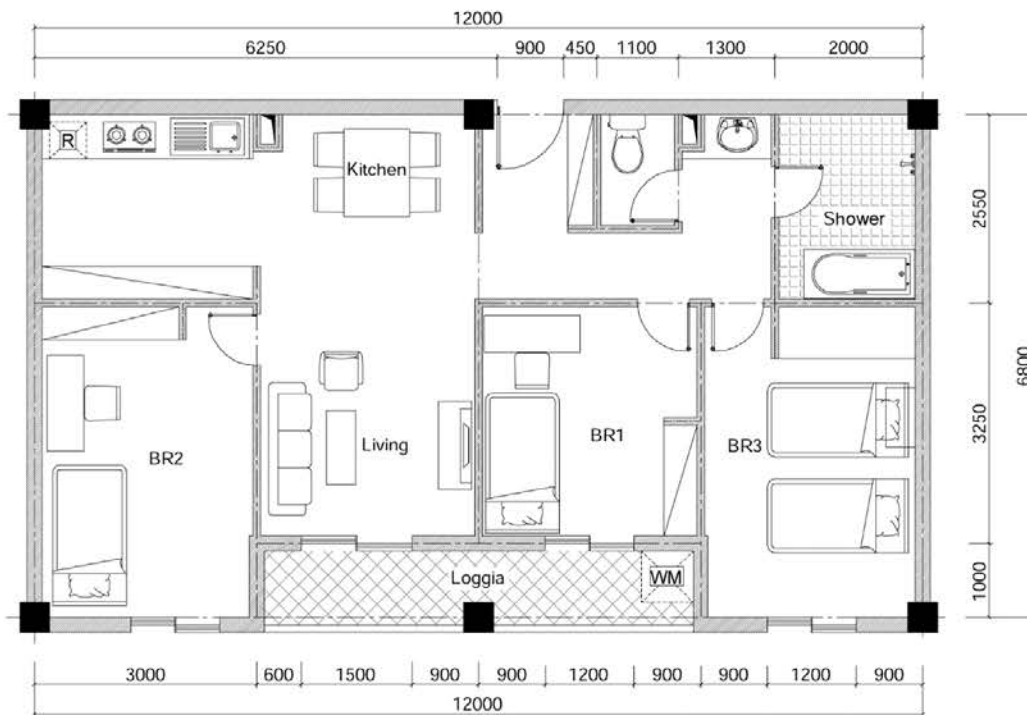
Figure 9 Ground Plan of Middle-Rise Housing (For Family Type) (Conversion Plan in the Future)

MEDIUM-RISE HOUSING (SINGLE TYPE)



PRESENT HOUSING

UNIT FLOOR AREA: 40.8M2

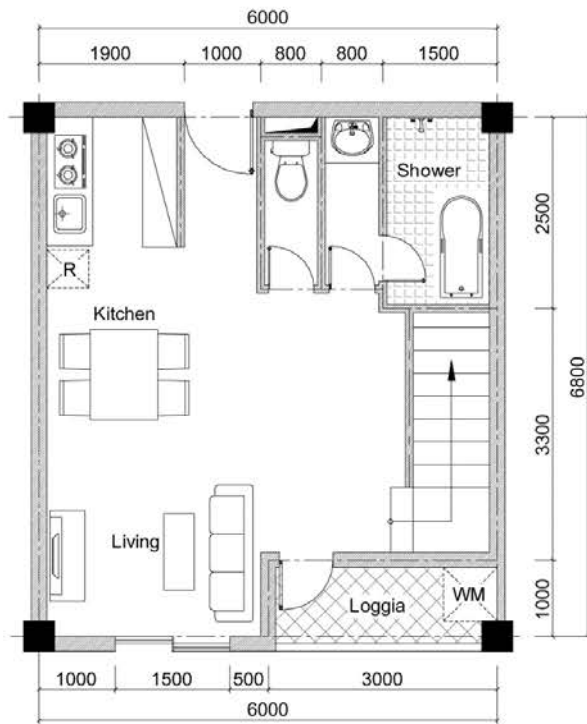


FUTURE HOUSING

UNIT FLOOR AREA: 81.6M2

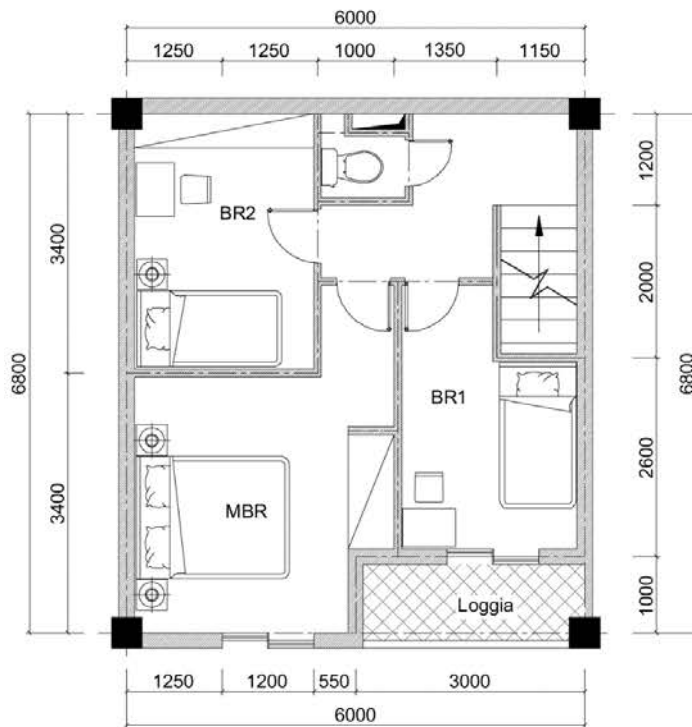
**Figure 10 Ground Plan of Middle-Rise Housing (for Single Workers)
(Conversion Plan in the Future)**

DUPLEX FLAT



2ND FLOOR HOUSING

UNIT FLOOR AREA: 40.8M2



3RD FLOOR HOUSING

UNIT FLOOR AREA: 40.8M2

Figure 11 Conversion Plan of Middle-Rise Housing (Case of Duplex)

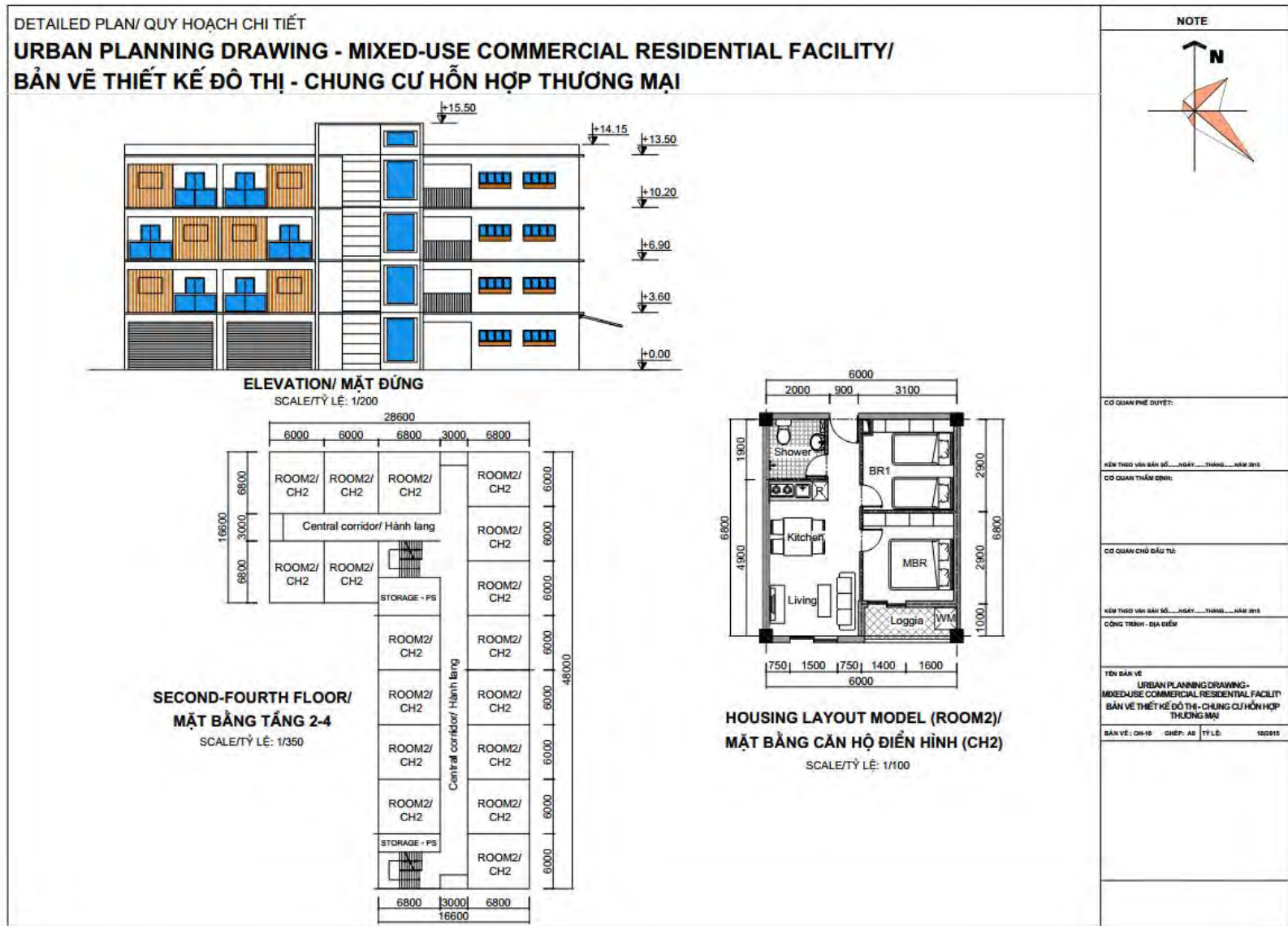


Figure 12 Planning and Design of Middle-Rise Housing (2)

**Annex 10 - Environmental and Social Considerations
for Model Study**

Annex-10 Environmental and Social Considerations for Model Study

10-1. Environmental and Social Impact Assessment

In this section, preliminary level evaluations (initial environmental examination) are conducted based on Vietnamese standards, instead of an ODA project, for the proposed design as a common labor housing project with private and/or public funds. However, as a technical assistance of JICA, JICA Study Team (JST) conducted assessments not only based on the Vietnamese regulatory requirement but also JICA Guidelines for Environmental and Social Considerations (2010) (JICA Guidelines).

(1) Objectives and Project Components

1) Aims of the environmental and social considerations

The principle objective of the environmental and social consideration for this study is to assess the potential impacts of the proposed designs in the early stages and assist strategic decision making not only for proponent of the project but also relevant key stakeholders including local authorities, in generally known as a “Strategic Environmental Assessment (SEA).”

As an example of a labor township for an industrial park/zone, JST and Ministry of Planning and Investment (MPI) with Hung Yen Provincial PPC had selected a site for a model township and prepared a detailed plan in accordance with Decree No.37/2010/ND-CP on formulation, appraisal, approval and management of urban planning. As a part of the detailed plan, SEA has been prepared by the JST in association with a Vietnamese certified environmental consulting firm in accordance with Circular No.01/2011/TT-BXD guiding the strategic environmental assessment in construction and urban plans (Ministry of Construction’s specific instruction of preparing SEA as per Decree No.37/2010/ND-CP).

In addition to the legal frameworks in Vietnam, JST and the local environmental consulting firm have also confirmed to the compliance with JICA Guidelines. Thus, the following SEA shall comply with both Decree No.37/2010/ND-CP and JICA Guidelines.

Since JST conducted baseline survey to understand the present condition, the SEA prepared by JST could be able to use as the basis of the following environmental impact assessment (EIA) required by Law on Environmental Protection (2014) and its decree No.18/2015/ND-CP on Environmental Protection Planning, Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Plans.

Table 1 Comparison of Project Components’ Area by Alternatives

Item		Alternative 1 6,000 persons	Alternative 2 9,000 persons	Alternative 3 12,000 persons
Residential Area	Single labors	1.4 ha	2.1 ha	2.2 ha
	Families	4.0 ha	6.0 ha	6.0 ha
	Superior	2.5 ha	0.0 ha	0.0 ha
	Sub-total	7.9 ha	8.1 ha	8.2 ha
Commercial Area		3.70 ha	2.85 ha	2.40 ha
Public Infrastructure	Social Infra.	2.1 ha	2.6 ha	2.8 ha
	Green area	0.30 ha	0.45 ha	0.60 ha
	Sub-total	2.40 ha	3.05 ha	3.40 ha
Roads		4.30 ha	4.30 ha	4.30 ha

Source: JST

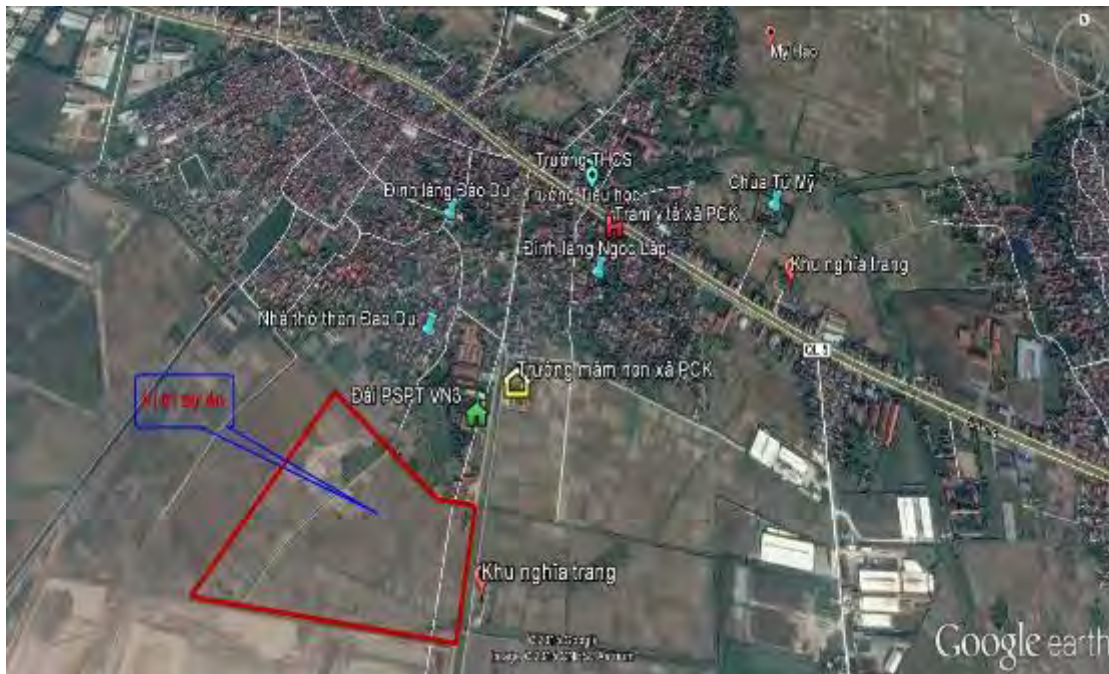
Public infrastructure includes, green/park area, schools (pre-school, primary and secondary), rainwater drainage, a water supply (a well, purification facilities, tank(s)), wastewater treatment, and electric supply systems. To be completed shortly.

(2) **Present Natural and Social Condition**

1) **General Description of the Model Site and Surrounding Communities**

The model site is a total of 18.2 hectare consisting of only tombs and paddy field with its water channels and footpaths in Phung Chi Kien commune in My Hao district subjected to accommodate labors for Thang Long Industrial Park II and Pho Noi Textile and Garment Industrial Park in the future. Phung Chi Kien commune connects to communes of Di Su, Cam Xa, Bach Sam to the North; commune of Bach Sam to the East; communes of Xuan Duc, Di Su and Thang Long Industrial Park to the South and commune of Di Su to the West (Figure 1). All communes belong to My Hao district of Hung Yen province.

Phung Chi Kien commune has an area of 444.48 ha and a population of 5,520 inhabitants of 1,777 households (2014). Based on the JST’s observation, the study area contains mainly paddy field (15.0 ha), small vegetable field, aquaculture pond, 99 graves (3 separate locations). Based on the field observation, past farmland distribution programs in the region, and consultation with commune PC, it is estimated that number of project affected households would be 350.



Source: Prepared by JST on Google Earth Image

Figure 1 Model Site and its Surrounding Condition

2) **Topography and Geology**

Topography: the terrain of the project site is flat with very small average ground slope (from 0.001% to 0.008%). The area with the highest altitude (from 3.5m to 5m) concentrates in the Northwest urban area of Ban Yen Nhan town. The average altitude (from 2.5m to +3.5m) is in Nhan Hoa, Di Su, Bach Sam and Phung Chi Kien commune. The lowest altitude (+1.6m to +2.5m) is in Minh Duc commune.

Geology: According to the geological data of Hung Yen province, the project site is located at ancient alluvial zone formed by unconsolidated sediments of Quaternary Period with a thickness of 150m-160m, following the stratigraphic sequence. There are soil and rock type as follows: (1) the Pleistocene sediment: thickness is 130m to 140m with coarse sediments including grit, gravel, coarse sand, medium sand with interspersed silt clay lenses, (2) the Holocene sediment: thickness is 5m to 30m, which is mainly composed of sandy clay, silt clay, clay contains organic, distributed on

the stratigraphic surface. With geological viewpoints, My Hao district area is favorable for urban construction.

3) **Climate**

The model site is located in the tropical monsoon climate region with 4 seasons in a year (summer and autumn rainfall, and atmospheric temperature are high; winter and spring rainfall, and temperature are low). The annual average temperature is 24–25 degree. The annual rainfall is 1,500 – 1,600 mm. The annual average relative humidity is 87.5%. Total annual sun hours are 1,320, and monthly average sunny days are 24.

There are two dominant wind directions in a year: Northeast wind in winter and southeast wind in summer. In June and July dry wind occurs at Hung Yen Hydro meteorological Station (106003' E, 20040' N) located roughly 30 km from the study area.

4) **Hydrology**

Phung Chi Kien commune is influenced by the hydrological regime of Bac Hung Hai irrigation systems:

- Bac Hung Hai River run along the south boundary of My Hao district with the length of 6km and the width of the river is from 70m to 100m. The river water levels are regulated and controlled to average level of +2.0m, in the rainy season it can be up to +4.2m.
- Ban – Vu Xa River and Cau Dau River have important role in providing water for irrigation serving production and daily life activities in the region.
- Due to the regulated irrigation systems around the project site, it would be rarely flooded.

5) **Environmental Quality (Air, Noise, Surface Water, Groundwater, Soil)**

Based on the site survey in June 2015 by JST, the present quality of the physical environment: air, noise and vibration, surface water, groundwater, soil in and around the model site is as follow:

a. **Air Quality**

- Dust concentrations at all monitoring sites varied from only 0.02 to 0.03 mg/m³, which are much lower than the maximum permissible limit of the Vietnam National Technical Regulation for Ambient Air Quality (QCVN 05:2013/BTNMT). Dust concentrations were highest at the sites closed to Thanh Long II industrial park (K1, K6, K7, K8: 0.03 mg/m³) and closed to residential sites.
- SO₂ concentrations varied from 0.03 to 0.04 mg/m³, which are much lower than the maximum permissible limit of the Vietnam National Technical Regulation for Ambient Air Quality (QCVN 05:2013/BTNMT for SO₂ : 0.35 mg/m³).
- NO₂ concentrations varied from 0.02 to 0.03 mg/m³, which are much lower than the maximum permissible limit of the Vietnam National Technical Regulation for Ambient Air Quality (QCVN 05:2013/BTNMT for NO₂ : 0.20 mg/m³).
- CO concentrations varied from 1.5 to 2.5 mg/m³, which are much lower than the maximum permissible limit of the Vietnam National Technical Regulation for Ambient Air Quality (QCVN 05:2013/BTNMT for CO : 30 mg/m³).



Source: Prepared by JST on Google Earth Image

Figure 2 Air and Noise Monitoring Points (June 2015)

b. Noise

At present noise levels at the study and surrounded areas vary only from 47.6 to 63.3 dBA. All survey points around the model site are under the National Technical Regulation for Noise (QCVN27:2010/BTNMT) for common areas in day time (from 6:00 AM to 9:00 PM: 70 dBA).

c. Surface Water Quality



Source: Prepared by JST on Google Earth image

Figure 3 Surface Water Monitoring Points (June 2015)

i) Organic Matters

At 5 sampling sites values of DO vary from 3.04 to 4.89; BOD5 vary from 8.14 to 12.5mg/L; COD: from 28 mg/L to 46 mg/L. In comparison with the permissible limits in National Regulation for Surface Water Quality (QCVN08:2008/BTNMT), it may evaluate that at present organic pollution in the monitoring sites is evident: it exceeds the limit for the Water Source A2 (water may be used

as raw source for clean water treatment plants). However, it still meet the requirement of Water Source B1 DO, BOD and COD of which are 4.0 mg/L, 5 mg/L and 30 mg/L, respectively. Organic pollution sources are likely run-off water from cultivated fields, animal husbandry and residential areas.

ii) Inorganic matters

Nutrient pollutants evaluated by concentrations of NH_4^+ , NO_3^- , total N and total P:

- At 5 monitoring sites NH_4^+ vary from 0.54 mg/L to 3.71 mg/L, which greatly exceeded the permissible limit for Water Source B1 in National Technical Regulation for Surface Water Quality QCVN 08:2008/BTNMT (for B1: NH_4^+ = 0.5 mg/L).
- Concentrations of NO_3^- vary from <0.01 mg/L to 0.03 mg/L, which much lower than the permissible limit for Water Source B1 of QCVN 08:2008/BTNMT (for B1: NO_3^- = 10 mg/L).
- Concentrations of total P vary from 1.94 mg/L to 6.89 mg/L, and total N: from 4.04 – 9.41 mg/L.

From the above data it may evaluate that at present nutrient pollution at the sampling sites is evident. In the conditions of high concentrations of NH_4^+ , total N and total P eutrophication may be easily created at that canals, creeks and ponds.

iii) Oil pollution

At present oil pollution at all sampling sites is very significant: oil contents exceed the permissible limit from 2 to over 8 times. Oil pollution may come from illegal dumping in the oil substances in the drainage channel in the region.

iv) Heavy metal pollution

Although Cr, As, Cd are confirmed in the water, the concentrations of Cr, As, Cd are much lower than the permissible limits in QCVN 08:2008/BTNMT. Water pollution by heavy metals is not a problem at the monitoring sites.

v) Bacteria pollution

Bacteria pollution is evident: 3/5 sites have values of total Coli form exceeding the permissible limit (for B1: 7500MPN/100mL). Bacteria pollution likely comes from sewage, domestic wastewater, and animal wastes from residential areas to drainage canals and fields without treatment.

d. Groundwater Quality

The monitoring result indicates that at present groundwater quality at the sampling sites is good for drinking, of which all physic-chemical parameters meet the permissible limits of National Technical Regulation for Groundwater Quality (QCVN 09:2008/BTNMT). Only slight bacteria contamination is found at 1/5 well.



