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# Social Housing for Workers in Industrial Zones in Vietnam - Concepts and Practical Solutions towards Sustainable Development. The Case Studies of Hanoi City

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**Abstract:** Economic growth associated with the rapid industrialization and urbanization over the past 30 years since Doi Moi (Reform) has facilitated the establishment and development of many industrial zones (IZs) in major cities of Vietnam. The high concentration of IZs in the largest cities has attracted millions of industrial laborers and created large migration waves from rural to urban areas. Establishing and improving the living environment of workers have become a huge pressure for the Government and local authorities across the country to deal with. Although the Government has issued numerous policies and incentives to encourage and support housing development for factory workers, there are still many conflicts and challenges in policy implementation. Through observational and questionnaire surveys supported with in-depth interviews of experts in urban planning and management, the research aims to understand clearly the context of social housing development for IZ workers in Vietnam recently, to demonstrate outstanding characters of different types of housing for factory workers as well as crucial issues related to social housing and informal housing for factory workers. Furthermore, the research proposes solutions including legal institutions, management mechanisms, industrial worker housing database establishment, and basic technical solutions (planning and spatial organization) in order to find out some appropriate concepts for social housing targeted at industrial workers and then to achieve social sustainable development.

**Keywords:** Social housing, industrial zone, worker housing, Hanoi city, Vietnam

## 1. Introduction

Vietnam has been experiencing rapid urbanization and industrialization thanks to the socio-economic transformation since Doi Moi (Reform) Policy in 1986. After more than 30 years of industrial development, at present, there are 335 industrial zones across the country (including industrial parks, export processing parks, and hi-tech parks), of which 265 industrial zones (IZs) have been operating with occupancy rate reaching 76 percent (Vietnam investment review, 2019). The development of IZs has contributed significantly to the changes in the local socio-economy, providing jobs for millions of workers. The number of employees working in industrial zones is increasing steeply in recent times. According to the report of the IZ's Management Board, currently, about 3.7 million employees are working in IZs and Economic Zones (EZs) across the whole country (Savills, 2019). The concentration of industrial workers has led to a big wave of migration from rural areas to big cities such as Hanoi, HCMC, Binh Duong, Hai Phong city, etc. Currently, migrant industrial workers are increasingly engaged in the non – agricultural sectors, staying in the city permanently instead of temporarily and seeking equality, especially in urban housing opportunity (Yamaguchi, 2019). More than 60

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percent of IZ laborers are migrants from other provinces of the country and almost all of them have housing needs. According to a report of Ministry of Labor, War Invalids, & Social Welfare, only five percent of migrant workers' housing demand could be provided by Vietnamese government and factory enterprises, while more than 80 percent of them do not have stable accommodation and good public service quality (MOLISA, 2012). The poor living conditions have left negative impacts on working and training environments for workers (Pham, K.T.H et al, 2019).

Numerous legal documents have been adopted to address housing needs for low-income people, especially industrial zone workers, over the last decades. In 2009, the Government promulgated the National Urban Upgrading Program from 2009 to 2020 to improve housing conditions in urban areas. As a measure of improving the balance between supply and demand of housing units, Decree No. 66/2009/QĐ-TT required that IZ operators (investors) should satisfy five percent of workers' housing needs by constructing housing facilities. This Decree was followed by the "National Housing Development Strategy towards 2020, with Vision towards 2030" issued by the Prime Minister. This policy aims to develop housing for workers of industrial zones – one of the eligible target groups that should