Source: Prepared by JST on Google Earth Image

Figure 4 Groundwater Monitoring Points (June 2015)

e. Soil Quality

Soil samples were taken at a depth of 15-20cm from the surface at 5 sites in the centre and surrounding sites of the study area. From the monitoring results it may conclude that at present contents of heavy metal (As, Cu, Pb and Zn) at the study area are much lower than the permissible limits for agricultural land as well as residential area development.



Source: Prepared by JST on Google Earth Image

Figure 5 Soil Monitoring Points (June 2015)

6) Biological Environment

Based on the field survey in June 2015, at present, only two ecosystems exist at the model site: paddy field ecosystem and field dams (“bờ vùng bờ thửa” in Vietnamese) ecosystem. In addition, at the border of the model site, there are garden ecosystem in residential area and aquatic ecosystem at creeks, canals and ponds.

7) Present Socio-Economic Conditions

i) General Information of Phung Chi Kien commune

Phung Chi Kien commune, which hosts the site to study for setting up a specific region for workers, is the center of My Hao district with a geographic position as below. It borders: Di Su, Camxa and

Bachsam communes in the North; Bachsam commune in the East; Xuanduc, Hunglong in the South; and Di Su commune in the West. It covers 444.48ha with a population of 5,500 people (1,777 households).

ii) Existing socio-economic conditions of Phung Chi Kien commune

Economy

In the first half of 2015, the total production is estimated at 930.2 billion VND, which meet 55% of the year plan and increase by 16% over the first half of 2014. In details, agriculture accounted for 11.2 billion VND, industry – small industry and handicraft 28.9 billion VND, and service – trading 53.1 billion VND.

The economic structure has changed with agriculture shrinking to 12%, industry - small industry - handicraft and service – trading increasing to 31% and 57% respectively.

Agriculture

Cultivation:

The winter – spring crop area in 2015 is 167 ha. This year, steering for that crop is the focal political task of the district because of unfavorable conditions such as abnormal weather changes, long-lasting drought, high prices of fertilizers and pesticides, etc. 100% of the area have been planted with 90% directly sowed and 10% transplanted.

Watering conduits have been cleaned, and field dams consolidated and irrigation gates installed.

Breeding:

Breeding has faced on myriad difficulties due to epidemics and high prices of feed, but the total number of cattle and poultry is still on the rise. The production value of breeding and aquaculture is estimated at 4.48 billion VND, equivalent to 40% of agriculture.

Industries, small industries and handicrafts

The crossing of National Road 5A and the location adjacent to industrial clusters are great advantage to the district. The number of employees of enterprises in the district is on the rise. To date, there are 18 private companies and families to develop industrial production in the district. It is reported that 857 local employees are working for offices and companies in the district (with more than 600 having stable and good income). The corporate income in the first six months of 2015 reached 28.9 billion VND, accounting for 31% of the economic structure.

Service and trading

Reportedly, 245 families are earning income from service and trading. There are 60 automobiles of various kinds. Many families have invested in machines and equipment for mechanization of agriculture and farm produce processing with high economic effects.

iii) Administration

Land administration

The district made the General Construction Plan My Hao district to 2020, Vision 2030 in 2012 and the plan was approved by the prime minister. The construction is the principal of the land administration plans for Phung Chi Kien commune.

Social policies

Propaganda is furthered for good implementation of state policies, protection of legal rights for people, and mobilization for people to contribute into local funds. Subject matters of social welfare are well examined and selected in compliance with laws. Families facing on difficulties and

misfortunes are assisted in due time. Policies are well implemented to support families with members joining the army.

In 2014 My Hao district was accredited by the Ministry of Construction as town of grade 4, and Phung Chi Kien commune is planned as the center of My Hao town in the future. The whole commune accomplished the New Rural Area Program in 2014.

Cemetery and Environmental Management Infrastructure

The district has made plans for 3 cemeteries at Longdang, Tummy and Nghialo.

There are 2 dump sites (1 in the north and 1 in the south of Road 5 to Haiphong). Each hamlet has a cart to collect waste.

There are no sewage treatment and residential wastewater treatment facilities at this moment. Thus, it is necessary for the proposed model township to install water treatment facility by itself.

(3) Legal Frameworks for Urban Planning and Environmental and Social Consideration

1) Vietnamese Legal Frameworks

Considering the applicable legal frameworks for Improvement of Living Conditions for Workers around Industrial Zones, applicable legal frameworks are as follows:

- Law on Organization of the Government, 25 December, 2001
- Law on Urban Planning, 17 June, 2009
- Law on Construction, 18 June, 2014
- Law on Environmental Protection, 23 June, 2014
- The National Strategy of Environmental Protection toward 2020, version to 2030 issued by the Prime Minister (Decision N1216/QĐ- TTg, dated 5th September 2012) indicated some main orientations in environmental protection.

Urban Planning Stage (This study):

- Decree 37/2010/ND-CP dated 7th April, 2010 on the Formulation, Evaluation, Approval and Management of Urban Planning
- Circular No.01/2011/TT-BXD dated 27 January, 2011 of Ministry of Construction, guiding the strategic environmental assessment in construction and urban plans

Project's Approval 1 (Following stage):

- Decree 18/2015/ND-CP dated 14th February, 2015 of the Government on Guidelines on SEA, EIA and CEP. In this Decree detailed guidelines for project classification, EIA procedures, public consultation in EIA process, and EIA appraisal are given.
- Circular 27/2015/TT-BTNMT dated 29 May, 2015 of Ministry of Natural Resources and Environment (MONRE) on SEA, EIA and Environmental Protection Plans

Definitions and methodologies of the SEA are different between Decree 37/2010/ND-CP and Decree 18/2015/ND-CP. After the confirmation of applicable legal frameworks with MPI at the TWG on 1st September, JST followed the Decree 37/2010/ND-CP for the purpose of the urban

1 In accordance with Decree 18/2015/ND-CP, the proposed project is categorized as "CATEGORY A" and full scale EIA, and an approval of Ministry of Natural Resource and Environment (MoNRE) will be required due to the more than 10 hectares change of paddy field into non-agricultural land.

planning and its authorization. Unlike the Decree 18/2015/ND-CP and its Circular 27/2015/TT-BTNMT, Decree 37/2010/ND-CP and its Circular No.01/2011/TT-BXD do not specify details of SEA methodologies and appraisal processes. Based on Circular No.01/2011/TT-BXD, SEA steps and its appraisal are summarized as follow:

Table 2 SEA Steps and Appraisals Authorities

<p>SEA Steps (Article 5)</p> <ol style="list-style-type: none"> 1. Conducting investigations, surveys, information collection, and determination of strategic environmental assessment scope. 2. Identifying the objectives and main environmental issues related to construction planning. 3. Analyzing current environmental conditions and developments when the construction planning is not yet formulated. 4. Analyzing environmental developments when the construction planning is implemented. 5. Proposing overall solutions to minimize and redress environmental impacts. 6. Making a strategic environmental assessment report in the explanation of the construction plan.
<p>SEA Appraisal (Article 22)</p> <ol style="list-style-type: none"> 1. The <u>Planning Architecture Department</u> (the Ministry of Construction), provincial-level <u>Departments of Construction</u>, Architecture Planning Departments of Hanoi and Ho Chi Minh City shall inspect and examine the compliance with requirements on SEA in construction plans under their respective management. 2. The <u>Science, Technology and Environment Department</u> shall act as a focal point assisting the Minister of Construction in managing and guiding SEA activities, periodically review and report thereon to the Ministry's leadership

Source: Circular No.01/2011/TT-BXD

2) **Comparison of Vietnamese Legal Frameworks and JICA Guidelines**

Considering the category of the JICA study for a master planning and a model site design, it was set as Category B study at the time of Record of Discussion between JICA and MPI in 2014, and it is confirmed the Category B study by the JST. Since this JICA study has been conducted as a technical assistance, JST refers the section 3.4 Technical Cooperation for Development Planning, particularly 3.4.3 of “Full Scale Study Stage Master Plan Study. JST confirmed the requirement of SEA of Circular No.01/2011/TT-BXD fullfills the JICA Guidelines. Comparison of the key elements is shown below.

Table 3 Comparison of Key Element of SEA

	JICA Guidelines	Circular No.01/2011/TT-BXD
Baseline	2. JICA collects relevant information and conducts field surveys covering a wider area than that of the detailed plan preparatory study stage, holds consultations with project proponents etc., and prepares scoping drafts.	3. Analysis and assessment of the environmental situation and developments without construction plan is not implemented
Scoping and Consultation	3. For Category B studies, project proponents etc. consult with local stakeholders after the disclosure of scoping drafts when necessary.	1. Introduction (Scope and contents of SEA) 2. Main environmental issues and objectives related to construction planning <Consultation is not specified>
SEA and Environmental Management Plan	4. TOR includes understanding of needs, impacts to be assessed, study methods, analysis of alternatives, a schedule, and other items. JICA applies a SEA to such studies. 5. In accordance with TOR and in collaboration with project proponents etc., JICA conducts IEE-level environmental and social considerations studies, and analyzes alternatives, including “without project” situations. During studies, JICA incorporates its results into related reports prepared accordingly.	4. Analysis and forecast of environmental impacts and developments with construction plan: a/ Assessment of the consistency of planning viewpoints and objectives as well as environmental protection objectives; b/ Identification of major environmental developments and impacts; c/ Analysis, calculation, forecast and quantification of environmental impacts and developments on the basis of data of construction planning options. Results of environmental impact and development analyses for construction planning options must be tabulated for comparison and use as a basis for selection of construction planning options; d/ Analysis, forecast and quantification of environmental impacts and developments in the course of implementing construction planning; e/ Construction planning solutions to minimize and redress the identified environmental impacts and developments. 5. Technical solutions to control pollution prevent and mitigate natural disasters or respond to environmental incidents, control environmental impacts; environment management and supervision plans.

Source: JICA Guidelines and Article 18 of Circular No.01/2011/TT-BXD

(4) Evaluation of Alternatives and No-Project Option

1) Project Components

The model site is a total of 18.3 hectare consisting of only tombs and paddy field with its water channels and footpaths in Phung Chi Kien commune in My Hao district subject to accommodate labors for Thang Long Industrial Park II and Pho Noi Textile and Garment Industrial Park.

Since the project location was already set by Hung Yen PC and JST, for the purpose of SEA, JST set “Two design capacities of labors” for the proposed township as the alternatives with no-project option. In general, project components are same among alternative, but the capacity of such components are different in accordance with the requirements of providing necessary services for labors. The following table shows the comparison of components’ area for each alternative.

Table 4 Comparison of Project Components' Area by Alternatives

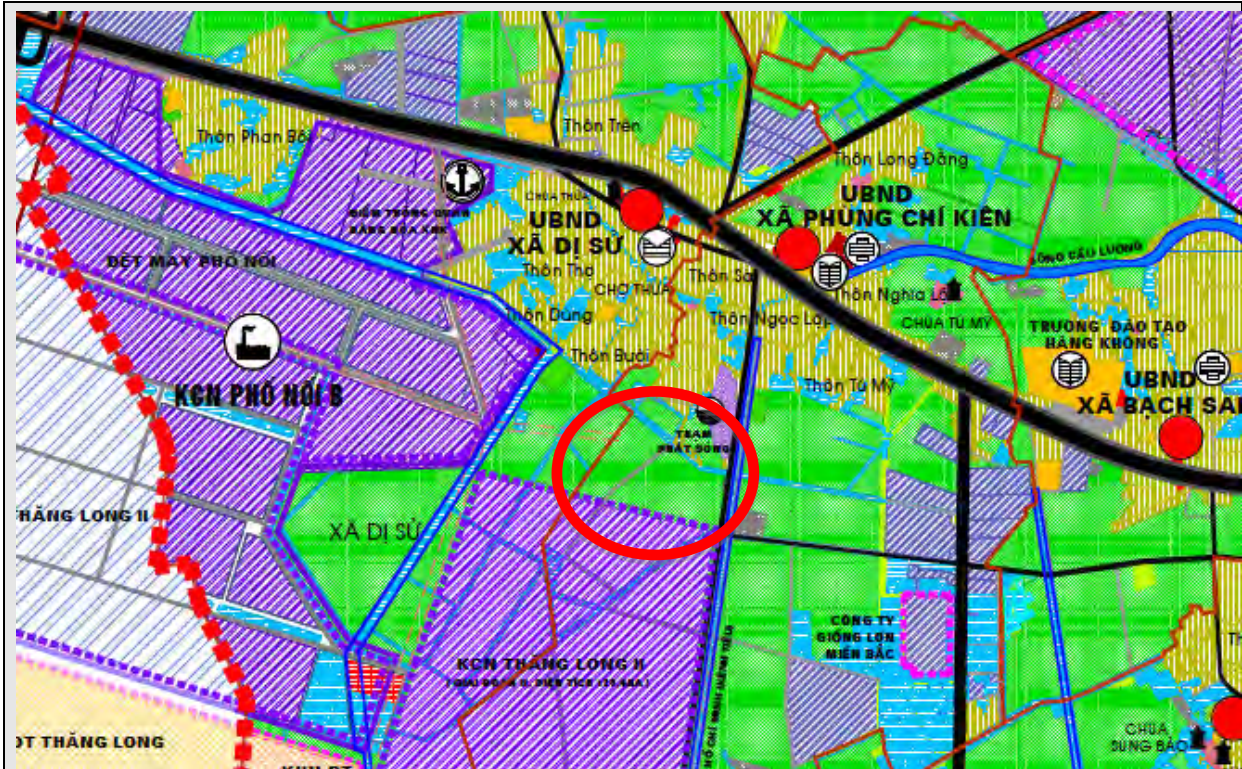
Item		No-Project	Alternative 2 9,000 persons	Alternative 3 12,000 persons
Residential Area	Single Labors	0.0 ha	2.1 ha	2.2 ha
	Families	0.0 ha	6.0 ha	6.0 ha
	Superior	0.0 ha	0.0 ha	0.0 ha
	Sub-total	0.0 ha	8.1 ha	8.2 ha
Farm Area		18.3 ha	0.0 ha	0.0 ha
Commercial Area		0.0 ha	2.85 ha	2.40 ha
Public Infrastructure	Social Infra.	0.0 ha	2.6 ha	2.8 ha
	Green area	0.0 ha	0.45 ha	0.60 ha
	Sub-total	0.0 ha	3.05 ha	3.40 ha
Roads		0.0 ha	4.30 ha	4.30 ha

Source: Prepared by JST

Public infrastructure includes, green/park, schools (pre-school, primary and secondary), rainwater drainage, water supply (ground well, purification facilities, tank(s)), wastewater treatment, and electric supply systems.

a. Alternatives

Commonly the site selection is the typical alternatives for planning stage SEA. However the site selection was completed by relevant authorities and JST in the early stage of this study so that JST decided to set alternative based on design capacity of labors, which follows section 7.2 of "Planning Specifications of Model Site as Typical Residential Unit." Since primary objective of the study is to provide affordable and better living condition for workers by providing housing in township schemes, labor capacity of 9,000 and 12,000 are selected. Capacity of 6,000 labors was withdrawn due to lower efficiency of land use and investments likely to lead unaffordable high price housing for common labors (ref. section 7.2). Figure 6 shows the general concept of the alternatives and their project components.



Source: General Construction Plan My Hao District to 2020, Vision 2030

No-Project (Paddy Field: Light Green)



Source: Prepared by JST

Alternative 1 : Design capacity 9,000 persons

- Principally **no layout change**
- Raise medium-rise housing (light green) to 5-6 stories from 4 stories to accommodate more workers
- Raise school buildings and other public facilities if it is necessary to supply adequate functions
- Compliances with all regulations for water supply, sewage treatment and discharge, and ground/surface water resource use

Alternative 2 : Design capacity 12,000 persons

Figure 6 Outlines of Alternatives and No-Project Option

b. No Project Option

Although My Hao district has its General Construction Plan My Hao District to 2020, Vision 2030, JST expects “No-Project option” as no land use change that leads present paddy field without improvement of social infrastructures in the surrounding communities.

2) Comparison of Alternatives

Initial environmental examination (IEE) level impact assessment for no-project option and 2 alternatives are considered. As the SEA level evaluation, key negative and positive impacts after necessary mitigation measures as well as improvement of the workers’ living condition (primary

objective of the study) are focused. The comparison with overall evaluation table with is shown below.

Table 5 Comparison of Project Impacts by Alternatives and No-Project Option

Item of Impact	No-Project	Alternative 1 9,000 persons	Alternative 2 12,000 persons
Pollution			
1 Air pollution	D: No impacts are expected	B-: Despite other project impacts by the industrial road inside the township project site, certain air pollution is expected from passing vehicles. Negligible impacts are expected from residents.	B-: As same impacts as Alternative 1 is expected.
2 Water pollution	B-: Contamination of water resources are expected from continuous urban development in the surrounding communities without proper water treatment.	B-: Minimal impacts are expected from surrounding communities with necessary water treatment as same manner as township. Minimal impacts are expected from the township's water treatment facility, but it shall comply with Vietnamese regulations.	B-: As same impacts as Alternative 1 is expected. In spite of larger water treatment facilities, impacts shall be minimal with required water treatment as per regulations.
4 Waste	D: No impacts are expected in spite of regular agricultural waste.	B-: Minimal impacts are expected with proper municipal waste management.	B-: As same impacts as Alternative 1 is expected.
5 Noise and vibration	D: No impacts are expected in spite of regular agricultural waste.	B-: In spite of the other project impacts by the industrial road inside the township project site, certain noise and vibration impacts are expected from passing vehicles. Negligible impacts are expected from residents.	B-: As same impacts as Alternative 1 is expected.
Natural Environment			

Item of Impact	No-Project	Alternative 1 9,000 persons	Alternative 2 12,000 persons
Water use	D: No impacts are expected.	B-: Minimal impacts are expected from the township's ground water use for drinking water supply.	B-: As same impacts as Alternative 1 is expected. In spite of larger water supply facilities, impacts shall be minimal as per ground water resource regulations.
Social Environment			
7 Involuntary resettlement	D: No impacts are expected.	A-: More than 200 agricultural households will permanently lose agricultural land. However, those project affected households have chances to receive free vocational training in urban societies or receive necessary farmland for maintaining livelihood.	A-: As same impacts as Alternative 1 is expected.
8 Local economies, such as employment, livelihood, etc.	B-: No further employment and higher agricultural productivities are expected in spite of continuous urbanization and rising demand for new job for young people.	A+: Not only target industrial zones but also common services, such as grocery shops, restaurants/cafe, mobile, and motorbike development are expected in the township and surrounding communities.	A+: As same impacts as Alternative 1 is expected.
9 Living Condition of Workers	A-: Poor living conditions will remain or get worse along with more and more workers needs housing close to industrial zones. Especially, workers out of surrounding communities will have difficulties to find an appropriate space to live.	B+: Better living condition is expected. Rather longer term residents may establish a model modernized society in the region and lead modernization of the region from agricultural rural communities to urban societies.	B+: It would be less comfort, but better living standards will be ensured for workers. Positive effects of the surrounding communities to transform the modernization with necessary social infrastructure would be as same as Alternative 1.
Others			
10 Accident	D: No impacts are expected.	B-: In spite of the other project impacts by the industrial road inside the township project site, certain traffic accidents are expected among passing vehicles and motorcycles and crossing residents. Both drivers and residents' behavioral change efforts must be continuously enforced in the society.	B-: As same impacts as Alternative 1 is expected.
11 Ease of Investment/ Development	D: It is not applicable	B-: In spite of less low-priced housing, Township investment would be additional but "medium-rise" housing investments would be reasonable as per new investment regulations and to keep attracting good workers	A-: In spite of more affordable housings for workers, high-rise township investment would be much harder challenge than that of medium-rise for investors/developers due to higher initial investment and uncertainties of return on investment. As a result, it would take more time or less chance to improve the workers' living standard.

Item of Impact	No-Project	Alternative 1 9,000 persons	Alternative 2 12,000 persons
Total Evaluation	<p>In spite of the most favorable options for present paddy field farmers, it is not recommended.</p> <p>First of all, no-project does not comply with the provincial and district's economic development strategy and its land use plan. Losing an opportunity to transform the modern society would negatively affect the privatives investment in the industrial zones and indirect service development in the region. Due to the lack of enforcement of building codes and sanitary social infrastructure development in such surrounding communities, majority of labors' living conditions are poor, particularly limited space and insufficient hygienic condition (JST's labor survey²).</p>	<p>In spite of certain numbers of involuntary resettlement for present paddy field farmers, Alternative 1 is the most recommended.</p> <p>Based on JST's labor survey², majority of the labors are less than 30 years old and roughly 50% of labors come from their parents or relatives' houses in the surrounding communities. The other half workers rent or share houses by themselves with family or other coworkers. As available labors are limited in the surrounding societies, more housing is surely required in the future. Affordable and clean/healthy housing supply would greatly affect the decision making of labors. Especially from the viewpoint of securing stable and higher productive workers, it would be reasonable investments for investors/developers.</p>	<p>In spite of more preferable option for low-mid income workers, Alternative 2 is not recommended.</p> <p>Because of less favorable option for investors/developers of township, it would cause more time to make a decision and it would be more chances to fail actual implementation. Especially in the case of the proposed model township development, reasonable priced land is still available in the surrounding area, it is recommended to start development smaller but faster at this stage.</p>

Source: prepared by JST

Note: A+/-: Remarkable Positive/Serious Negative Impact is predicted,
B+/-: Positive/Negative Impact is expected to some extent, D: Impact is very small or negligible

(5) Scope of Impacts and ToR for Strategic Environmental Assessment

As assessed in the previous section, capacity of 9,000 community size township (Alternative 1) is recommended. Following table shows the scoping matrix of environmental and social impacts in the context of pollution in the natural and social environment for the 9,000 person-township.

² Survey on Housing Condition of Workers at Thang Long II Industry Park” by JST in June 2015

Table 6 Scope of the Project Impacts

Category	#	Items of impact	Assessment		Result of Preliminary Assessment
			Planning/ Construction Stage	Operation Stage	
Anti-Pollution Measures	1	Air pollution	C-	D-	Construction stage: Temporal air pollution due to dust, material transfer, and construction equipment is expected. Operation stage: Very limited air pollution is expected from residential houses.
	2	Water pollution	B-	B-	Construction stage: Temporal water quality might worsen due to working construction equipment and vehicles. Operation stage: Residential wastewater and sewage water will contaminate the existing water channels unless properly treated.
	3	Waste	B-	B-	Construction stage: Common construction wastes are expected without hazardous material. Operation stage: Substantial residential wastes are expected.
	4	Soil pollution	B-	D-	Construction stage: Oil and other construction material spill may be occurred when it is not managed properly. Operation stage: Pollution is not assumed caused by daily life at residential complex.
	5	Noise and vibration	C-	C-	Construction stage: Noise/vibration level may exceed the permissible level due to the concentration of construction equipments and vehicles. Operation stage: Due to the 30m width road across the model site, noise and vibration from passing vehicles are expected.
	6	Ground subsidence	D-	B-	Construction stage: no subsidence is expected. Operation stage: In case of excess water extraction from water well, subsidence is expected.
	7	Offensive odors	D-	D-	No offensive odor is envisaged in construction and operation stage.
	8	Bottom sediment	D-	D-	No bottom sediment is envisaged in construction and operation stage.
Natural Environment	9	Protected area	D-	D-	There is no national park or protected area around study site.
	10	Biota and ecosystem	B-	D-	Construction: Present paddy field will be completely converted to residential area, so some extent of degradation of ecosystem is expected but limited to present paddy field ecosystem. Operation: No further impacts are expected.
	11	Hydrology	D-	D-	Little impact to hydrology is envisaged in construction and operation stage.
	12	Topography and geology	D-	D-	Impact might be very small because the height of embankment is low.
Social Environment	13	Involuntary resettlement	C-	D-	Planning stage/Construction: some rice farmers permanently lose paddy field and small aquaculture ponds. Operation stage: No further resettlement is expected.
	14	Vulnerable Group	D-	D-	No impacts are expected.
	15	Indigenous or ethnic minority people	D-	D-	No indigenous or ethnic minority lives at study site.
	16	Local economies, such as employment livelihood, etc.	A-/B+	B+	Planning stage: Serious impact due to the loss of cultivatable paddy field is assumed. Construction/Operation stage: On the other hand, the construction of residential complex will create temporal job opportunity both in construction and operation stages.
	17	Land use and utilization of local resources	D-	D-	No impacts are expected.
	18	Water use	D-	C-	Construction stage: Limited water use is expected. Operation stage: Drinking water well will extract substantial amount of ground water.

Category	#	Items of impact	Assessment		Result of Preliminary Assessment
			Planning/ Construction Stage	Operation Stage	
	19	Existing infra-structure and services	B-	B-	Construction stage: Some electric supply wires and towers might be relocated. Operation stage: Influx of residents may cause the shortage of medical and educational facilities.
	20	Social institutions and local decision-making institutions	D-	B-	Planning stage: No administrative impacts are expected. Operation stage: Substantial number of labors from external communities may influence the decision making of the project site commune
	21	Misdistribution of benefits and damages	D-	D-	No impact might be envisaged against the surrounding village.
	22	Local conflicts of interest	D-	B-	Planning/Construction: No impact might be envisaged against the surrounding village. Operation: Cultural difference between immigrant labors may cause conflicts in the model site as well as against the surrounding local communities.
	23	Cultural heritage	D-	D-	There is no cultural heritage near study site.
	24	Landscape	D-	D-	Planning/Construction: No impact is expected. Operation: Little impacts are expected due to no high rise residences.
	25	Gender	D-	D-	No impacts are expected.
	26	Children's right	D-	D-	No impacts are expected.
Social Environment	27	Infectious diseases such as HIV/AIDS	D-	B-	Construction stage: It is assumed that the impact might be very small because the study site is adjacent to Hanoi, and the influx of workers from other provinces will be very small. Operation stage: It is assumed that the Influx of new residents will increase the infectious risks.
	28	Working conditions	B-	A+	Construction stage: It is envisaged that the impact will be arisen when the proper measures on working circumstance to the site workers are not taken by the contractors. Operation stage: Cleaner and healthier living condition will greatly improve the living standards of labors and health condition of the labors.
Others	29	Accident	B-	C-	Construction stage: It is assumed that the accident will arise when proper facility or safety training is not provided. Operation stage: The traffic accidents caused by residents those related to when the go for work or come back home across 34m roads.
	30	Global warming/Climate change	D-	D-	No impacts are expected.

Source: prepared by JST

Note: A+/-: Remarkable Positive/Serious Negative Impact is predicted.

B+/-: Positive/Negative Impact is expected to some extent.

C: Extent of Impact is uncertain. (A further examination is needed and the impact could be defined as study progresses)

D: Impact is very small or nil and further survey is not required

SEA is conducted in accordance with Circular No.01/2011/TT-BXD as it is fully compatible with SEA of JICA Guidelines. TOR for the survey is presented in Table 7.

Table 7 TOR for SEA

Items of impact	Items of survey	Approach method
Air and Water pollution	<ol style="list-style-type: none"> 1. Confirm environmental standards in Vietnam 2. Confirm the present water quality level in main rivers 3. Confirm the present river water use for daily life 4. Forecast the adverse impacts mightily arisen in construction stage 	<ol style="list-style-type: none"> 1. Review existing information 2. Review existing information and conduct the site survey 3. Conduct site survey and hearing from neighbors 4. Predict magnitude of impacts due to the construction activities <ul style="list-style-type: none"> • Baseline survey of air and water quality
Soil Pollution	<ol style="list-style-type: none"> 1. Confirm environmental standards in Vietnam 2. Confirm the present soil pollution level 	<ol style="list-style-type: none"> 1. Review existing information 2. Review existing information and conduct site survey
Waste	<ol style="list-style-type: none"> 1. Confirm environmental standards in Vietnam 2. Confirm the present waste treatment condition 	<ol style="list-style-type: none"> 1. Review existing information 2. Review existing information and conduct site survey
Noise and vibration	<ol style="list-style-type: none"> 1. Confirm environmental standards applied in Vietnam 2. Clarify the locations of residence, school and hospital those neighbor to the project 3. Predict noise and vibration level in construction and operation stage 	<ol style="list-style-type: none"> 1. Review existing information 2. Review existing information and conduct the site survey where new/improvement of stations are anticipated 3. • baseline survey: LAeq 4. Predict noise level in construction and operation stage based on anticipated parameters
Ground subsidence	<ol style="list-style-type: none"> 1. Confirm environmental standards in Vietnam 2. Confirm the areas where ground subsidence might be anticipated 	<ol style="list-style-type: none"> 1. Review the existing information 2. Review the existing information and conduct site survey.
Biota and ecosystem	<ol style="list-style-type: none"> 1. Clarify the precious species and related laws and regulations in Vietnam 2. Confirm the distribution of fauna and flora 3. Confirm the information on river ecosystem (situation and environment of inhabiting) 	<ol style="list-style-type: none"> 1. Review the existing information and data collection from the concerned agencies 2. Review the existing information and conduct site survey.
Water use	<ol style="list-style-type: none"> 1. Confirm the situation of water use 	<ol style="list-style-type: none"> 1. Review the existing information and conduct site survey.
Local economies, such as employment livelihood, etc.	<ol style="list-style-type: none"> 1. Clarify assumed affected private properties 2. Identify PAPs 	<ol style="list-style-type: none"> 1. Review the existing information and community survey 2. Entitlement eligibility in line with Vietnamese legal frameworks
Existing social infrastructures and services	<ol style="list-style-type: none"> 1. Clarify the existing residence, school and medical facility 	<ol style="list-style-type: none"> 1. Review the existing information 2. Field observation
Land use and utilization of local resources	<ol style="list-style-type: none"> 1. The existing land use 	<ol style="list-style-type: none"> 1. Review the existing information 2. Field observation
Social infrastructure and local decision-making institutions. Existing social infrastructure and services	<ol style="list-style-type: none"> 1. Confirm the affected schools, community centers, local clinics 	<ol style="list-style-type: none"> 1. Review the existing information 2. Field observation
Working conditions	<ol style="list-style-type: none"> 1. Way to improve the workers' safety 2. Way to prevent accident, which will involve the third person 	<ol style="list-style-type: none"> 1. Review the existing law/regulation 2. Review of Labor study by JST in June, 2015
Accident	<ol style="list-style-type: none"> 1. Confirm distribution of houses and various facilities around project area 	<ol style="list-style-type: none"> 1. Collect data from similar cases

Source: prepared by JST

(6) **Assessments of Selected Design Impacts**

Based on the baseline survey results and potential impact assessments, impacts of the proposed township project are summarized as follow. The items with “D”, which is very small or negligible impacts, in the scoping matrix (Table 4) is omitted from the following table.

Table 8 Assessments of Selected Design Impacts

	#	Items of impact	Assessment		Result of Preliminary Assessment
			Planning/ Construction Stage	Operation Stage	
Anti-Pollution Measures	1	Air pollution	B-	D-	Construction stage: Temporal air pollution due to dust, material transfer, and construction equipment is expected. Operation stage: Very limited air pollution is expected from residential houses.
	2	Water pollution	B-	B-	Construction stage: Temporal water quality might be worsen due to working construction equipment and vehicles. Operation stage: Residential wastewater and sewage water will contaminate the existing water channels unless properly treated.
	3	Waste	B-	B-	Construction stage: Common construction wastes are expected without hazardous material. Operation stage: Substantial residential wastes are expected.
	4	Soil pollution	B-	D-	Construction stage: Oil and other construction material spill may be occurred when it is not managed properly. Operation stage: Pollution is not assumed to be caused by daily life at residential complex.
	5	Noise and vibration	B-	B-	Construction stage: Noise/vibration level may exceed the permissible level due to the concentration of construction equipments and vehicles. Operation stage: Due to the 30m width road across the model site, noise and vibration from passing vehicles are expected.
	6	Ground subsidence	D-	B-	Construction stage: no subsidence is expected. Operation stage: In case of excess water extraction from water well, subsidence is expected.
Natural Environment	10	Biota and ecosystem	B-	D-	Construction: Present paddy field will be completely converted to residential area, so some extent of degradation of ecosystem is expected but limited to present paddy field ecosystem. Operation: No further impacts are expected.
Social Environment	13	Involuntary resettlement	A-	D-	Planning stage/Construction: more than 200 rice farmers permanently lose paddy field and small aquaculture ponds. Operation stage: unless follow up of the rice farmers, no further resettlement is expected.
	16	Local economies, such as employment, livelihood, etc.	A-/B+	B+	Planning stage: Serious impact due to the loss of cultivatable paddy field is assumed. Construction/Operation stage: On the other hand, the construction of residential complex will create temporal job opportunity both in construction and operation stages. In addition to the direct impacts indirect impacts from service sector development, such as grocery store restaurants/cafe, mobile, motorbike maintenance, etc. is expected, which would provide large employment and self sustain economic development in the region.
	18	Water use	D-	B-	Construction stage: Limited water use is expected. Operation stage: Drinking water well will extract substantial amount of ground water without regulation.
	19	Existing infrastructure and services	B-	B-	Construction stage: Some electric supply wires and towers might be relocated. Operation stage: Influx of residents may cause the shortage of power, medical and educational facilities in the region in short term.
	20	Social institutions and local decision-making institutions	D-	B-	Planning stage: No administrative impacts are expected. Operation stage: Substantial number of labors from external communities may influence the decision making of the project site commune.

	#	Items of impact	Assessment		Result of Preliminary Assessment
			Planning/ Construction Stage	Operation Stage	
	22	Local conflicts of interest	D-	B-	Planning/Construction: No impact might be envisaged against the surrounding village. Operation: Cultural difference among immigrant labors may cause conflicts within model site as well as against the surrounding local communities.
Social Environment	27	Infectious diseases, such as HIV/AIDS	D-	B-	Construction stage: It is assumed that the impact might be very small because the study site is adjacent to Hanoi and the influx of workers from other provinces will be very small. Operation stage: Influx of new residents will increase the infectious risks.
	28	Working conditions	B-	A+	Construction stage: It is envisaged that the impact will be arisen when the proper measures on working circumstance to the site workers are not taken by the contractors. Operation stage: Cleaner and healthier living condition will greatly improve the living standards of labors and health condition of the labors.
Others	29	Accident	B-	B-	Construction stage: It is assumed that the accident will arise when proper facility or safety training is not provided inside the construction site and surrounding communities. Operation stage: In spite of the other industrial road development going through the proposed project, traffic accidents likely increase without behavioral changes of both vehicle/motorbike drivers and pedestrians.

Source: prepared by JST

Note: A+/-: Remarkable Positive/Serious Negative Impact is predicted.

B+/-: Positive/Negative Impact is expected to some extent.

C: Extent of Impact is uncertain. (A further examination is needed and the impact could be defined as study progresses)

D: Impact is very small or nil and further survey is not required

Source: prepared by JST

(7) Environmental Management Plan

It is clear that without proper environmental management plan, any activities will cause certain or significant negative impacts in and around the proposed project site. Followings are the commonly implemented and locally available countermeasures for recognized impacts in Table 8 above.

1) Recommended Mitigation Measures for Proposed Design Impacts

Summary of the mitigation measures are shown in the Table 9 below. Detailed mitigation measures are shown in the PART FIVE of SEA.

Table 9 Mitigation Measures during Pre-construction/Construction Stage

Impacts	Mitigation Measures	Responsible org.
Air pollution	<ul style="list-style-type: none"> - Construction vehicles with tested and qualified by Vietnam Register and all valid records of periodical vehicle inspection of technical safety and environmental protection - Material cover when transporting construction material for dust control - Compaction of surface and leveling shortly after fill-up in order to avoid of dust dispersion by wind - Regular removal of construction waste from construction site to the dump sites as stipulated by the PC of Phung Chi Kien commune of My Hao district - Dust control by water spray trucks for humidifying the construction site in rainless days and washing access roads (the section crossing Phung Chi Kien commune) - Construction of 2m fencing (of galvanized or plastic sheets) covering whole construction site 	1) project owner 2) contractor

Impacts	Mitigation Measures	Responsible org.
Water pollution	<p><Wastewater from construction activities></p> <ul style="list-style-type: none"> - Mobile toilet for construction workers in the camps and construction sites as stipulated by the Hung Yen PC with the mud suction frequency of once for 2-3 weeks - Oil skimmers and deposit tanks for machine and equipment wash water in the construction site before discharge <p><Runoff-water></p> <ul style="list-style-type: none"> - Deposit tanks and drainages for collecting and settle down the sediment before discharging to the drainage of the commune <p><Wastewater from township></p> <ul style="list-style-type: none"> - Construction of appropriate capacity wastewater treatment facilities to meet the discharge standard of Hung Yen PC (included in the proposed design) 	<p>1) project owner 2) contractor</p>
Waste	<ul style="list-style-type: none"> - Separate construction waste collection with waste bins in the construction site - Disposal by legally available waste management organizations and/or sales of recyclable construction wastes - Proper contract with the Urban Environment Enterprise of My Hao district on periodical collection and transport of trash from construction sites to dump sites of the district - Collection and temporary storage for hazardous wastes (oily waste, used batteries and fluorescent lamps, etc.) and transport in compliance with Circular 36/2015/TT-BTNMT dated 30/6/2015 by the MONRE and the other relevant regulations 	<p>1) contractor</p>
Noise and vibration	<ul style="list-style-type: none"> - Construction of 2m fencing (of galvanized or plastic sheets) covering whole construction site - Restriction of noisy activities (particularly staking) in sensitive hours (evenings and early mornings from 21:00 to 6:00) - Special attention to the sources of strong vibration, such as staking machines, hammers, heavy duty trucks and electric generators throughout the construction period and providing advanced notices for surrounding communities for understanding - Shaking at least 100m from residential area for using strong vibration activities and machines 	<p>1) project owner 2) contractor</p>
Involuntary resettlement	<ul style="list-style-type: none"> - Proper information disclosure and consensus building with present land users - Timely compensation payment for legally defined amount <p>Provide necessary assistance (vocational training, transitional allowance, and 1st job) for those who want to change occupation and same value agricultural land for those who want to maintain same agricultural activities</p>	<p>1) project owner 2) local authorities</p>
Ground water use	<ul style="list-style-type: none"> - Implementation of automatic ground water monitoring gauges - Proper management of ground water extraction with monitoring results - Additional ground well construction or city water connection if additional capacity needs 	<p>1) project owner 2) local authorities</p>
Conflicts in the communities and, public health control	<p><Public health control></p> <ul style="list-style-type: none"> - Enforcement of mobile toilets and environmental sanitation training for construction workers especially for subcontractors - Education of measures against diseases - Cooperation with local medical bodies for epidemic prevention and worker's health care - Training course in environmental health and safety in the construction sites and surrounding communities <p><Conflict control></p> <ul style="list-style-type: none"> - Employment as many local inhabitants as possible for simple jobs (earthwork, material transport, cooking, safeguarding, etc.). - Frequent education/communication of workers about relationships with local residents - Registration of the temporary residence of workers with local police - Frequent meetings between project proponent/contractor/sub-contractors and Phung Chi Kien commune PC with opinion leaders of local communities 	<p>1) project owner 2) contractor 3) local authorities</p>

Impacts	Mitigation Measures	Responsible org.
Accidents	<ul style="list-style-type: none"> - Installation of signal lights and safety road signs around the surrounding communities - Warning signs where accidents are likely to occur (i.e. along the access routes to Thang Long Industrial Park II and the project site) - Especially, warnings of speed limit and weight - Strict enforcement of traffic police along the roads for transportation of materials - Proper rehabilitation of roads in case of damages by construction activities and vehicles - Periodical awareness workshops for both construction workers including truck drivers and local residents 	<ul style="list-style-type: none"> 1) contractor 2) local authorities

Source: prepared by JST

2) **Monitoring Plan**

Proposed environmental monitoring plan is shown below. Actual environmental monitoring plan must be prepared by project proponent in the following EIA stage.

Table 10 Environmental Monitoring Plan

No	Indicators	Parameters /Units	Means of Monitoring	Frequency	Implementing Organization	Responsible Organization
1	Resettlement	Progress of land acquisition and rehabilitation assistance	- Records of activities by responsible authorities - Hearing with PAPs	Monthly	Local authority	Local authority
2	Air Quality/Noise	Environmental quality items in Vietnamese standards	Analytical methods in Vietnamese standards	every 6 months	Hung Yen DONRE	Hung Yen DONRE
		Registration papers and compliance certificates of construction vehicles	Vietnam Register Authority of Police approved environmental emissions standards Observation	Random check	Construction contractor	Project owners; Provincial/District DONREs
		Installation of noise and dust control fences around construction sites	Observation	Monthly	Construction contractor	Project owners; Provincial/District DONRE
3	Water Quality	Waste waters, generated in worker residential zone	Analytical methods in Vietnamese standards	Random examination	Residential Zone Management Board	Hung Yen DONRE
4	Dust Control	Working condition of water sprinkle vehicle	Visual inspection	Daily	Contractor	PIU: Consultant of supervision
		Covering of all trucks moving to and from site	Observation	Random check	Construction contractor	Project owners; Provincial/District DONREs
5	Waste Management	Installation of temporary waste storage areas at each construction site including segregation of hazardous and non-hazardous wastes.	Observation	Monthly	Construction contractor	Project owners
		Compliance to requirements for disposal of construction wastes	Observation	Random check	Construction contractor	Project owners;
		Illegal disposal of all kinds of wastes in canals, ponds and field	Observation	Random check	Contractor	Provincial/District DONREs
		Hazardous wastes, generated in worker residential zone	Analytical methods in Vietnamese standards	Random examination	Residential zone Management board	Hung Yen DONRE
6	Working conditions and Accident	Sanitation conditions at construction worker camps, included sewage treatment facilities (toilets), domestic solid wastes management etc.	Observation	Monthly	Construction contractor	Project owners;
		General site condition and cleanliness	Visual inspection	Weekly	Construction contractor	Project owners
		Traffic accident	Record of traffic accident	Monthly	Residential zone Management board	Traffic Police
7	Grievance redress	Number and type of community complaints on environmental issues received	Review of complaints	Monthly	Construction contractor	Project owners;

Source: prepared by JST

3) Proposed Implementation Structure of Environmental Management Plan

By law on Environmental Protection (2014), it is the project owner's responsibility to propose the implementation structures and acquire an approval of the EIA by MONRE due to a category A project. Based on the local experts' experiences to supervise category A projects under private initiatives, following structure is recommended.

Table 11 Proposed Implementation Structure of EMP

Authority	Responsibilities
Hung Yen DOC	<p>Hung Yen DOC would be the primary authority for plan management including overall environmental management. To carry out overall environment management, within DOC an Environment Management Section will be set up. The Section is in charge of guiding and supervising implementation of the EMP for this plan of construction of a worker residential zone</p> <ul style="list-style-type: none"> - Ensure that sufficient funds are available to properly implement the EMP - Ensure that EMP provisions are implemented for the entire Plan regardless of financing source. - Ensure that Plan implementation complies with the Vietnamese environmental policy principles and requirements - Establish an environmental grievance redress mechanism, to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances about the Project's environmental performance - Submit semi-annual environmental monitoring reports to Hung Yen Department of Natural Resources and Environment (DONRE) and or MONRE.
Hung Yen DONRE	<p>Department of Natural Resources and Environment (DONRE) of Hung Yen Province is responsible for overall management of natural resources and environment in the provincial territory. During implementation of construction projects of this Plan DONRE is responsible for supervision and monitoring on compliance of project owners and contractors with the EMP requirements including environmental monitoring at the planned area in Phung Chi Kien commune, My Hao district.</p>
Investor / Developer	<p>Investor/Developer is responsible for implementation of the projects in this plan. Their responsibilities include:</p> <ul style="list-style-type: none"> - Overall planning, management and monitoring of the environmental management. - Ensuring that all environmental protection and mitigation measures of environmental impacts are carried out in accordance with policies regulations on environment and other relevant laws. - Coordinating with Hung Yen DONRE in environmental management activities. - Supervising and providing budget for monitoring activities. - Reporting on environmental information to Hung Yen DOC and DONRE. - Implement changes or adjustments according to DONRE recommendation to protect the environment according to the Vietnam's standards, laws, and regulations. - Ensure that sufficient funds are available to properly implement the EMP - Ensure that EMP provisions are implemented for the entire plan regardless of financing sources. - Ensure that plan implementation complies with Vietnam environmental policy principles and requirements - Ensure that environmental protection and mitigation measures proposed in the Plan EMP are incorporated in the detailed design. - Ensure that tender documents and civil works contracts include the Plan EMP and specify requirement for preparation and implement of construction EMP. - Review and approve the Construction Environmental Management Plans (CEMPs) with assistance from the Project Supervision Consultant (PSC), - Based on the results of EMP monitoring, identify environmental corrective actions and prepare a corrective action plan, as necessary for submission to DONRE - Submit semi-annual environmental monitoring reports to DONRE
Design Consultants	<p>Incorporate with the environmental design and mitigation measures specified in the EMP</p>
Plan Supervision Consultant (PSC)	<ul style="list-style-type: none"> - Prepare and submit to DOC technical and financial proposals in their bids for environmental monitoring and other services. - Assist project owners to ensure that the EMP provisions are included in the tender documents and civil works contracts

Authority	Responsibilities
	<ul style="list-style-type: none"> - Engage environment specialists to undertake regular project monitoring and reporting based on EMP provisions - Prior to implementation of civil works, assist project owners in reviewing the CEMPs prepared by contractors to ensure that these are consistent with the provisions of the EMP - Assist project owners in monitoring the implementation of mitigation measures during pre-construction stage and the environmental performance of contractors based on the EMP and the CEMPs prepared by contractors. - Recruit an environmental effects monitoring consultant to undertake ambient baseline data collection and monitoring during construction phase - Incorporate in the environmental monitoring reports, which is the results of environmental effects monitoring and undertake data analysis. - Assist to the project owners in preparing monitoring reports for submission to DONRE and DOC on a semi-annual basis - Undertake capacity building/training program on environmental management specified in the EIA/EMP
<p style="text-align: center;">Construction Contractors</p>	<p>The Construction Contractors (Contractors) will be selected by DOC and /or project owners. Their responsibility includes construction works and following contractor specifications outlined in the SEA, EIA and EMP. This includes:</p> <ul style="list-style-type: none"> - Recruit a qualified Environmental Officer on a full-time basis to ensure compliance to environmental contractual obligations and proper implementation of the CEMP - Prepare and submit to DOC a CEMP prior to commencement of civil works - Ensure proper implementation of the CEMP and EMP provisions - Submit monthly reports to DOC on the implementation of environmental mitigation measures - Implement additional environmental mitigation measures, as necessary - Ensuring safety of construction workers and local people during construction.
<p style="text-align: center;">People’s Committee of Hung Yen province</p>	<p>The PC will task their DONRES, DOCs and district PC to undertake the following:</p> <ul style="list-style-type: none"> - Supervision of implementation environmental mitigation measures during various project phases. - Checking compliance of the stakeholders with the Vietnamese laws, regulation on land acquisition and environmental protection. - Organization of resolution for all environmental and social problems risen during Plan implementation.

Source: JST

(8) **Stakeholder Meeting**

Due to the early stage planning without actual project owner and developers, environmental team of the JST was requested to avoid direct contact with local residents for SEA and social impact assessment purpose. Thus, JST considered the technical working group (TWG) meetings for this JICA study as the stakeholder meetings where all relevant authorities raised opinions and MPI made decisions for this JICA study.

1) **Results of Technical Working Group (TWG)**

During the TWG on 1st September 2015, applicable legal frameworks and applicability of SEA for this JICA study were discussed among authorities and final recommendation for Joint Coordinating Committee (JCC) was confirmed. Summaries of the key discussions for SEA matters are as follows.

Date / Place	1 st September, 2015 / Ministry of Planning and Investment
Chairman	Deputy Director General, Department of Economic Zones Management, MPI
TWG Members	<ul style="list-style-type: none"> • Deputy Head of Housing Development Division, Bureau of Housing and Real Estate Market Management, MOC • Hung Yen DONRE • Hung Yen DOC • Deputy Manager of Hung Yen Industrial Zone Authority • Officer, Department of Economic Zones Management, MPI • Officer, Department of Economic Zones Management, MPI • Officer, Department of Planning and Investment of Hung Yen Province • Program Officer, JICA Vietnam
JST	<ul style="list-style-type: none"> • Team Leader/ District Development Planning / Industrial Park • Secretary, interpreter, etc.
ITINERARY	<p>I. Interim Report (ITR) Presentation by JST</p> <p>II. Applicable environmental and social impact assessment for urban planning, SEA with Decree No. 37/2010/ND-CP or EIA with Decree 18/2015/ND-CP</p>
DISCUSSION relevant to SEA	
<p><MPI></p> <ul style="list-style-type: none"> • Since the model study site was decided in Phung Chi Kien commune, it is not necessary to explain much about site selection process, including candidate sites analysis in the ITR. <p><Hung Yen DONRE></p> <ul style="list-style-type: none"> • In the old Law on Land 2003 and Law on Land 2013, Vietnamese Government has stipulation on the development worker housing together with industrial park development, it should be very good if the JST to supplement its evaluation on how these stipulations are implemented in reality. • Suggested JST to conduct environmental and social considerations in compliance with the latest Law on Environment. <p><MOC></p> <ul style="list-style-type: none"> • New Decree replaced from Decree No. 188 was submitted by the MOC to the Government. It will be issued soon in order to match with New Law on Housing of 2015, however, basic contents will remain the same as the ones in the Decree No. 188 with some amendments, for example: responsibility of investors and developers of IPs in worker housing development. • In ITR, MOC has not found the analysis on relation between workers' income and housing rental fee to be paid by the workers and profits of developer in connection with investment cost. Such an analysis is the basis for the developers to decide investment in housing and select the appropriate housing types. In addition, this analysis is also useful for the government agencies to consider the worker housing development. • Regarding the profit limitation of social housing project, stipulated in the Decree No. 188, MOC suggested that the JST may make recommendation in order to attract more investments in social housing development project. For pilot project, Vietnamese government can apply specific policy on profit limitation. <p><JST/requested information and decision by Authorities></p> <ul style="list-style-type: none"> • Responsibilities for providing infrastructures for the site (central government, local government or IP operator)? • Acceptance of the target population of 8,000 to 9,000 people based on calculation following the related development plan (for example, My Hao Urban Development Plan) with consideration of housing situation around the site. <p><MPI></p> <ul style="list-style-type: none"> • JST need to check the roles of relevant authorities, such as Prime Minister major role is approving the guideline and policy for investment project. • Even though Vietnam has relevant national technical regulations related to planning and housing design, but the JST could give recommendations to modify if it is necessary. • Regarding EIA suggested by the Hung Yen DONRE, it is beyond JICA study's scope of work for a detail plan under urban planning stage. • Regarding environmental and social considerations, it is confirmed that SEA for model study site shall be prepared in accordance with the Decree No. 37/2010/ND-CP since SEA and EIA in accordance with the Decree No. 18/2015/ND-CP are not applicable. 	

- Considering the role of public entities for realization and execution of the project in the future based on the result of the Study, such as land preparation and preparation of infrastructures, private sector should be mobilized as much as possible.

Source: TWG Minutes of Meeting on 1st September 2015

9-2. Involuntary Resettlement and Rehabilitation

As same manner as environmental and social considerations above, preliminary level evaluations are conducted based on Vietnamese standards not only for the proposed project but also for common labour housing projects with private and/or public funds. However, as a technical assistance of JICA, JST also gives realistic and practical recommendations for both relevant authorities and project proponents to minimize the gap between the Vietnamese standards/practices and JICA/WB standards for timely and smooth land acquisition.

(1) Scale of Land Acquisition

1) Scope of Land Acquisition

Approximately 18ha in 2 villages in Phung Chi Kien commune, My Hao district, and Hung Yen province will be acquired for this project. Roughly 350 households engaged in rice cultivation and/or aquaculture will be affected. In addition to the 350 Project Affected Households (PAHs), families of the 73 graves will be also involved. At the time of Land Acquisition Policy Framework (LAPF) study, the owners of cemeteries were not identified due to the instruction by local authorities stated above. Inventory of Losses has been surveyed through field survey, Google Earth and cadastral map, then the number of affected house loss more than 20% productive land (severity affected households-SAHs) have been estimated with 35% of total affected households (122 SAH) based on the limited agriculture land allocation according to Vietnamese Government with the basic of 360 square meter per person in labor age of each household.

Table 12 Summary of Project Impacts by Land Acquisition

No.	Item	Unit	Quantity	Note
1	Land		180,203	
1.1	Agricultural land	m ²	149,790	Paddy land
1.2	Fish pond land	m ²	2,893	
1.3	Cemetery land	m ²	1,820	
1.4	Canal system land	m ²	25,700	
2	Structures			
2.1	Earth grave/cemetery	unit	16	
2.2	Concrete grave/ cemetery	unit	73	
2.3	Electric pole	unit	7	
3	Crops/aquaculture product and tree			
3.1	Annual crop (paddy rice)	m ²	149,790	
3.2	Banana along the canal	tree	262	
4	Number of AH			
4.1	Number of AH	HH	350	
4.2	Number of AH loss from 30-100% productive land	HH	122	Estimate 35% of total AH

Source: Prepared by JST

2) **Affected Agricultural Land**

Total of 180,203 m² will be acquired for project from 350 AHs. In which, almost is agriculture land (149,790 m² around 83%). Only 01 AH with aquaculture land through leasing contract. Besides some cemeteries land and public land for canal system will be affected. Refer to table 2.1 for detail of affected land.

3) **Structure, Trees and Crops Affected:**

Only some banana tree along the canal will be affected. Total of 89 cemeteries inside the planning area will be relocated.

4) **Common Property Resources**

About 7 electric poles will be affected by project.

5) **Significance of Impact**

Estimated 35 percentages of affected households (around 122 AH) will be loss more than 20% of total productive land. This number will be certified during detailed survey for updating calculation the assistance and income restoration strategy.

6) **Special Measures for Vulnerable Groups**

As planning stage, the SES survey has not been conducted the number of vulnerable household. These will not be identified accordingly. This number will be surveyed during the FS/ or detailed design.

(2) **Legal Framework of Land Acquisition**

1) **Legal Frameworks in Vietnam**

The Legal Framework of the Government of Vietnam: The key national laws, regulations and decrees governing land acquisition, compensation and resettlement in Vietnam are as follows:

- The Constitution of Vietnam 2013 confirms the right of citizens to own house and to protect the ownership of the house.
- The Land Law 2013 (No.45/2013/QH13), issued on November 29, 2013.
- Law on Construction (2014) 50/2014/QH13, dated June 18, 2003.
- Law on Urban Planning No.30/2009/QH12 dated June 17, 2009.
- Decree No.43/2014/ND-CP dated May 15, 2014 of the Government providing guidance on detailed implementation of some articles from the Land Law 2013 No. 45/2013/QH13.
- Decree No.47/2014/ND-CP dated 15/05/2014 by the government regulating on compensation, assistance and resettlement when the state acquired land. (Replacement of Decree No. 197/2004/ND-CP) dated 3/12/2004).
- Circular No. 37/2014/TT-BTNMT dated 30 June 2014, providing detailed regulation compensation, assistance, and resettlement when the state acquires land.

The 2013 Land Law and new guiding Decrees become effective on 1 July 2014, and Hung Yen PPC has been issued the regulations for compliance with new policy. Therefore, relevant regulations for model site design on compensation, assistance and resettlement shall be as followed:

- Decision No.14/2014/QD-UBND dated October 27th 2014 by Hung Yen PPC on promulgating detailed contents on compensation, assistance and resettlement when the state acquired land in the provincial area.

- Decision No. 21/2014/QĐ-UBND dated 26th December 2014 by Hung Yen PPC on promulgating price of types of land in the provincial area in 2015
- Announcement No. 277/TB-STC, dated 27th December 2014 of Hung Yen Financial Department on unit price of compensation, assistance for loss of crop/tree, livestock in Hung Yen province
- Announcement No. 332/TB-STC dated 30th June 2015 of Hung Yen Financial Department on unit price of rice for basic of compensation, assistance and resettlement
- Announcement No. 235/TB-SXD, dated 25th December 2014 of Department of Construction on compensation price for house, structure and others by land acquisition in Hung Yen province

2) Gap between Vietnamese Legal Frameworks and JICA Guidelines

There is basic congruence between Viet Nam’s laws and JICA’s Resettlement Policy especially with regard to the entitlement of persons with legal rights/titles. When Vietnamese policy framework is not consistent with the requirements of international development partners, the government of Vietnam has agreed to adapt the policies of the donor (item 2, Article 87 of Land Law and Article 6 of Decree No. 38/2013/NĐ-CP).

Considering the objective of the JICA study and its applicable legal framework, JST is aiming for “typical design” for industrial park labors. Thus, JST focuses on Vietnamese legal framework, but provide recommended counter measures for avoiding conflicts and delay from typical land acquisition issues.

For the reference purpose, key differences between JICA/WB Resettlement Policy and Viet Nam’s resettlement legislation are summarized in the following table.

Table 13 Key Differences between JICA/WB and Vietnamese’s Resettlement Policies

Subject	JICA’s Guidelines (2010) and WB requirements (OP4.12)	Vietnam
Non-Eligible Land Users	Entitled to compensation / rehabilitation to restore affected assets and living standards to the pre-project level <ul style="list-style-type: none"> ▪ Land is not compensated but assisted to meet the project objectives. ▪ Structure is entitled to compensation at 100% of the replacement cost. 	Assisted or not assisted, depending on level of legality of the affected land and structure <ul style="list-style-type: none"> ▪ Land: no compensation but assistance or considered for assistance depending on legality level ▪ Structure: no compensation
Compensation Price	Replacement cost to fully restore the affected assets. <ul style="list-style-type: none"> ▪ Land: as per market price (tax and fees inclusive) ▪ Structure: 100% at replacement cost. 	Suitable with market price/newly built cost. <ul style="list-style-type: none"> ▪ Land – Land Law 2013; Decree 44 and 47/2014: Land price must be suitable with the popular market price of transferred land with the same land use purpose ▪ Structure: 100% cost of newly-built structure for households and individuals
Affected Business and Losses of Income	Fully compensated for losses of income and income sources restoration.	Only licensed businesses and legal land users are assisted for income losses, production and livelihood stabilization
Assistance in restoring income sources	Income source restoration program is required for affected households losing production land or business	<i>Land Law 2013, Decree 47/2014:</i> Assistance for stabilizing production and livelihood, job changing (assistance up to 5 times agric. land price), free training for

Subject	JICA's Guidelines (2010) and WB requirements (OP4.12)	Vietnam
		new skills, help seeking new job, provision of preferential credit for production, business development. Land users who have business attached to residential land to be relocated, are assisted for training, career change and facilitating job searching. Plan for training, career change and facilitating job searching shall be developed and approved concurrently with plan for compensation, support and resettlement.
Compensation for indirect impact	Social assessment is undertaken and measures identified to minimize and mitigate adverse impacts, particularly upon poor and vulnerable people	Not addressed
Time of Compensation and Resettlement	Before commencing of civil works (including completion of the resettlement site for DPs to move in)	No mention clearly
Grievance redress mechanism	Grievance redress mechanism should be independent	The same body making decision on compensation, resettlement and handling grievances at the first step. However, PAPs can go to court at any step of grievance redress mechanism
Independent Monitoring	Independent monitoring for the implementation of compensation and resettlement activities is required.	No mention
Resettlement Plan Development	The resettlement plan, which meet requirements of the WB, is condition for project's appraisal.	Plan on compensation, assistance and resettlement is approved together with land acquisition decision (often when project is already approved)

Source: prepared by JST

3) Recommended Legal Frameworks for the Following Implementation Stage

As stated earlier, one of the principle objectives of this study is a pilot design for a “typical township” for labors to improve their living standards. The target of the policy frameworks should be common “private investment or join program of public’s social housing,” instead of ODA program. However, JST and local experts also recognized the difficulties of land acquisition, especially due to the differences between government’s market price and actual trading price. JST would recommend the following frameworks to avoid prolonged unproductive negotiation and loss of opportunity costs. JST’s recommendation focuses on “sustainability” of the PAPs’ post resettlement, instead of meaningless cash compensation.

As described in section 8.2.2 above also shown in the appendix 1 of comparison of Vietnamese entitlement matrix and international development partners’ level entitle matrix, Vietnamese entitlements are similar to the international development partners’ requirements. For the purpose of the “common” development activities for labor township development in Vietnam by private or local authorities, we are recommended to follow the Vietnamese entitlements as the basis. In the urban area, higher compensation and rehabilitation supports will be required to achieve the agreement between land owners and project proponent.

4) **Compensation and Entitlement Policy**

Summary of the eligibilities for entitlements are summarized below. Detailed entitlement matrix is shown in the Vietnamese Policy column of the Annex of this chapter comparison of Vietnamese entitlement matrix and international development partners' entitlement matrix.

a. **Land**

- Legal owners of lands who have formal legal rights to land or not have formal legal rights to land but have a claim to legal rights based upon the laws of the country who are provided compensation at replacement cost for the land (and any other assets) they lose, and other assistance, which shall be paid for the loss of land at full replacement cost, free from taxes and transaction cost.
- Holders who have no recognizable legal right or claim to the land they are occupying will be compensated for structure and improvements only, at full replacement cost, with no deduction for salvaged materials.

b. **Structure**

- If severely affected, cash compensation for the whole structure at full replacement cost, it would be no deduction for salvaged building materials.
- If marginally affected, compensation in cash at full replacement cost, for the portion of the structure including replacement cost of restoring the remaining structure, it would be no deduction for salvaged building materials.

c. **Recovery/Improvements**

- For improvements, such as fences, wells, outdoor toilets, animal enclosures, etc., to be affected by the project, full replacement cost will be based on the current or prevailing market price of materials, labor and transportation cost.
- Compensation in cash at replacement cost for the affected portion of public structures to government or non-government agencies or to the appropriate LGUs (City/Municipality or Barangay) in case of a donated structure by agencies that constructed the structure
- Compensation to cover the cost of reconnecting the facilities, such as water, power and telephone

d. **Crops, Trees and Perennials**

- Cash compensation for perennials of commercial values determined by DRC. PAPs will be given sufficient time to harvest crops on the affected land.
- Damaged crops are to be compensated at market value at the time of taking based on the cost of production per hectare in proportion to the affected area.
- Fruit bearing trees will be valued based on the assessment of the local consultant where the project is located, or current market price surveyed and publicized by DRC or Department of Planning and Investment (DPI).

(3) **Compensation and Rehabilitation Assistance**

1) **Compensation Procedure to Title Holders**

Compensation and supports should be done in compliance with Hung Yen PPC policies.

2) **Compensation Procedure to Non-Title Holders**

Compensation and supports should be done in compliance with Hung Yen PPC policies. As per the Hung Yen PPC policy, non-title holder will not be paid for the land but will be paid only for affected assets on the land.

3) **Assistance from Relevant Government Departments**

a. **Income Loss**

For loss of business/income, the PAHs will be entitled to income rehabilitation assistance not to exceed for the severely affected structures if the present means of livelihood is no longer viable and the PAHs will have to engage in a new income activity.

Cash compensation equivalent to income loss based on the latest copy of the tax recorder business permit for the period corresponding to the stoppage of business activities during demolition and reconstruction of their shop but not to exceed one month income. For small shops, micro business and vendors with no tax record or business permit, cash compensation will be based on indicated income as respondent to the socio-economic survey of the detail measurement survey written in the questionnaire.

Wage Earners will receive cash compensation equivalent to one month salary as prescribed by Vietnamese's policy.

b. **Rehabilitation Assistance**

In the form of skills training and other development activities if the present means of livelihood is no longer viable and the PAH will have to engage in a new income activity.

c. **Transportation Allowance or Assistance**

If being relocated, PAHs need to be provided in the transportation assistance according to the Hung Yen policy.

d. **Additional Allowance for Vulnerable Groups**

Provincial social policies for HHs who are entitled to social allowance at the time their land is acquired by the state will be assisted according to policy of Hung Yen province.

Besides that, other vulnerable affected households like elderly, disabled, female-headed households whose deemed that they will be worse off after implementation of the resettlement action plan will be provided with an additional allowance at least of 2 million VND in one time.

(4) **Grievance Redress Mechanism**

Affected people are entitled to complain regarding entitles and responsibilities in the project implementation including (but not limited) such things entitlement to compensation, compensation policy, unit prices, land acquisition, resettlement and entitlements related to the income restoration program. Complaints can also concern issues related to construction safety and nuisances caused by construction. Grievance procedures should be affordable and accessible for third party settlement of disputes arising from resettlement, such as grievance mechanism, should take into account the availability of judicial resource and traditional dispute settlement mechanism of community. All complaint will be recorded, recognized and processed by the competent agencies at all levels.

Local mass organization, such as Fatherland Front, Farmer association and women union etc. are mobilized to participate actively in the process of resolving complaints. Affected people can report their complaints (without any administrative and legal charges) to the responsible units under districts and commune/ward level. Implementing agencies must ensure having assigned staff in these responsible units to work on the project and maintaining a throughout reporting system. If possible, project will ensure to support the translator in case the affected households have difficulty

in communicating in Vietnamese language. Following the aforementioned arrangement, the grievance procedure will be:

Step 1	Any person who are not satisfied with any contents of program income restoration and resettlement can report verbally or in writing to their Commune People’s Committee (CPC)/ Ward, and CPC will be responsible for resolving their complaints within 15 days through inspection, identification and propose to upper authorities.
Step 2	After the due date if there is no agreement, conciliation formed between AP and CPC or no answer from CPC, AP can appeal to the District People’s Committee (DPC) who will give their decision within 30 days after receiving the complaints.
Step 3	After the due date if there is no agreement, conciliation formed between PAP and DPC or no answer from DPC, no agreement/ conciliation/ answer is made. PAP can appeal to responsible unit of PPC who will give their decision within 30 days after receiving the complaints.
Step 4	If they are not satisfied with the decisions at the provincial level, PAP can present their petition to their district administrative court.

PAP will be exempted from all administrative and legal fees. Besides an escrow accounts for resettlement payments should be used when grievance is resolving to avoid excessive delay of the project while ensuring compensation payment after the grievance has been resolved. All queries, suggestions and grievances, and their solution should be record and forwarded to PC and its functioning monitored monthly. All the cost of grievance redress mechanism establishing and functioning should be included in the project cost.

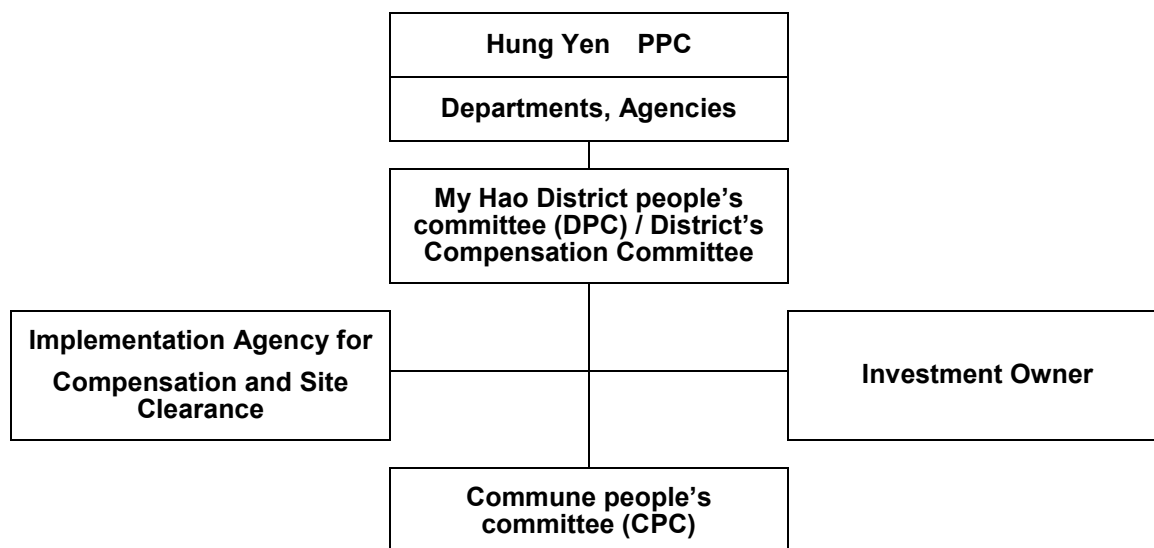
The above grievance redress mechanism is subject to be disclosed and discussed with the APs to ensure that the PAPs understand the process. DPI and DRC are responsible to follow up the grievance process from the PAPs.

(5) Implementation Structure of Land Acquisition and Rehabilitation Support and Time Frame

1) Implementation Structure of Land Acquisition and Rehabilitation Support

a. Primary Structure of the Land Acquisition and Rehabilitation Support

In accordance with law, regulation and relevant provincial policies, implementation of the LAPF requires the participation of relevant agencies from the province to local district, and commune level. The figure 7 shows the primary structure of the responsible stakeholders as per Vietnamese legal frameworks. Table 14 shows the expected role and responsibility of the key stakeholders, but they could be adjusted upon agreement during detailed engineering study stage.



Source: Prepared by JST

Figure 7 Expected Implementation Structure of Land Acquisition and Rehabilitation Support

Table 14 Expected Roles of the Key Stakeholders in the Implementation Process

Organization	Actions to be taken	Monitoring
Hung Yen PPC	<ul style="list-style-type: none"> Announces on land acquisition for the project, approves specific land price and general compensation policy in the province 	
Hung Yen PPC Departments	<ul style="list-style-type: none"> Appraises specific land price and advises on prices 	<ul style="list-style-type: none"> Instructs and monitors compensation committee, organizes implementation of compensation as well as site clearance
DPC/	<ul style="list-style-type: none"> Announces on land acquisition, appraises detailed compensation plan, issues decision on land acquisition for individuals and approves detailed compensation plan for HHs 	<ul style="list-style-type: none"> Monitors the group implementing compensation and site clearance
Compensation Committee	<ul style="list-style-type: none"> Implements announcement of land acquisition, compensation and site clearance procedures in accordance with regulation 	
Implementation Agency for Compensation and Site Clearance	<ul style="list-style-type: none"> Timely allocates fund in accordance with approved plan and coordinates with unit implementing compensation to carry out compensation payment for HHs 	
Investment owner	<ul style="list-style-type: none"> Coordinates with compensation and site clearance committee, organizes implementation of site clearance, disseminates and determines land origin and handles complaints of people. 	
CPC	<ul style="list-style-type: none"> Announces on land acquisition, appraises detailed compensation plan, issues decision on land acquisition for individuals and approves detailed compensation plan for HHs 	<ul style="list-style-type: none"> Monitors the group implementing compensation and site clearance

Source: Prepared by JST

b. Other Organizations/Stakeholders Involved in the Process

Women groups in land acquisition process

The RAP implementation shall ensure a gender sensitive approach in planning, management and operations of land acquisition and resettlement. Separate groups of female APs will be formed and operated by the District Resettlement Committee (DRC). Feedbacks from the female APs and female headed AHs will be obtained through these female focused groups discussions as well. Preferably female survey staff shall identify “Special or additional” needs of female APs for income restoration approaches and implementation of the restoration programs.

Community (stakeholders) participation in LAP implementation

Local people, especially affected people and representatives of the affected local community shall be involved in process of project formulation and implementation in timely manners. They shall be well informed in advance and consulted for consensus building among stakeholders.

2) Implementation Process and Time Frame of Land Acquisition and Rehabilitation Support

At this moment, there is no specific time line for the project implementation, but common time frame for land acquisition and rehabilitation support is summarized as follows. During next detailed engineering design time frame must be updated and well informed in advance to ensure the enough time for APs.

Table 15 Common Timeframe for Land Acquisition and Rehabilitation Support

Activities	Expected Duration
Information dissemination and public consultation LAPF	1 month
IOL and preparation of compensation, assistance and resettlement plan	2 months
First disclosure draft RAP and submission of RAP	1 month
Finalization and approval of RAP	1 month
Information dissemination approved RAP	1 month
DMS and updating RAP	3 months
Payment for compensation and assistance	1 month
Implementing income restoration for severity affected household (in needed)	6 months
Monitoring and evaluation	18 months

Source: Prepared by JST

(6) Land Acquisition and Rehabilitation Costs

1) Budget and Financial Plan

Resettlement budget is required for all resettlement activities including compensation for land acquisition, affected assets, administrative cost, monitoring, income restoration, resettlement site, etc. and included in project cost. Estimated costs will be updated based on the detailed survey and replacement cost survey results following detailed designs. Project proponent and relevant authorities shall review and revise the resettlement action plan and budget should unforeseen obligations related to the agreed LAPF arise during implementation of the project resettlement plan.

2) Payment of Cash Compensation by the Local Government

Compensation and assistance payment will be done by resettlement task force under DRC/ LFDC with supporting/ monitoring of responsible organizations/agencies.

Time of compensation payment will be conducted after 5 days from resettlement task force complete the publicly post the approval decision of compensation plan and specify the first receive announcement in the receiving notice as prescribed.

Resettlement task force will recover all certificates of land, house (original) and transfer to land registration office for filling (for the case of full land acquisition) or adjusting the certificate of land for partly acquisition.

3) Assessment of Unite Values for Compensation

At the time of preparing LAPF, survey team has been conduct replacement cost survey. The survey team has consulted and interviewed represent advices from relevant departments/ divisions, such as division of natural resource and environment, finance, planning, owners of construction material shops, worker, farmers, and at commune level.

Survey results show that at present in affected area there is no market price for agriculture land, and there is no land exchange or purchase houses or trees. So, unit price for compensation for land is followed Decision No.21/2014/QĐ-UBND dated 26 December 2014 and unit price for compensation and assistance for structures, trees and crops, home raised animal and live stock is followed announcement issued by Hung Yen PPC. The proposed price for compensation rate as table below:

Table 16 Rough Land Valuation at the Project Site in Phung Chi Kien Commune

No.	Item	Unit	Price promulgated by Hung Yen PPC	Surveyed price (VND)	Proposed price for compensation (VND)
1	Lands	Decision No. 21/2014/QĐ-UBND			
1.1	Agricultural land	m ²	66,000	300,000	66,000
1.2	Fish pond land	m ²	307,000	310,000	310,000
2	Structures	Official Announcement No. 235/TB-SXD			
2.1	Earth grave (exhumed bones)	Grave	1,682,000	2,500,000	2,500,000
2.2	Built grave (exhumed bones)	Grave	3,965,000	6,000,000	6,000,000
3	Price of labor	Official Announcement No 277/TB-STC			
3.1	Price for unskilled labor	VND/workday	Not available price	180,000	180,000
3.2	Price of sticky rice*	VND/Kg	12,500	12,000	12,500

* Official Note No. 332/STC-GCS

Source: Prepared by JST

4) Income Restoration Program

In order to assist PAPs restore livelihoods and income levels, the project will provide an income restoration program that is adapted to the needs and situation of the PAPs as determined in the socio-economic surveys. The PAPs covered by the income restoration program are identified in the entitlement matrix.

The scope of the entitlements includes an allowance to cover living costs during a period of reduced income while PAPs restore current livelihood and income-generating activities or make a transition to new income-generating activities. In-kind assistance to strengthen or initiate income-generating activities will also be provided.

In-kind assistance to strengthen or initiate income-generating activities will be decided in consultation with local authorities and PAPs eligible for the income restoration, and will be fully

developed in the resettlement plans for each sub-project. Forms of assistance may include, but are not limited to:

- Agricultural extension assistance, to improve the productivity of remaining or newly allocated agricultural land and fishponds.
- Assistance to restore or replace affected tree plantations, provision of seedlings and technical assistance to help severely affected PAPs to restore income from cash-crop tree plantations.
- Support for income-generating activities including appropriate technical support, assistance in vocational planning, small business planning, financial planning, and to access and utilize credit, and the other measures to promote existing or new income-generating activities.
- Project-related employment whereby priority will be given to severely affected and vulnerable PAPs for work on construction

5) **Approval of the Budget**

Hung Yen PPC through DPI will review and approval the budget for resettlement cost.

At the time of planning, resettlement cost has been estimated according to impacts in table below. Estimated costs will be updated based on the detailed survey and replacement cost survey results following detailed designs.

Table below presents the estimate cost for land acquisition. According to the replacement cost survey, the proposed compensation prices are the same with PPC's price of compensation. Additional assistance as per JICA/WB level is only amount of assistance for severe agriculture land loss from 20% to 30% equal to 30kg rice per person in 03 months. At the time of survey, the number of PAHs loss from 20% to 30% of agriculture land is not yet identified, and then the assistance was estimated with the all severe PAHs less than 20%.

Table 17 Rough Resettlement Cost Estimation

No.	Item	Unit	Quantity	Unit Cost	Total Cost (VND)
1	Compensation for land		180,203	-	29,341,071,400
1.1	Agricultural land	m ²	149,790	66,000	9,886,140,000
1.2	Fish pond land	m ²	2,893	66,000	190,938,000
1.3	Cemetery land	m ²	1,820	700,000	1,274,000,000
1.4	Canal system land	m ²	25,700	700,000	17,990,000,000
2	Compensation for Houses		-		514,896,000
2.1	Mộ đất	unit	16	4,806,000	76,896,000
2.2	Mộ xây	unit	73	6,000,000	438,000,000
3	Compensation for trees, crops			-	1,505,760,000
3.1	Annual crop	m ²	149,790	10,000	1,497,900,000
3.3	Banana	tree	262	30,000	7,860,000
4	Allowances				33,629,657,900
4.1	Stabilization assistance for severity AH (4 people/HH*30kg rice/1 person*6 month*12,500VNĐ/1kg rice)	Hộ	122	9,000,000	1,098,000,000
4.2	Stabilization assistance for HH with affected fish pond	m ²	4,190	10,000	41,900,000
4.3	Assistance for job creation (3 times of unit price)	m ²	153,980	198,000	30,488,040,000
4.4	Assistance for Job training	m ²	153,980	3,000	461,940,000
4.5	Bonus for hand over land on time	m ²	153,980	10,000	1,539,800,000
5	Public work				2,606,200,000
5.1	Assistance for irrigation system land	m ²	25,700	66,000	1,696,200,000
5.2	Assistance for moving electric pole	pole	7	130,000,000	910,000,000
6	Total				67,639,484,300
7	Administration and implementation (2%)	%	2		1,352,789,686
8	External monitoring (4 time * 300 Mil./time)	%			1,200,000,000
9	Contingency	%	15		10,145,922,645
	Grand Total (in VND)				80,338,196,631
	Grand Total (in USD)				3,570,587

Note: 1USD= 22.500VNĐ

Source: Prepared by JST

(7) Monitoring and Evaluation

The Project will establish systems for internal monitoring and evaluation. The main purpose of the monitoring and evaluation programme is to ensure that resettlement and acquisition of land and properties have been implemented in accordance with the policies and procedures of the RAP. Especially, evaluation will focus on social impacts on APs. In addition, whether or not APs have been able to restore a standard of living equal to or better than pre-project condition.

In the case of international aid programmes, internal and external monitoring is commonly separated to ensure the independence of the evaluations and accountability of the aid agencies. However, in the case of this particular study, it aims to promote good practices in Vietnamese legal

frameworks; we have recommended internal monitoring and evaluation only by local authorities due to present practices and realistic recommendation.

Apart from the monitoring, all grievances will be “separately” resolved through grievance redress mechanism of project. The objectives of the monitoring and evaluation programme are to (i) ensure that the standard of living of PAPs is restored or improved; (ii) monitor whether the time lines are being met; (iii) assess if compensation, rehabilitation measures and social development support programmes are sufficient; (iv) identify problems or potential problems; and (v) identify methods of responding immediately to mitigate problems.

1) **Internal Monitoring**

DPI and DONRE will conduct the internal monitoring of RP implementation can be adjusted. Related information will be collected monthly from the field to assess the progress of RP implementation and will be consolidated every quarter and reported to the relevant authorities.

- (i) Verify that the baseline information of all PAPs has been carried out and that the valuation of assets lost or damaged, and the provision of compensation, resettlement and other rehabilitation entitlements has been carried out in accordance with the provisions of this LAPF and the respective RAP.
- (ii) Oversee that the RAP is implemented as designed and approved.
- (iii) Verify that funds for implementing the RP are provided in a timely manner and in amounts sufficient for their purposes, and that such funds are used in accordance with the provisions of the RAP.
- (iv) Record all grievances and their resolution and ensure that complaints are dealt with in a timely manner.

(8) **Local Stakeholder Meeting**

Although the proposed project site is designated for “Water and Green/Tree Buffer Area” by My Hao District General Construction Plan to 2020 Vision 2030 and will be designated for “New Urban Residential Area” as the results of discussion with local authorities and JST, such construction plan is not widely recognized by the community, especially by the project affected farmers at the site. Also, there is no specific implementation plan for the proposed township project so that the responsible authorities had requested JST to avoid direct communication with PAPs at this stage. Therefore, JST did not conduct any local stakeholder meeting for this study.

Table 18 Comparison of Vietnamese Entitlement Matrix and International Development Partners’ Level Entitle Matrix

No	Type of Loss/Impacts	Application	Eligible Persons	Entitlement according to JICA/WB	Entitlement according to VN’s policy
1.	Production land (agriculture land, aquaculture land, forestry land, garden)	Less than 10% total productive land in use of the vulnerable AH or 20% total productive land of AH	Owners with have formal legal rights to land; Or who initially do not have formal legal rights to land but have a claim to legal rights based upon the laws of the country	<ul style="list-style-type: none"> For the permanently acquired land, cash compensation is equal to replacement cost. Adjustment of free of charge possession right for landowner for the remaining land, which is still in use. For non-land properties, see section 3-6 below. Providing progress bonus (item 11) 	<ul style="list-style-type: none"> For the permanently acquired land, cash compensation is equal to PPC’s compensation price in accordance with specific appraisal result of PPC by the time of implementing compensation. Adjustment of free of charge possession right for landowner for the remaining land, which is still in use. For non-land properties, see section 3-6 below. Providing progress bonus (item 11)
		Same application as above	Affected households with long term lease agreement over the affected land	<ul style="list-style-type: none"> For the permanently acquired land, cash assistance equal to 30% of replacement cost (this is considered as cost invested into the land, improvement, upgrading etc.) For affected trees, crops, compensation on market price and yield to be calculated as average of the last 3 years 	<ul style="list-style-type: none"> For the permanently acquired land, cash assistance equal to 30% of PPC’s compensation price (this is considered as cost invested into the land, improvement, upgrading etc.) For affected trees, crops, compensation on market price and yield to be calculated as average of the last 3 years.
		Same application as above	Owners have no recognizable legal right or claim to the land they are occupying (illegally appropriated land)	<ul style="list-style-type: none"> Not entitled to compensation for land but for crop, trees as equal to replacement cost. 	Not entitled to compensation for land but for crop, trees as equal to PPC’s compensation price .
		More than 10% total productive land in use of the vulnerable AH or 20% total productive land of AH	Owners with formal legal rights to land; Or who initially do not have formal legal rights to land but have a claim to legal rights based upon the laws of	<ul style="list-style-type: none"> Cash compensation equal to replacement cost or “land-for-land” compensation Adjustment of free of charge possession right for landowner for the remaining land, which is still in use. For non-land properties, see section 3-6 below. 	<ul style="list-style-type: none"> Cash compensation is equal to PPC’s compensation price or “land-for-land” compensation Adjustment of free of charge possession right for landowner for the remaining land which still in use. For non-land properties, see section 3-6 below. Assistance for server damage, see item 8 and 10

No	Type of Loss/Impacts	Application	Eligible Persons	Entitlement according to JICA/WB	Entitlement according to VN's policy
			the country	<ul style="list-style-type: none"> Assistance livelihood restoration for AHs (item 8). Providing progress bonus (item11) 	<p>below.</p> <ul style="list-style-type: none"> Providing progress bonus (item11)
		Same application as above	Land lease and permanent land lease	<ul style="list-style-type: none"> For the permanently acquired land, cash assistance is equal to 30% of replacement cost (this is considered as cost invested into the land, improvement, upgrading etc.) For affected trees, crops, compensation on market price and yield to be calculated as average of the last 3 years Affected people shall be informed 4 month prior to implementation of land acquisition for the project. 	<ul style="list-style-type: none"> For the permanently acquired land, cash assistance equal to 30% of PPC's compensation price (this is considered as cost invested into the land, improvement, upgrading etc.) For affected trees, crops, compensation on market price and yield to be calculated as average of the last 3 years Affected people shall be informed 4 month prior to implementation of land acquisition for the project.
		Same application as above	Owners have no recognizable legal right or claim to the land they are occupying (illegally appropriated land) (illegally appropriated land)	<ul style="list-style-type: none"> Not entitled to compensation for land but for crop, trees as equal to replacement cost. Affected people shall be informed 4 months prior to implementation of land acquisition for the project. Provided assistance for livelihood restoration for AHs (item 8) 	<ul style="list-style-type: none"> Not entitled to compensation for land but for crop, trees as equal to PPC's compensation price. Affected people shall be informed 4 months prior to implementation of land acquisition for the project. Provided assistance for livelihood restoration for AHs (item 8)
2.	Residential land	<p>Marginal loss (i.e., land is still viable for use and not requiring relocation).</p> <p>Severe loss (i.e., it is not being able to stay on the remaining portion of land or acquired entire area of land)</p>	<p>Owners of the land with eligible possession right or possession right acceptable to the law</p> <p>Owners of the land with eligible possession right or possession right acceptable to the law</p>	<ul style="list-style-type: none"> Compensation for the loss of land in cash at replacement cost to the legal and legal land users Providing progress bonus (item11) <ul style="list-style-type: none"> A land plot in resettlement site or apartment will be provided to the DP in consultation with them. They will have full land title or apartment ownership title without any cost to them. Alternatively, on request of the DPs through informed choice, cash compensation at full replacement cost plus the amount equivalent 	<ul style="list-style-type: none"> Compensation for the loss of land in cash at PPC's compensation price to the legal and legal land users Providing progress bonus (item11) <ul style="list-style-type: none"> A land plot in resettlement site or apartment will be provided to the DP in consultation with them. They will have full land title or apartment ownership title without any cost to them. Alternatively, on request of the DPs through informed choice, cash compensation at PPC's compensation price plus the amount

No	Type of Loss/Impacts	Application	Eligible Persons	Entitlement according to JICA/WB	Entitlement according to VN's policy
				<p>to the value of the infrastructure investments calculated averagely for each household in resettlement site. In this case, they will be expected to relocate themselves. If the compensation amounts are less than the costs of minimum land plot/apartment in the project's resettlement site, DPs will be provided additional support to enable them to acquire the land plot/apartment (or cash assistance will be provided equivalent to this difference for self-relocated DPs).</p> <ul style="list-style-type: none"> • Providing progress bonus (item11) 	<p>equivalent to the value of the infrastructure investments calculated averagely for each household in resettlement site. In this case, they will be expected to relocate themselves. If the compensation amounts are less than the costs of minimum land plot/apartment in the project's resettlement site, DPs will be provided additional support to enable them to acquire the land plot/apartment (or cash assistance will be provided equivalent to this difference for self-relocated DPs).</p> <ul style="list-style-type: none"> • Providing progress bonus (item11)
3.	Other structures	To be restructured or damaged	Owners of the structures with or without acceptable proof of ownership over the land; with or without building permit	<ul style="list-style-type: none"> • Cash compensation equal to market price on material and labour without considering depreciation and deduction of salvage material. 	<ul style="list-style-type: none"> • Cash compensation at PPC's compensation price on material and labour without considering depreciation and deduction of salvage material.
4	Graves/ Cemeteries	Affected graves	Affected owner	<ul style="list-style-type: none"> • Compensation for all costs of digging, exhumation, transporting for reburial for the affected HHs • Graves shall be excavated and haulage in compliance with traditional manner and custom 	<ul style="list-style-type: none"> • Compensation for all costs of digging, exhumation, transporting for reburial for the affected HHs • Graves shall be excavated and haulage in compliance with traditional manner and custom
5	Crops and trees	Affected crops and trees	Owners regardless of tenure status	<ul style="list-style-type: none"> • Affected people are entitled to cash compensation for affected crops, which is equal to market price. • Affected people are entitled to cash compensation for affected trees, which is equal to market price as per tree type, age and production values. If affected trees can be removable, compensation will be equal to cost for movement and actual damage. 	<ul style="list-style-type: none"> • Affected people are entitled to cash compensation for affected crops at PPC's compensation price. • Affected people are entitled to cash compensation for affected trees, which is equal to market price as per tree type, age and production values. If affected trees can be removable, compensation will be equal to cost for movement and actual damage.

No	Type of Loss/Impacts	Application	Eligible Persons	Entitlement according to JICA/WB	Entitlement according to VN's policy
				Note: <i>Affected people shall be noticed some months prior to commencement of construction. Trees and crops are grown after the notice date will not subject to compensation</i>	<ul style="list-style-type: none"> Note: <i>Affected people shall be noticed some months prior to commencement of construction. Trees and crops are grown after the notice date will not subject to compensation</i>
6	Public facilities	Works, structures, community forest/pasture for animal/or other types of land/ irrigation system to be affected as temporary or permanent use of land or landfill of solid waste.	Village, ward, governmental administrative units	<ul style="list-style-type: none"> Restoration of building, community structures at least to its originated conditions, or Replacement in the dedicated area with consultation of the affected community and relevant authorized agencies, or Compensation equal to replacement cost without considering depreciation but deduction salvage material. <p><i>Note: If damage on income is estimated (for Ex. Irrigation system, community forest, community pasture for animal), and hamlets are entitled to compensation to total damages on production, this compensation would be collectively used for solutions of restoration of income and/or new infrastructure</i></p>	<ul style="list-style-type: none"> Restoration of building, community structures at least to its originated conditions, or Replacement in the dedicated area with consultation of the affected community and relevant authorized agencies, or Compensation equal to PPC's compensation price without considering depreciation but deduction salvage material. <i>Note: If damage on income is estimated (for Ex. Irrigation system, community forest, community pasture for animal), and hamlets are entitled to compensation to total damages on production, this compensation would be collectively used for solutions of restoration of income and/or new infrastructure.</i>
7	Temporary impacts during project construction process	Agriculture land to be temporarily impacted	Affected land owner is	<ul style="list-style-type: none"> Compensation for the loss from net income during impacted period of construction. Recovery to the same or better condition than before with methods of soil quality improvement 	<ul style="list-style-type: none"> Compensation for the loss from net income during impacted period of construction. Recovery to the same or better condition than before with methods of soil quality improvement
		Temporary impact to residential land	Owner of affected land	<ul style="list-style-type: none"> Compensation for the property impacted equal to replacement cost Recovery of soil to its previous conditions 	<ul style="list-style-type: none"> Compensation for the property impacted equal to replacement cost. Recovery of soil to its previous conditions
		Damages caused by contractor to the public or private owned structures or	Owner or someone who has land use right	<ul style="list-style-type: none"> The contractor shall be requested to compensate immediately to the affected HHs, groups, communities or state agencies. 	<ul style="list-style-type: none"> The contractor shall be requested to compensate immediately to the affected HHs, groups, communities or state agencies.

No	Type of Loss/Impacts	Application	Eligible Persons	Entitlement according to JICA/WB	Entitlement according to VN's policy
		land		<ul style="list-style-type: none"> Damaged properties shall be recovered to their original conditions. 	<ul style="list-style-type: none"> Damaged properties shall be recovered to their original conditions.
8	Loss in income/livelihood due to land lost	Severely affected households due to loss, which is equal to or more than 20% of productive land or 10 % for vulnerable AHs	Owners with formal legal rights to land; Or someone who initially do not have formal legal rights to land but have a claim to legal rights based upon the laws of the country. Affected households with lease agreement over the affected land	<p>Transition subsistence allowances (stabilizing livelihood and creating jobs)</p> <ul style="list-style-type: none"> Assistance equal to 3 times of agriculture land price for entire acquired land – regardless the rate of land loss (area to get assistance is not exceeded local land handing limit). In addition, further assistance to HHs that total area of agriculture land is acquired from 10% to 30%, which is equal to 3 months in case of non-relocation, 6 months in case of relocation. From 30% to 70% is equal to 6 months in case of non-relocation, 12 months in case of relocation; total area of acquired agriculture land is more than 70%, which is equal to 12 months in case of non-relocation and 24 months in case of relocation. Assistance in cash is equal to 30kg of rice /member/month. 	<p>Transition subsistence allowances (stabilizing livelihood and creating jobs)</p> <ul style="list-style-type: none"> Assistance equal to 3 times of agriculture land price for entire acquired land – regardless the rate of land loss (area to get assistance is not exceeded local land handing limit). In addition, further assistance to HHs that total area of agriculture land is acquired from 10% to 30%, which is equal to 3 months in case of non-relocation, 6 months in case of relocation. From 30% to 70% is equal to 6 months in case of non-relocation, 12 months in case of relocation; total area of acquired agriculture land is more than 70%, which is equal to 12 months in case of non-relocation and 24 months in case of relocation. Assistance in cash is equal to 30kg of rice /member/month. (No assistance for AH that total acquired area is less than 30%)
9	Impacts on houses/structures and will require relocation	Severe impact on houses	Relocating households regardless of tenure status	<p>Transportation allowance</p> <ul style="list-style-type: none"> If households must be relocated within the province /city, which are not exceeding 20km distance (If exceeding 20km distance, it would be relocated to another province), they shall each receive a support according to Hung Yen's policy. <p>House leasing assistance</p> <ul style="list-style-type: none"> House leasing assistance is according to Hung Yen PPC. 	<p>Transportation allowance</p> <ul style="list-style-type: none"> If households must be relocated within the province /city, which are not exceeding 20km distance (If exceeding 20km distance, it would be relocated to another province), they shall each receive a support according to Hung Yen's policy. <p>House leasing assistance</p> <ul style="list-style-type: none"> House leasing assistance is according to Hung Yen PPC.

No	Type of Loss/Impacts	Application	Eligible Persons	Entitlement according to JICA/WB	Entitlement according to VN's policy
10	Higher risks of impoverishment /hardship due to loss of resource base (Vulnerable Ahs)	Loss of Land and Non-Land Assets	Affected vulnerable groups regardless of severity of impacts	Particular attention must be paid to the needs of the vulnerable groups among those displaced, especially those below the poverty line, landless, elderly, women and children, ethnic minorities etc. (WB OP4.12 Para.8)	According to policy of Hung Yen province: project affected HHs, who are entitled to social allowance at the time their land, will be assisted according to policy of Hung Yen province in case of the acquisition by the state.
11	Providing progress bonus	Damage and loss of land and property on land	Owner with affected properties	<ul style="list-style-type: none"> According to policy of Hung Yen province 	According to policy of Hung Yen province

Source: Prepared by JST

Annex 11 - Cost Estimation Process of Business Cost

Annex-11 Cost Estimation Process of Business Cost

Annex-11 describes the measures and basic information for the calculation of cost estimation.

(1) Setting Process of the Housing Rent and Sales Price

The construction cost to be estimated does not include the costs of land acquisition, repair and infrastructure. The some of the IPs in Vietnam are freely provided the land preparation and the construction by IP operators or provincial governments. Therefore, the cost to be estimated in this section is corresponding to the cases, and the building construction cost only needs to be recovered.

The proportion of the annual housing rent to the construction cost and the sales cost to the construction cost are calculated for the following conditions.

- $B/C \cong 0$
- $IRR = 10\%$

Following business periods are set for the balance calculation of the rents and the sales business models.

- Rental Model : two years construction period and 20 years business period
- Sales Model : two years construction period and 1 year sales period

Following results are calculated based on the above mentioned business condition and annual financial balance sheet:

- Annual housing rent ratio: ratio of annual rent amount to the construction cost
- Housing sale price

1) Explanation of Calculation Process

The tables for the business planning conditions and annual financial balance sheets are shown as below:

The study seeks the business planning conditions which correspond to the $B/C \doteq 0$ and $IRR = 10\%$.

Table 1 Requirement Setting Table (Calculation Method)

Profit Level Calculations

Lease Model (20 yrs)		Sales Model (Sales within 1 year after completion)	
Construction (VNC1,000)	Setting housing construction cost	Construction (000)	Sales Value
VDN195,800,000	NA	800,000	108.72%
Plan and Design		Design	VDN212,874,791
3%	Rent	3%	Rental
VDN5,874,000	7.08%	VDN5,874,000	NA
O&M	VDN13,867,022	O&M	Lease Pay
1%	Lease Pay	NA	NA
VDN1,958,000 (annual)	NA		
Renovation	Remaining	Renovation	Remaining
5%	NA	NA	NA
VDN9,790,000 (10yrs)		Occupancy rate	Rate of sold housing unit to all housings
	Revenue Success		Revenue Success
	90%		95%
Constant IRR			B/C Current
0.0%	IRR will be calculated as the result of financial sheet (The rate changes by the rent and sale price settings)		1.00
Real Price IRR			B/C Discounted
-4.8%			0.93
Inflated IRR	B/C Inflated	Inflated IRR	B/C Inflated
5.0%	1.54	5.2%	1.08

Table 2 Annual Expenditure Calculation Table (Calculation Method)

Lease Cash Flow

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8
Expense	103,774,000	97,900,000	1,958,000	1,958,000	1,958,000	1,958,000	1,958,000	1,958,000
Income	0	0	12,480,319	12,480,319	12,480,319	12,480,319	12,480,319	12,480,319
Balance	-103,774,000	-97,900,000	10,522,319	10,522,319	10,522,319	10,522,319	10,522,319	10,522,319
Cumulative	-103,774,000	-201,674,000	-191,151,681	-180,629,361	-170,107,042	-159,584,722	-149,062,403	-138,540,083
Year	Y9	Y10	Y11	Y12	Y13	Y14	Y15	Y16
Expense	1,958,000	1,958,000	1,958,000	1,958,000	11,748,000	1,958,000	1,958,000	1,958,000
Income	12,480,319	12,480,319	12,480,319	12,480,319	12,480,319	12,480,319	12,480,319	12,480,319
Balance	10,522,319	10,522,319	10,522,319	10,522,319	732,319	10,522,319	10,522,319	10,522,319
Cumulative	-128,017,764	-117,495,444	-106,973,125	-96,450,805	-95,718,486	-85,196,166	-74,673,847	-64,151,527
Year	Y17	Y18	Y19	Y20	Y21	Y22	Total	
Expense	1,958,000	1,958,000	1,958,000	1,958,000	1,958,000	1,958,000	250,624,000	
Income	12,480,319	12,480,319	12,480,319	12,480,319	12,480,319	12,480,319	249,606,389	
Balance	10,522,319	10,522,319	10,522,319	10,522,319	10,522,319	10,522,319	-1,017,611	
Cumulative	-53,629,208	-43,106,888	-32,584,569	-22,062,249	-11,539,930	-1,017,611		

Sales Cash Flow

Year	Y1	Y2	Y3	Total
Expense	103,774,000	97,900,000	0	201,674,000
Income	0	0	202,231,051	202,231,051
Balance	-103,774,000	7,900,000	202,231,051	557,051
Cumulative	-103,774,000	7,900,000	557,051	

(Design cost + Construction cost) / 2

Construction cost / 2

Management and operation cost

Income by annual rent

(Design cost + Construction cost) / 2

Construction cost / 2

Income by sales

In the case of B/C = 0, the rent ratio is set to make this number as approx. 0

In the case of B/C = 0, the sale price is set to make this number as approx. 0.

In the case of IRR=10 %, the rent price is set to make the result of the IRR function of the light blue highlighted parts to be 10% in Excel calculation.
Reference : <http://www.excelfunctions.net/Excel-Irr-Function.html>

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2) Calculation Result

a) Setting rent and sale price in the case of $B/C \approx 0$

The following result is calculated by the annual balance sheet calculation.

- Rent price : set the annual rent price as 6.50 % of the construction cost.
- Sale price : set the sale price as 108.72 % of the construction cost.

Table 3 Requirement Setting Table (Calculation Result)

Profit Level Calculations

Lease Model (20 years leasing)		Sales Model (Sales within 1 year after completion)	
Construction (VNC1,000)	Sales Value	Construction (VNC1,000)	Sales Value
<u>VDN195,800,000</u>	NA	VDN195,800,000	<u>108.72%</u>
Plan and Design		Plan and Design	VDN212,874,791
<u>3%</u>	Rental	<u>3%</u>	Rental
VDN5,874,000	<u>6.50%</u>	VDN5,874,000	NA
O&M	VDN12,727,000	O&M	Lease Pay
<u>1.0%</u>	Lease Pay	NA	NA
VDN1,958,000 (annual)	NA		
Renovation	Remaining	Renovation	Remaining
<u>0%</u>	NA	NA	NA
VDN0 (10yrs)			
	Revenue Success		Revenue Success
	<u>95%</u>		<u>95%</u>
Constant IRR	B/C Current	Constant IRR	B/C Current
0.0%	1.00	0.2%	1.00
Real Price IRR	B/C Discounted	Real Price IRR	B/C Discounted
-4.7%	0.65	-4.6%	0.93
Inflated IRR	B/C Inflated	Inflated IRR	B/C Inflated
5.0%	1.59	5.2%	1.08

Table 4 Annual Expenditure Calculation Table (Calculation Result)

Lease Cash Flow

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8
Expense	103,774,000	97,900,000	1,958,000	1,958,000	1,958,000	1,958,000	1,958,000	1,958,000
Income	0	0	12,090,650	12,090,650	12,090,650	12,090,650	12,090,650	12,090,650
Balance	<u>-103,774,000</u>	<u>-97,900,000</u>	<u>10,132,650</u>	<u>10,132,650</u>	<u>10,132,650</u>	<u>10,132,650</u>	<u>10,132,650</u>	<u>10,132,650</u>
Cumulative	-103,774,000	-201,674,000	-191,541,350	-181,408,700	-171,276,050	-161,143,400	-151,010,750	-140,878,100
Year	Y9	Y10	Y11	Y12	Y13	Y14	Y15	Y16
Expense	1,958,000	1,958,000	1,958,000	1,958,000	1,958,000	1,958,000	1,958,000	1,958,000
Income	12,090,650	12,090,650	12,090,650	12,090,650	12,090,650	12,090,650	12,090,650	12,090,650
Balance	<u>10,132,650</u>	<u>10,132,650</u>	<u>10,132,650</u>	<u>10,132,650</u>	<u>10,132,650</u>	<u>10,132,650</u>	<u>10,132,650</u>	<u>10,132,650</u>
Cumulative	-130,745,450	-120,612,800	-110,480,150	-100,347,500	-90,214,850	-80,082,200	-69,949,550	-59,816,900
Year	Y17	Y18	Y19	Y20	Y21	Y22	Total	
Expense	1,958,000	1,958,000	1,958,000	1,958,000	1,958,000	1,958,000	240,834,000	
Income	12,090,650	12,090,650	12,090,650	12,090,650	12,090,650	12,090,650	241,813,000	
Balance	<u>10,132,650</u>	<u>10,132,650</u>	<u>10,132,650</u>	<u>10,132,650</u>	<u>10,132,650</u>	<u>10,132,650</u>	979,000	
Cumulative	-49,684,250	-39,551,600	-29,418,950	-19,286,300	-9,153,650	979,000		

Sales Cash Flow

Year	Y1	Y2	Y3	Total
Expense	103,774,000	97,900,000	0	201,674,000
Income	0	0	202,231,051	202,231,051
Balance	<u>-103,774,000</u>	<u>-97,900,000</u>	<u>202,231,051</u>	<u>557,051</u>
Cumulative	-103,774,000	-201,674,000	557,051	

b) Setting rent in the case of IRR=10 %

The following result is calculated by the annual balance sheet calculation.

- Annual housing rent ratio : the annual housing rent as 14.49 % of construction cost corresponds to the financial condition of IRR=10 %.

Table 5 Requirement Setting Table (Case of Rent Setting as IRR=10%)

Profit Level Calculations

Lease Model (20 years leasing)	
Construction (VNC1,000)	Sales Value
<u>VDN195,800,000</u>	NA
Plan and Design	
<u>3%</u>	Rental
VDN5,874,000	<u>14.49%</u>
O&M	VDN28,371,420
<u>1%</u>	Lease Pay
VDN1,958,000 (annual)	NA
Renovation	Remaining
<u>0%</u>	NA
VDN0 (10yrs)	
	Revenue Success
	<u>95%</u>
Constant IRR	B/C Current
10.0%	2.24
Real Price IRR	B/C Discounted
4.8%	1.45
Inflated IRR	B/C Inflated
15.6%	3.54

Table 6 Annual Expenditure Calculation Table (Case of Rent Setting as IRR=10%)

Lease Cash Flow

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8
Expense	103,774,000	97,900,000	1,958,000	1,958,000	1,958,000	1,958,000	1,958,000	1,958,000
Income	0	0	26,952,849	26,952,849	26,952,849	26,952,849	26,952,849	26,952,849
Balance	<u>-103,774,000</u>	<u>-97,900,000</u>	<u>24,994,849</u>	<u>24,994,849</u>	<u>24,994,849</u>	<u>24,994,849</u>	<u>24,994,849</u>	<u>24,994,849</u>
Cumulative	-103,774,000	-201,674,000	-176,679,151	-151,684,302	-126,689,453	-101,694,604	-76,699,755	-51,704,906
Year	Y12	Y13	Y14	Y15	Y16	Y9	Y10	Y11
Expense	1,958,000	1,958,000	1,958,000	1,958,000	1,958,000	1,958,000	1,958,000	1,958,000
Income	26,952,849	26,952,849	26,952,849	26,952,849	26,952,849	26,952,849	26,952,849	26,952,849
Balance	<u>24,994,849</u>	<u>24,994,849</u>	<u>24,994,849</u>	<u>24,994,849</u>	<u>24,994,849</u>	<u>24,994,849</u>	<u>24,994,849</u>	<u>24,994,849</u>
Cumulative	48,274,490	73,269,339	98,264,188	123,259,037	148,253,886	-26,710,057	-1,715,208	23,279,641
Year	Y17	Y18	Y19	Y20	Y21	Y22	Total	
Expense	1,958,000	1,958,000	1,958,000	1,958,000	1,958,000	1,958,000	240,834,000	
Income	26,952,849	26,952,849	26,952,849	26,952,849	26,952,849	26,952,849	539,056,980	
Balance	<u>24,994,849</u>	<u>24,994,849</u>	<u>24,994,849</u>	<u>24,994,849</u>	<u>24,994,849</u>	<u>24,994,849</u>	298,222,980	
Cumulative	173,248,735	198,243,584	223,238,433	248,233,282	273,228,131	298,222,980		

c) Setting sale price in the case of IRR=10%

The following result is calculated by the profit balance calculation.

– Housing sale price: Setting sales price as 125.54 % of the construction corresponds to the financial condition of IRR=10 %.

Table 7 Requirement Setting Table (Case of Sales Price as IRR=10%)

Sales Model (Sales within 1 year after completion)	
Construction (VNC1,000)	Sales Value
VDN916,608,000	<u>125.54%</u>
Plan and Design	VDN1,150,709,683
3%	Rental
VDN27,498,240	NA
O&M	Lease Pay
NA	NA
Renovation	Remaining
NA	NA
	Revenue Success
	<u>95%</u>
Constant IRR	B/C Current
10.08%	1.16
Real Price IRR	B/C Discounted
4.8%	1.08
Inflated IRR	B/C Inflated
15.6%	1.25

Table 8 Annual Expenditure Calculation Table (Case of Sales Price as IRR=10%)

Sales Cash Flow

	Y1	Y2	Y3	Total
Expense	485,802,240	458,304,000	0	944,106,240
Income	0	0	1,093,174,199	1,093,174,199
Balance	<u>-485,802,240</u>	<u>-458,304,000</u>	<u>1,093,174,199</u>	<u>149,067,959</u>
Cumulative	-485,802,240	-944,106,240	149,067,959	

(2) Comparison of Housing Construction Cost and Workers Housing Affordability

In this section, the rent and the housing sales price of the worker house for lease is calculated from the construction cost and the management expenditure, then it compares with workers' affordable housing cost. The calculated construction cost in this section does not include the costs of land acquisition, repair and infrastructure as mentioned in section (1). The some of the IPs in Vietnam are freely provided the land preparation and the construction by IP operators or provincial governments, and some other IPs need to prepare the land by themselves or factory owners.

In the case of calculation, it is examined by the results of construction and management costs and assumed rent, sales revenue of housing for workers except for land expropriation, compensation, and the infrastructure development costs, etc. The results of the study show the costs and the conditions of basic cost. When factory owners shoulder that of land and the infrastructure development as well as outsourcing housing development to third parties, and the building construction cost only needs to be recovered.

1) Rent and Affordability in the Rental Model

The rent of the workers' houses for lease is calculated from the construction cost and the management expenditure, and then it is compared with workers' affordable housing costs. The study examines non-profitable case ($B/C \doteq 1$) and profitable case ($IRR \doteq 10\%$)¹ which assumes earnings of 10% of investment in the lease business.

The rent setting is calculated as using the construction original cost and the relationship between rent and the calculated construction cost in (1) 2).

The rent of each housing type and the affordable housing cost are set based on the following condition.

- Business condition: Including construction cost, design expense (3 %), and running cost (1 %), Construction period: 2 years, Business operation period: 20 years, Occupancy rate 95 %
- Non-profitable case: 6.5 % of the construction cost is the annual sum of rent
- Profitable case: 14.49 % of the construction cost is the annual sum rent
- Housing cost of low-rise single house: Rent paid by two workers. Income class of first Quintile (lower 0-20 %) is assumed (Refer to Chapter 3 (8)) of Main Text.
- Housing cost of mid-rise single house: Rent paid by four workers. Income class of first Quintile (lower 0-20 %) is assumed (ditto).
- Housing cost of mid-rise family house: Rent paid by two workers. Income class of second Quintile (lower 20-40 %) is assumed (ditto).

The affordable residential cost for the 1st quintile group is about 15 % of their incomes, and 20 % is for the 2nd quintile group. The survey result shows that 15 % to 20 % of their income is used for their residential costs, and the higher income groups allocate more percentages of their incomes for the residences.

The relationship between housing construction cost, rent of the lease model, and the workers' affordable housing cost is shown below.

¹ IRR (Internal Rate of Return) is measures how much profit an investment makes, without effect of things such as interest rates or inflation:

Table 9 Rent of Non-Profitable Case and Affordable Housing Cost

Rent of Non-Profitable Case ($B/C \cong 1$)

Housing Type	Construction Cost (1,000VND)			Rent (Non-Profitable Case)	
	Total Cost	Housing Unit	Construction Cost Per Unit	Annual Rent Ratio *1	Monthly Rent (1,000VND)
	a	b	c=a/b	D	e=c*d/12
(1) Low-Rise Single	133,500,000	916	145,742	6.50%	789
(2) Mid-Rise Single	99,582,806	231	431,094	6.50%	2,335
(3) Mid-Rise Family	627,200,000	1,290	486,202	6.50%	2,634

*1: Annual Rent Ratio is the ratio of the annual rent to the construction cost. Annual rent includes maintenance cost and interest of business loan for 20 years.

Affordable Housing Cost Ratio for Non-Profitable Case ($B/C \cong 1$)

Housing Type	Housing Cost for Workers				
	Expected Income Group	Monthly Affordable Cost per Person (1,000VND) f	Number of persons to afford G	Cost per Housing Unit (1,000VND) h=f*g	Affordable Rent Price Ratio (1,000VND) i=e/h
(1) Low-Rise Single	Quintile 1	447	2	893	113.1%
(2) Mid-Rise Single	Quintile 1	447	4	1,787	76.5%
(3) Mid-Rise Family	Quintile 2	1,067	2	2,133	81.0%

Table 10 Rent of Profitable Case and Affordable Housing Cost

Rent of Profitable Case ($IRR \cong 10\%$)

Housing Type	Construction Cost (1,000VND)			Rent (Profitable Case)	
	Total Cost	Housing Unit	Construction Cost Per Unit	Annual Rent Ratio *1	Monthly Rent (1,000VND)
	a	b	c=a/b	D	e=c*d/12
(1) Low-Rise Single	133,500,000	916	145,742	14.49%	1,760
(2) Mid-Rise Single	99,582,806	231	431,094	14.49%	5,205
(3) Mid-Rise Family	627,200,000	1,290	486,202	14.49%	5,871

*1: Annual Rent Ratio is the ratio of the annual rent to the construction cost. Annual rent includes maintenance cost and interest of business loan for 20 years.

Affordable Housing Cost Ratio of Profitable Case ($IRR \cong 10\%$)

Housing Type	Housing Cost for Workers				
	Expected Income Group	Monthly Affordable Cost per Person (1,000VND) f	Number of persons to afford g	Cost per Housing Unit (1,000VND) h=f*g	Affordable Rent Price Ratio (1,000VND) i=e/h
(1) Low-Rise Single	Quintile 1	447	2	893	50.7%
(2) Mid-Rise Single	Quintile 1	447	4	1,787	34.3%
(3) Mid-Rise Family	Quintile 2	1,067	2	2,133	36.3%

Followings are findings from the result of examination.

- The affordable cost for rental housing and purchase by workers (expected the lowest 20 % of income class of workers are able to afford about 15 % of the cost, and 20 % to 40 % of low income class of workers are able to afford about 20 % of their income for housing) is higher than the rent of low rise houses of non-profitable case, but lower than the selling price or rent based on the original housing construction cost.
- While this price is higher than rent, which is set on the basis of construction cost of lower-rise housing, it is lower than rent of lower-rise housing or sales price.
- 20 % of the lowest income class of workers can afford housing costs for single type units in the low-rise decent rent rooms, but they cannot afford the rent of the profitable rent case (approx. 50 % of housing cost for rent).
- 20 % to 40 % of the lowest income class of workers cannot afford housing costs for single and family type units in the mid-rise buildings, 3-4 persons, average 40 m² (approx. 80 % of housing cost for rent).

2) **Housing Price and Affordability in Sales Model**

The price of the workers' houses for sale is calculated from the construction cost and the management expenditure, and then it compared with workers' affordable housing cost. The prices of each housing type and the affordable housing cost are calculated based on the following conditions.

The rent setting is calculated as using the construction original cost and the relationship between rent and the calculated construction cost in (1) 2).

- Business condition: Including construction cost, design expense (3 %), Construction period: 2 years, sales period: 1 year, Sales rate 95 %
- Non-profitable case: 108.72 % of the construction cost is the corresponding sales price (Refer to Annex 11)
- Profitable case: 125.54 % of the construction cost is the corresponding sales price (ditto)
- Affordable housing cost of workers: Assuming 15 % of income for the lower 0-20 %, and 20 % of income for the lower 20-40 % (Refer to previous section 1).

The relation of the housing construction cost, the price of the sales model, and the workers' affordable housing cost is resumed as follows.

Table 11 Sales Price of Non-Profitable Case and Affordable Housing Cost

Affordable Ratio for Housing Purchase in Non-Profiting Case (B/C
≅ 1)

Housing Type	Housing Sales Price (1,000VND)	Possible Housing Purchase Ratio for Worker Households	
		Quintile 1 Income Group (Lower 0-20 %) (Affordable Purchase Price: 135,372k VND)	Quintile 2 Income Group (Lower 20-40 %) (Affordable Purchase Price: 322,268k VND)
(1) Low-Rise Single	158,451	85.4%	203.4%
(2) Mid-Rise Single	468,686	28.9%	68.8%
(3) Mid-Rise Family	528,598	25.6%	61.0%

Table 12 Sales Price of Profitable Case and Affordable Housing Cost

Affordable Ratio for Housing Purchase in Profiting Case (IRR ≅
10%)

Housing Type	Housing Sales Price (1,000VND)	Possible Housing Purchase Ratio for Worker Households	
		Quintile 1 Income Group (Lower 0-20 %) (Affordable Purchase Price: 135,372k VND)	Quintile 2 Income Group (Lower 20-40 %) (Affordable Purchase Price: 322,268k VND)
(1) Low-Rise Single	182,965	74.0%	176.1%
(2) Mid-Rise Single	541,196	25.0%	59.5%
(3) Mid-Rise Family	610,377	22.2%	52.8%

Followings are findings from the result of examination.

- The workers' potential purchasing powers cover up to approximately 61% of the non-profiting sales price of the family unit in the mid-rise buildings.
- Potential purchasing power of typical IP workers with family exceeds both non-profiting and profiting prices of the single type units in the low-rise buildings. The purchasing power may satisfy affordability to purchase family type units in the low-rise buildings if they are available.
- As a result of the study, it is stated that the construction cost based rent and sales price of the housings do not match with workers' income.

3) Conclusion

Construction cost for IP workers is beyond the affordable housing cost. Since expected rent and sales price are lower than corresponding housing cost, it is difficult to expect developers' voluntary involvement in housing business for workers if the developers are third party to the business stakeholders group of IP.

- Social housing project targeted to the industrial workers whose income is first and second quintile levels basically do not work in commercial business. However, housing business for families in low-rise buildings is exceptional.
- Housing rent business for families occupying low-rise buildings possibly work as commercial business. Housing rent business for two singles in a low-rise building might be able to work in commercial business if provided with some grants.
- For business forms other than the promising business types mentioned above, it is necessary to provide an amount of subsidy equivalent to attain realization.

(3) **Calculation Result of Investment Cost Allocation**

This section shows the financial allocation of investment cost and its calculation details.

Each borrowed business cost by each related entities is calculated based on monthly income and repayment by using PV function from Excel.

PV function: a function to calculate an amount of loan when a profit rate is estimated as stable. The loan amount can be calculated by “PV (discount rate, term, stable payment amount)”.

Reference: <http://www.excelfunctions.net/Excel-Pv-Function.html>

(Monthly refund amount=total monthly income, discount rate =each setting profit rate, term=20 years)

1a Housing Allowance 500,000 VND/per month

(Notice: the calculation total may not be matched exactly since the numbers are rounded)

Business Cost Conditions

		Cost (mill. VND)	Note
Hung Yen Province	Land Acquisition	25,929	
	Land Preparation	0	
Company	Monthly Housing Support	0.5	Monthly amount per person
	Development Cost Allocation	0	Per person
Other Business	Business Content	None	
	Profit from Sales	0	Additional income
	Cost outside of Business	0	Cost outside of business

Rent Afforded by Workers

(Unit :1,000VND)

	Worker Number by each Housing	Number of Housing	Number of Workers	Afforded Rent	Total in a Month	Actual Monthly Income*
Low-Rise Single	2	916	1,832	893	818,352	777,434
Mid-Rise Single	4	231	924	1,787	412,750	392,112
Mid-Rise Family	2	1,290	2,580	2,133	2,752,120	2,614,514
Total Monthly Income	Total Residents		5,336			3,784,061
Loaned Business Cost						573,380,969

*:Income case when the occupancy rate is 95%

Housing Allowance by Company

(Unit: 1,000VND)

	Worker Number by each Housing	Number of Housing	Number of Workers	Afforded Rent	Total in a Month	Actual Monthly Income*
Low-Rise Single	2	916	1,832	1,000	916,000	870,200
Mid-Rise Single	4	231	924	2,000	462,000	438,900
Mid-Rise Family	2	1,290	2,580	1,000	1,290,000	1,225,500
Total Monthly Income	Total Residents		5,336			2,534,600
Loaned Business Cost						384,056,059

*:Income case when the occupancy rate is 95%

Business Cost Allocation by Roles

(Unit: 1,000,000 VND)

Cost	Total Cost	Cost by the Roles				Shortage
	Cost	Resident	Company	Government	Other Developers (Commercial Operator Facility Operator and General Profit Business)	
Total Business Cost	1,568,168	908,174	608,304	25,929	25,761	-
Non-Loaned Business Cost	51,690	0	0	25,929	25,761	-
Loaned Business Cost	1,516,478	908,174	608,304	0	0	-
Cost Allotted for Business Cost	957,437	573,381	384,056	0	0	-
Cost Allotted for Interest Payment	559,041	334,793	224,248	0	0	-
Shortage	-	-	-	-	-	302,291

Result of Investment Fund Allocation

(Unit: 1,000,000 VND)

Item		Total Cost	Cost by the Roles					Initial Loan Amount
		Cost	Resident	Company	Government	Other Developers (Commercial Operator Facility Operator and General Profit Business)	Shortage	
Total Business Cost	a	<u>1,311,418</u>	573,381	384,056	25,929	25,761	302,291	
(Ratio)		—	43.7%	29.3%	2.0%	2.0%	23.1%	
Commercial Facility Business Income	b	25,761				25,761		
General Profit Business	c	—				—		
Total Business Cost for Worker Housings	d=a-b-c	<u>1,285,657</u>	<u>573,381</u>	<u>384,056</u>	<u>25,929</u>	—	<u>302,291</u>	—
(Ratio)		—	44.6%	29.9%	2.0%	—	23.5%	—
Rent & Housing Allowance (Sum Repayable of Initial Loan)	e	957,437	573,381	384,056				957,437
Land Acquisition Cost	f	25,929			25,929			
Land Preparation Cost	g	0			0			
Contribution of Development Cost	h	0		0				
Shortage	d-(e~h)	302,291						

1b Housing Allowance 300,000 VND/per Month

Business Cost Conditions

		Cost (mill. VND)	Note
Hung Yen Province	Land Acquisition	25,929	
	Land Preparation	0	
Company	Monthly Housing Support	0.3	Monthly amount per person
	Development Cost Allocation	0	Per person
Other Business	Business Content	None	
	Profit from Sales	0	Additional income
	Cost outside of Business	0	Cost outside of business

Rent Afforded by Workers

(Unit : 1,000VND)

	Worker Number by each Housing	Number of Housing	Number of Workers	Afforded Rent	Total in a Month	Actual Monthly Income*
Low-Rise Single	2	916	1,832	893	818,352	777,434
Mid-Rise Single	4	231	924	1,787	412,750	392,112
Mid-Rise Family	2	1,290	2,580	2,133	2,752,120	2,614,514
Total Monthly Income	Total Residents		5,336			3,784,061
Loaned Business Cost						573,380,969

*:Income case when the occupancy rate is 95%

Housing Allowance by Company

(Unit : 1,000VND)

	Worker Number by each Housing	Number of Housing	Number of Workers	Afforded Rent	Total in a Month	Actual Monthly Income*
Low-Rise Single	2	916	1,832	600	549,600	522,120
Mid-Rise Single	4	231	924	1,200	277,200	263,340
Mid-Rise Family	2	1,290	2,580	600	774,000	735,300
Total Monthly Income	Total Residents		5,336			1,520,760
Loaned Business Cost						230,433,635

*:Income case when the occupancy rate is 95%

Business Cost Allocation by Roles

(Unit: 1,000,000 VND)

Cost	Total Cost	Cost by the Roles				Shortage
	Cost	Resident	Company	Government	Other Developers (Commercial Operator Facility Operator and General Profit Business)	
Total Business Cost	1,324,846	908,174	364,982	25,929	25,761	-
Non-Loaned Business Cost	51,690	0	0	25,929	25,761	-
Loaned Business Cost	1,273,156	908,174	364,982	0	0	-
Cost Alloted for Business Cost	803,815	573,381	230,434	0	0	-
Cost Alloted for Interest Payment	469,341	334,793	134,548	0	0	-
Shortage	-	-	-	-	-	455,914

Result of Investment
Fund Allocation

(Unit: 1,000,000 VND)

Item		Total Cost	Cost by the Roles					Initial Loan Amount
		Cost	Resident	Company	Government	Other Developers (Commercial Operator Facility Operator and General Profit Business)	Shortage	
Total Business Cost	a	<u>1,311,418</u>	573,381	230,434	25,929	25,761	455,914	
(Ratio)		—	43.7%	17.6%	2.0%	2.0%	34.8%	
Commercial Facility Business Income	b	25,761				25,761		
General Profit Business	c	—				—		
Total Business Cost for Worker Housings	d=a-b-c	<u>1,285,657</u>	573,381	230,434	<u>25,929</u>	—	<u>455,914</u>	—
(Ratio)		—	44.6%	17.9%	<u>2.0%</u>	—	<u>35.5%</u>	—
Rent & Housing Allowance (Sum Repayable of Initial Loan)	e	803,815	573,381	230,434				803,815
Land Acquisition Cost	f	25,929			25,929			
Land Preparation Cost	g	0			0			
Contribution of Development Cost	h	0		0				
Shortage	d-(e~h)	455,914						

2a-1 20% of Site for Sale

Business Cost Conditions

		Cost (mill. VND)	Note
Hung Yen Province	Land Acquisition	25,929	
	Land Preparation	0	
Company	Monthly Housing Support	0.5	Monthly amount per person
	Development Cost Allocation	0	Per person
Other Business	Business Content	Sell 20% business land of low rise housing	
	Profit from Sales	63,540	Additional income *
	Original Construction Cost	170,880	Construction cost outside of business**

* Sell 20% (3.22ha) of total housing business area for low rise housing with 10% profits.

**Construction cost outside of selling area

Rent Afforded by Workers

(Unit :1,000VND)

	Worker Number by each Housing	Number of Housing	Number of Workers	Afforded Rent	Total in a Month	Actual Monthly Income*
Low-Rise Single	2	204	408	893	182,253	173,140
Mid-Rise Single	4	231	924	1,787	412,750	392,112
Mid-Rise Family	2	1,290	2,580	2,133	2,752,120	2,614,514
Total Monthly Income		Total Residents	3,912			3,179,767
Loaned Business Cost						481,815,147

*:Income case when the occupancy rate is 95%

Housing Allowance by Company

(Unit :1,000VND)

	Worker Number by each Housing	Number of Housing	Number of Workers	Afforded Rent	Total in a Month	Actual Monthly Income*
Low-Rise Single	2	204	408	1,000	204,000	193,800
Mid-Rise Single	4	231	924	2,000	462,000	438,900
Mid-Rise Family	2	1,290	2,580	1,000	1,290,000	1,225,500
Total Monthly Income		Total Residents	3,912			1,858,200
Loaned Business Cost						281,564,337

*:Income case when the occupancy rate is 95%

Business Cost Allocation by Roles

(Unit: 1,000,000 VND)

Cost	Total Cost	Cost by the Roles				Shortage
	Cost	Resident	Company	Government	Other Developers (Commercial Operator Facility Operator and General Profit Business)	
Total Business Cost	1,495,222	763,144	445,968	25,929	260,181	-
Non-Loaned Business Cost	260,181	0	0	25,929	260,181	-
Loaned Business Cost	1,209,112	763,144	445,968	0	0	-
Cost Allotted for Business Cost	763,379	481,815	281,564	0	0	-
Cost Allotted for Interest Payment	445,733	281,329	164,404	0	0	-
Shortage	-	-	-	-	-	261,929

Result of Investment Fund Allocation

(Unit: 1,000,000 VND)

Item		Total Cost	Cost by the Roles					Initial Loan Amount
		Cost	Resident	Company	Government	Other Developers (Commercial Operator Facility Operator and General Profit Business)	Shortage	
Total Business Cost	a	<u>1,311,418</u>	481,815	281,564	25,929	260,181	261,929	
(Ratio)		—	36.7%	21.5%	2.0%	19.8%	20.0%	
Commercial Facility Business Income	b	25,761				63,540		
General Profit Business	c	234,420				234,420		
Total Business Cost for Worker Housings	d=a-b-c	<u>1,051,237</u>	481,815	281,564	<u>25,929</u>	—	<u>261,929</u>	—
(Ratio)		—	45.8%	26.8%	<u>2.5%</u>	—	<u>24.9%</u>	—
Rent & Housing Allowance (Sum Repayable of Initial Loan)	e	763,379	481,815	281,564				763,379
Land Acquisition Cost	f	25,929			25,929			
Land Preparation Cost	g				0			
Contribution of Development Cost	h	0		0				
Shortage	d-(e-h)	261,929						

2a-2 20% of Family Housing for Sale

Business Cost Conditions

		Cost (mill. VND)	Note
Hung Yen Province	Land Acquisition	25,929	
	Land Preparation	0	
Company	Monthly Housing Support	0.5	Monthly amount per person
	Development Cost Allocation	0	Per person
Other Business	Business Content	Sell 20% business land of medium rise housing	
	Profit from Sales	19,452	Additional income *
	Original Construction Cost	194,524	Construction cost outside of business**

* Sell 20% (3.22ha) of total housing business area for medium rise housing with 10% profits.

**Construction cost outside of selling area

Rent Afforded by Workers

(Unit : 1,000VND)

	Worker Number by each Housing	Number of Housing	Number of Workers	Afforded Rent	Total in a Month	Actual Monthly Income*
Low-Rise Single	2	916	1,832	893	818,352	777,434
Mid-Rise Single	4	231	924	1,787	412,750	392,112
Mid-Rise Family	2	890	1,780	2,133	1,898,750	1,803,812
Total Monthly Income	Total Residents		4,536			2,973,359
Loaned Business Cost						450,539,080

*:Income case when the occupancy rate is 95%

Housing Allowance by Company

(Unit : 1,000VND)

	Worker Number by each Housing	Number of Housing	Number of Workers	Afforded Rent	Total in a Month	Actual Monthly Income*
Low-Rise Single	2	916	1,832	1,000	916,000	870,200
Mid-Rise Single	4	231	924	2,000	462,000	438,900
Mid-Rise Family	2	890	1,780	1,000	890,000	845,500
Total Monthly Income	Total Residents		4,536			2,154,600
Loaned Business Cost						326,476,440

*:Income case when the occupancy rate is 95%

Business Cost Allocation by Roles

(Unit: 1,000,000 VND)

Cost	Total Cost	Cost by the Roles				Shortage
		Cost	Resident	Company	Government	
Total Business Cost	1,496,376	713,606	517,104	25,929	239,737	-
Non-Loaned Business Cost	265,666	0	0	25,929	239,737	-
Loaned Business Cost	1,230,710	713,606	517,104	0	0	-
Cost Allotted for Business Cost	777,015	450,539	326,476	0	0	-
Cost Allotted for Interest Payment	453,695	263,067	190,628	0	0	-
Shortage	-	-	-	-	-	268,737

Result of Investment Fund Allocation

(Unit: 1,000,000 VND)

Item		Total Cost	Cost by the Roles				Shortage	Initial Loan Amount
		Cost	Resident	Company	Government	Other Developers (Commercial Operator Facility Operator and General Profit Business)		
Total Business Cost	a	<u>1,311,418</u>	450,539	326,476	25,929	239,737	268,737	
(Ratio)		—	34.4%	24.9%	2.0%	18.3%	20.5%	
Commercial Facility Business Income	b	25,761				25,761		
General Profit Business	c	213,976				213,976		
Total Business Cost for Worker Housings	d=a-b-c	<u>1,071,681</u>	450,539	326,476	<u>25,929</u>	—	<u>268,737</u>	—
(Ratio)		—	42.0%	30.5%	<u>2.4%</u>	—	<u>25.1%</u>	—
Rent & Housing Allowance (Sum Repayable of Initial Loan)	e	777,016	450,539	326,476				777,016
Land Acquisition Cost	f	25,929			25,929			
Land Preparation Cost	g				0			
Contribution of Development Cost	h	0		0				
Shortage	d-(e~h)	268,737						

2b-1 Contribution Cost for Company 55 mil VND/per Person

Business Cost Conditions

		Cost (mill. VND)	Note
Hung Yen Province	Land Acquisition	25,929	
	Land Preparation	0	
Company	Monthly Housing Support	0.5	Monthly amount per person
	Development Cost Allocation	55	Per person
Other Business	Business Content	None	
	Profit from Sales	0	Additional income
	Cost outside of Business	0	Cost outside of business

Rent Afforded by Workers

(Unit :1,000VND)

	Worker Number by each Housing	Number of Housing	Number of Workers	Afforded Rent	Total in a Month	Actual Monthly Income*
Low-Rise Single	2	916	1,832	893	818,352	777,434
Mid-Rise Single	4	231	924	1,787	412,750	392,112
Mid-Rise Family	2	1,290	2,580	2,133	2,752,120	2,614,514
Total Monthly Income	Total Residents		5,336			3,784,061
Loaned Business Cost						573,380,969

*:Income case when the occupancy rate is 95%

Housing Allowance by Company

(Unit :1,000VND)

	Worker Number by each Housing	Number of Housing	Number of Workers	Afforded Rent	Total in a Month	Actual Monthly Income*
Low-Rise Single	2	916	1,832	1,000	916,000	870,200
Mid-Rise Single	4	231	924	2,000	462,000	438,900
Mid-Rise Family	2	1,290	2,580	1,000	1,290,000	1,225,500
Total Monthly Income	Total Residents		5,336			2,534,600
Loaned Business Cost						384,056,059

*:Income case when the occupancy rate is 95%

Business Cost Allocation by Roles

(Unit: 1,000,000 VND)

Cost	Total Cost	Cost by the Roles				Shortage
	Cost	Resident	Company	Government	Other Developers (Commercial Operator Facility Operator and General Profit Business)	
Total Business Cost	1,861,648	908,174	901,784	25,929	25,761	-
Non-Loaned Business Cost	345,170	0	293,480	25,929	25,761	-
Loaned Business Cost	1,516,478	908,174	608,304	0	0	-
Cost Allotted for Business Cost	957,437	573,381	384,056	0	0	-
Cost Allotted for Interest Payment	559,041	334,793	224,248	0	0	-
Shortage	-	-	-	-	-	8,811

Result of Investment Fund Allocation

(Unit: 1,000,000 VND)

Item		Total Cost	Cost by the Roles				Shortage	Initial Loan Amount
		Cost	Resident	Company	Government	Other Developers (Commercial Operator Facility Operator and General Profit Business)		
Total Business Cost	a	<u>1,311,418</u>	573,381	677,536	25,929	25,761	8,811	
(Ratio)		—	43.7%	51.7%	2.0%	2.0%	0.7%	
Commercial Facility Business Income	b	25,761				25,761		
General Profit Business	c	—				—		
Total Business Cost for Worker Housings	d=a-b-c	<u>1,285,657</u>	573,381	677,536	<u>25,929</u>	—	<u>8,811</u>	—
(Ratio)		—	44.6%	52.7%	<u>2.0%</u>	—	<u>0.7%</u>	—
Rent & Housing Allowance (Sum Repayable of Initial Loan)	e	957,437	573,381	384,056				957,437
Land Acquisition Cost	f	25,929			25,929			
Land Preparation Cost	g	0			0			
Contribution of Development Cost	h	293,480		293,480				
Shortage	d-(e~h)	8,811						

2b-2 Land Preparation Cost Born by Local Government

Business Cost Conditions

		Cost (mill. VND)	Note
Hung Yen Province	Land Acquisition	25,929	
	Land Preparation	112,290	
Company	Monthly Housing Support	0.5	Monthly amount per person
	Development Cost Allocation	35	Per person
Other Business	Business Content	None	
	Profit from Sales	0	Additional income
	Cost outside of Business	0	Cost outside of business

Rent Afforded by Workers

(Unit : 1,000VND)

	Worker Number by each Housing	Number of Housing	Number of Workers	Afforded Rent	Total in a Month	Actual Monthly Income*
Low-Rise Single	2	916	1,832	893	818,352	777,434
Mid-Rise Single	4	231	924	1,787	412,750	392,112
Mid-Rise Family	2	1,290	2,580	2,133	2,752,120	2,614,514
Total Monthly Income		Total Residents	5,336			3,784,061
Loaned Business Cost						573,380,969

*:Income case when the occupancy rate is 95%

Housing Allowance by Company

(Unit : 1,000VND)

	Worker Number by each Housing	Number of Housing	Number of Workers	Afforded Rent	Total in a Month	Actual Monthly Income*
Low-Rise Single	2	916	1,832	1,000	916,000	870,200
Mid-Rise Single	4	231	924	2,000	462,000	438,900
Mid-Rise Family	2	1,290	2,580	1,000	1,290,000	1,225,500
Total Monthly Income		Total Residents	5,336			2,534,600
Loaned Business Cost						384,056,059

*:Income case when the occupancy rate is 95%

Business Cost Allocation by Roles

(Unit: 1,000,000 VND)

Cost	Total Cost	Cost by the Roles				Shortage
		Cost	Resident	Company	Government	
Total Business Cost	1,867,218	908,174	795,064	138,219	25,761	-
Non-Loaned Business Cost	350,740	0	186,760	138,219	25,761	-
Loaned Business Cost	1,516,478	908,174	608,304	0	0	-
Cost Allotted for Business Cost	957,437	573,381	384,056	0	0	-
Cost Allotted for Interest Payment	559,041	334,793	224,248	0	0	-
Shortage	-	-	-	-	-	3,241

Result of Investment Fund Allocation

(Unit: 1,000,000 VND)

Item		Total Cost Cost	Cost by the Roles				Shortage	Initial Loan Amount
			Resident	Company	Government	Other Developers (Commercial Operator Facility Operator and General Profit Business)		
Total Business Cost	a	<u>1,311,418</u>	573,381	570,816	138,219	25,761	3,241	
(Ratio)		—	43.7%	43.5%	10.5%	2.0%	0.2%	
Commercial Facility Business Income	b	25,761				25,761		
General Profit Business	c	—				—		
Total Business Cost for Worker Housings	d=a-b-c	<u>1,285,657</u>	573,381	570,816	<u>138,219</u>	—	<u>3,241</u>	—
(Ratio)		—	44.6%	44.4%	<u>10.8%</u>	—	<u>0.3%</u>	—
Rent & Housing Allowance (Sum Repayable of Initial Loan)	e	957,437	573,381	384,056				957,437
Land Acquisition Cost	f	25,929			25,929			
Land Preparation Cost	g	112,290			112,290			
Contribution of Development Cost	h	186,760		186,760				
Shortage	d-(e-h)	3,241						

2c-1 Interest Rate 1%、Housing Allowance 400,000VND/Month

Business Cost Conditions

		Cost (mill. VND)	Note
Hung Yen Province	Land Acquisition	25,929	
	Land Preparation	0	
Company	Monthly Housing Support	0.4	Monthly amount per person
	Development Cost Allocation	0	Per person
Other Business	Business Content	None	
	Profit from Sales	0	Additional income
	Cost outside of Business	0	Cost outside of business

Rent Afforded by Workers

(Unit :1,000VND)

	Worker Number by each Housing	Number of Housing	Number of Workers	Afforded Rent	Total in a Month	Actual Monthly Income*
Low-Rise Single	2	916	1,832	893	818,352	777,434
Mid-Rise Single	4	231	924	1,787	412,750	392,112
Mid-Rise Family	2	1,290	2,580	2,133	2,752,120	2,614,514
Total Monthly Income	Total Residents		5,336			3,784,061
Loaned Business Cost						822,810,928

*:Income case when the occupancy rate is 95%

Housing Allowance by Company

(Unit :1,000VND)

	Worker Number by each Housing	Number of Housing	Number of Workers	Afforded Rent	Total in a Month	Actual Monthly Income*
Low-Rise Single	2	916	1,832	800	732,800	696,160
Mid-Rise Single	4	231	924	1,600	369,600	351,120
Mid-Rise Family	2	1,290	2,580	800	1,032,000	980,400
Total Monthly Income	Total Residents		5,336			2,027,680
Loaned Business Cost						440,901,305

*:Income case when the occupancy rate is 95%

Business Cost Allocation by Roles

(Unit: 1,000,000 VND)

Cost	Total Cost	Cost by the Roles				Shortage
		Cost	Resident	Company	Government	
Total Business Cost	1,446,507	908,174	486,643	25,929	25,761	-
Non-Loaned Business Cost	51,690	0	0	25,929	25,761	-
Loaned Business Cost	1,394,817	908,174	486,643	0	0	-
Cost Allotted for Business Cost	1,263,712	822,811	440,901	0	0	-
Cost Allotted for Interest Payment	131,105	85,363	45,742	0	0	-
Shortage	-	-	-	-	-	-3,984

Result of Investment Fund Allocation

(Unit: 1,000,000 VND)

Item		Total Cost Cost	Cost by the Roles				Shortage	Initial Loan Amount
			Resident	Company	Government	Other Developers (Commercial Operator Facility Operator and General Profit Business)		
Total Business Cost	a	1,311,418	822,811	440,901	25,929	25,761	-3,984	
(Ratio)		—	62.7%	33.6%	2.0%	2.0%	-0.3%	
Commercial Facility Business Income	b	25,761				25,761		
General Profit Business	c	—				—		
Total Business Cost for Worker Housings	d=a-b-c	1,285,657	822,811	440,901	25,929	—	-3,984	—
(Ratio)		—	64.0%	34.3%	2.0%	—	-0.3%	—
Rent & Housing Allowance (Sum Repayable of Initial Loan)	e	1,263,712	822,811	440,901				1,263,712
Land Acquisition Cost	f	25,929			25,929			
Land Preparation Cost	g	0			0			
Contribution of Development Cost	h	0		0				
Shortage	d-(e-h)	-3,984						

Loaned Business Cost				822,810,928
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*:Income case when the occupancy rate is 95%

Housing Allowance by Company

(Unit :1,000VND)

	Worker Number by each Housing	Number of Housing	Number of Workers	Afforded Rent	Total in a Month	Actual Monthly Income*
Low-Rise Single	2	916	1,832	600	549,600	522,120
Mid-Rise Single	4	231	924	1,200	277,200	263,340
Mid-Rise Family	2	1,290	2,580	600	774,000	735,300
Total Monthly Income		Total Residents	5,336			1,520,760
Loaned Business Cost						330,675,979

*:Income case when the occupancy rate is 95%

Business Cost Allocation by Roles

(Unit: 1,000,000 VND)

Cost	Total Cost	Cost by the Roles				Shortage
	Cost	Resident	Company	Government	Other Developers (Commercial Operator Facility Operator and General Profit Business)	
Total Business Cost	1,431,566	908,174	471,702	25,929	25,761	-
Non-Loaned Business Cost	158,410	0	106,720	25,929	25,761	-
Loaned Business Cost	1,273,156	908,174	364,982	0	0	-
Cost Allotted for Business Cost	1,153,487	822,811	330,676	0	0	-
Cost Allotted for Interest Payment	119,669	85,363	34,306	0	0	-
Shortage	-	-	-	-	-	-478

Result of Investment Fund Allocation

(Unit: 1,000,000 VND)

Item		Total Cost	Cost by the Roles				Shortage	Initial Loan Amount
		Cost	Resident	Company	Government	Other Developers (Commercial Operator Facility Operator and General Profit Business)		
Total Business Cost	a	<u>1,311,418</u>	822,811	437,396	25,929	25,761	-478	
(Ratio)		—	62.7%	33.4%	2.0%	2.0%	0.0%	
Commercial Facility Business Income	b	25,761				25,761		
General Profit Business	c	—				—		
Total Business Cost for Worker Housings	d=a-b-c	<u>1,285,657</u>	822,811	437,396	<u>25,929</u>	—	-478	—
(Ratio)		—	64.0%	34.0%	<u>2.0%</u>	—	<u>0.0%</u>	—
Rent & Housing Allowance (Sum Repayable of Initial Loan)	e	1,153,487	822,811	330,676				1,153,487
Land Acquisition Cost	f	25,929			25,929			
Land Preparation Cost	g	0			0			
Contribution of Development Cost	h	106,720		106,720				
Shortage	d-(e-h)	-478						

Annex 12 - Seminar (2016/07/01) Minutes

Annex-12 Minutes of Seminar on Results of the Study for Improvement of Living Conditions for Workers around Industrial Zones in Vietnam

Under the Study for Improvement of Living Conditions for Workers around Industrial Zones in Vietnam, Ministry of Planning and Investment (MPI) and Japan International Cooperation Agency (JICA) hold a seminar for disclosing the results of the study.

The Seminar aims to provide the results on study of the Project on the Improvement of Living Conditions Workers around Industrial Zones, which can be used by relevant Ministries and Branches for developing policies and framework on improvement of living conditions of the workers and to recommend the pilot model that developers or IP tenants can learn for their investment in worker housing construction throughout the country. The seminar also provides the opportunity for relevant organizations and businesses to hear and exchange their experiences and suggest possible measures for social housing development in Vietnam.

Time: 8h00 – 12h15, Friday, July 01, 2016

Venue: Melia Hotel, 44B Ly Thuong Kiet, Hoan Kiem, Hanoi

Details of the Seminar:

1.1. Attendants:

127 persons in total including 12 Japanese as below.

- Chairmen:
 - Mr. Vu Quoc Huy, Deputy Director General of Department of Economic Zones Management, MPI;
 - Mr. Dang Ngoc Quynh, Vice Chairman of Hung Yen PPC;
 - Mr. Trinh Truong Son, Associate Vice Chairman of Bureau of Housing and Real Estate Management, MOC;
 - Mr. Hashimoto Kenichi, Team Leader of the JICA Study Team.
- Attendants:
 - Representative of JICA Viet Nam: Mr. Anzo Hiroshi – Project Formulation Advisor;
 - Representative of International Organizations: JETRO.
 - Representatives of relevant Ministries and Branches (20 people) : MPI, MOLISA, Ministry of Culture, Sport and Tourism, MONRE, Vietnam General Confederation of Labour;
 - Provincial Industrial and Export Processing Zones Authorities and Hung Yen PPC/DPI (29 people) : Hung Yen, Hanoi, Bac Ninh, Ha Nam, Nam Dinh, Thai Binh, Thai Nguyen, Yen Bai, Hoa Binh provinces.
 - IP developers, social housing developers (27 people): Thang Long II, Pho Noi A, VID, IDICO, BIC and etc.
 - IP tenants: Honda etc.
 - Mass Media (30 people) : Vietnam Televisions, Voice of Vietnam, Vietnam Investment Review, Vietnam News Agency, Economic Times, etc.

1.2. Summary of Seminar

1.2.1. Session 1: Opening

- Mr. Anzo Hiroshi – Project Formulation Advisor – delivered greeting speech
- Mr. Nguyen Van Trung – Vice Minister of Planning and Investment – gave opening speech.

1.2.2. Session 2: Major Results of the Study

(1) Presentations

1) "Overview on Development Facts, Orientations and Policies for Industrial Zone Development in Vietnam" by Mr. Vu Quoc Huy.

- Development Facts:
 - Achievements: IP occupation rate is 70%, there are 7,100 FDI projects and 6,000 domestic investment projects with total investment capital of 94 billion USD and 585 trillion VND, creating 2.6 million jobs. These IPs make up 45% of total import and export value of the whole country.
 - Pending issues: inconsistencies among specific regulations; inadequate guidance on authorization towards to Provincial Authority for IPs and EPZs; urgent issue on monitoring and inspection of environment protection during IPs and EPZs operation; unremarkable improvement in housing, social welfare and living standards of industrial workers.
- Development Orientations:
 - Reviewing and amending IP and EPZ development plans for ensuring such plans be suitable with development reality;
 - Diversifying funding resources for developing infrastructure of IPs and EPZs;
 - Changing investment attraction expectation toward manufacturing activities with ecofriendly technologies and highly added values;
 - Studying and developing new model of IP: ecological IPs, IPs for supporting industries, special economic zones;
 - Improving related policies and legal frameworks;

2) "Overview of orientations and policies on industrial worker housing development in Vietnam" by Mr. Trinh Truong Son- MOC

- Current situation of worker housing:
 - Low minimum salary rate, worker income is insufficient to cover expenses for very basic living needs of the workers;
 - 80% of workers are living in rental houses with very low qualities and lack of basic amenity facilities;
- Social housing development for workers according to existing legal framework is still not remarkable because of various reasons: (i) the Government has not enough financial resources to develop social housing, (ii) social housing development requires huge investment capital, long capital return period, low profitability, (iii) financial incentives including subsidiary or financial support are inadequate to attract investment in social housing development.

- Up to now, 87 social housing projects have been completed with about 28,800 dwelling units; while another 64 projects with about 69,300 dwelling units are on going. There are some successful large projects, such as Becamex Binh Duong, IDICO. There is a huge demand on housing for workers in IPs in particular and workers in Industrial clusters and factories outside IP in general.
- Orientation of social housing development: Government, community and individuals should participate in; at the same time, incentives should be implemented in order to promote participation of different economic elements in social housing development.;
- Possible measures:
 - To improve legal framework related to social housing development;
 - To integrate industrial park development plan with urban center development for IP employees;
 - To improve salary scheme in order to improve the workers' housing affordability;
 - To have scheme for increasing responsibility of employers in worker housing support;
 - To include social housing targets in socio-economic development plan of each locality.

3) **"Results of the Study on Improvement of Living Conditions for the Workers around Industrial Zones in Vietnam" by Mr. Kenichi Hashimoto**

- Pending issues in living conditions for industrial workers
 - Quality of Living condition (lack of developers interested in investment in worker housing construction, lack of affordable housing, strict rules and regulation of dormitories, inappropriate housing location);
 - Housing business support (disparity among different provinces);
 - Low profitability.
- Recommendations for improvement: 19 recommendations in 3 fields of major issues of the housing development for workers.: (i) spatial and building design, (ii) institutional and legal system, (iii) business and financial planning;
- Outline of Model Study Site: about 18.23 ha site in Phung Chi Kien commune, My Hao district, Hung Yen province.
 - Location: integrated compact living town with surrounding villages; sharing technical and social infrastructures with surrounding areas; acceptable distance to the factories.;
 - Planning orientation: including low rise buildings and mid rise buildings (rooms for single workers, apartment for worker families), commercial and education facilities (kindergarten, schools), public facilities (medical center parks, technical infrastructures facilities), and site planning with land subdivision corresponding to the small-scale investment by local investors.
 - Study on investment project execution
- Total estimated project cost is 1,311 bill VND with following assumptions for financial planning: annual interest rate of 5%, loan period is 20 year, occupation rate is 95%, stakeholder contributions: (i) residents (affordability); (ii) Developers; (iii) IP tenants (rent support: up to 500,000VND/person/month); (iv) Government support (land preparation, technical infrastructures and business cost support.
- For the financial planning, following matters are considered for improving financial balance; (i) reduction of annual interest rate from 5% to 1%, (ii) housing rent support by the

tenants, (iii) introduction of expected supported from the Government for land acquisition and land preparation.

4) **"Proposals and Measures for worker housing development in Hung Yen provinces in regard of the Study Results" by Mr. Dang Ngoc Quynh – Vice Chairman of Hung Yen PPC**

- Here are approx. 145 thousand employees working in Industrial Parks in Hung Yen province. Even though the local government has paid attention to worker housing development and improvement, however, due to various reasons, such as, limited financial budget and inadequate incentives policies for social housing/low income people housing development, requirement of huge investment, low investment return, etc., then worker housing supply is mainly relying on rental rooms with poor facilities and low environmental and hygiene conditions, located near to IPs.
- It is highly appreciated the study results because the study concerns not only housing development but also includes urban technical and social infrastructure conditions, these conditions are inevitable to the worker to settle their life. The study results will be the basis for next steps of worker housing construction in order to improve living conditions as well as social welfare.
- It should be expected that JICA will continue valuable supports for realizing the study results; it is proposed relevant Ministries and Branches to allocate fund for project implementation; to improve the policies in order to increase investment attraction. Hung Yen province promises providing most favorable conditions for project execution.

(2) **Other comments**

1) **Mr. Nguyen Manh Hai – Central Institute for Economic Management (CIEM)**

- Current legal framework for worker housing development is inadequate to attract investment from businesses and individuals.
- The study report truly reflected existing situation of worker housing in Vietnam. Business planning – financial planning for project execution based on financial analysis is good for project financial resource planning.

2) **Ms. Vo Thi Minh Le – Institute for World Economics and Politics**

- The study report is helpful for Vietnamese Government.
- At present, housing development for sustainable development is one of target that Vietnamese Government has committed to the UNDP. However, this target still remain as a challenge because of following reasons:
 - At present, housing development for sustainable development is one of target that Vietnamese Government has committed to the UNDP. However, this target still remain as a challenge because of following reasons:
 - Coordination among policy issuing authorities and policy execution authorities is inadequate;
 - Financial resources: Government budget is limited; ODA fund: donor country and conditions should be considered; PPP can be good measure to be considered.
 - Awareness of workers
- It will take much time to resolve this issue.

3) **Mr. Goki Nobuta – Thang Long II Corporation**

- Worker housing demand is urgent, especially number of workers in IP has been reached to 20,000.

- Other than housing for workers, housing for other employees should be considered (administrative staff, or management staff, foreign staff).
- 4) **Mr. Nguyen Duc Tung – Institute for Sustainable Development**
- Where is the Study area?
 - The JST shared the experiences of Indonesia, India, Thailand, etc. But not Japan. Please share Japanese experiences.
 - Industrial Park development should be integrated with worker housing construction responsibility. The IP tenants should estimate their employee numbers for each period in order to prepare corresponding housing development plan.
 - For example: Trung Son Hydropower Plant Construction Project, funded by World Bank, is implemented with condition that worker housing should be constructed.
 - Worker housing development should be implemented with participation of private sector.
- 5) **Mr. Duong Hung – Foreign Investment Authority , MPI**
- Private poor rental rooms around Industrial Parks are observed. This is also an effective housing supply source.
 - The worker's affordability is lower than housing cost in ordinary business scheme.
 - The Government should have incentive policies with low interest rate and longer grace period in order to facilitate the worker's access to housing.
 - Large investor should make commitment with local government in renting land inside industrial parks for housing development or cooperating with IP developer in worker housing construction.
- 6) **Mr. Ngo Chi Hung – Deputy Director of Hanoi Industrial and Export Processing Zone Authority**
- Highly agreed with the study results.
 - At present, Hanoi has about 170 thousand employees working in industrial parks, of which 70% came from other provinces. Hanoi City Peoples Committee has assigned Hanoi Industrial and Export Processing Zone Authority to be a hub for seeking housing construction sites.
 - According to the report, the expected rent allowance by the tenants is 500,000 – 1,000,000 VND/person/month, but actually, Japanese companies in Hanoi provide housing allowance of about 150,000VND/person/month.
 - It is recommended that high rise apartment is good or not? How long is the appropriate period of rental? Is maintenance cost considered or not? Is room for 4 persons more reasonable than room for 7-8 persons? Other than housing, public facilities such as, cultural house, sport yard, relax areas should be considered.
- 7) **Mr. Kenichi Hashimoto– Team Leader of the Study Team**
- Final Report will be publicized in official website of JICA.
 - Japanese experiences on worker housing: at present, worker housing is not critical issue of Japan, because very few industrial parks, which need housings for large numbers of workers, remain in Japan now.
 - Demand forecast: as for large factory, for example, Samsung, housing demand forecast is not difficult. However, for medium and small factories, it is rather difficult.
 - As for other comments, basic ideas and considerations are described in the report, but it is necessary to find solutions through discussions for further implementation.

1.2.3. Seminar Closing Speech by Mr. Vu Quoc Huy – Deputy Director General of Department of Economic Zone Management, MPI

- In morning session, 4 presentations, 3 commentaries and a lot of comments were given.
- Highly appreciated the Study Results.
- Different opinions and suggestions for policies
 - To clarify roles/responsibilities of stakeholders (Central Government, local government, developers, workers), it needs MPI to consider and clarify.
 - About housing development by non-government capital, at present, many private rental rooms are available around industrial parks and most of workers live in these rental rooms, however, the quality of these rooms is low and lack of control and management.
 - About feasibility of fund raising for worker housing construction: the project is planned based on worker income and lifestyle then mid and low rise apartments are planned for cost saving and rental cost lowering.
 - For changing the habits, lifestyle of workers: it is necessary to encourage/persuade them to live in social housing.
 - It is required close cooperation among stakeholders of housing development.
 - Land allocation: worker housing development along with industrial park development is stipulated in regulation, some of provinces have arrange land for worker housing, while some others have prepare the plan but no construction has taken up in reality.
 - Hung Yen province: construction site was indicated and project feasibility study was formulated under the Study assisted by JICA.
- The Seminar Organizers expresses thanks to all of attendants. All of comments/suggestions given at the Seminar will be complied and reported to the Prime Minister for formulating pilot framework for Hung Yen province and later to apply in the whole country.

The Seminar ended on 12h15, July 1, 2016.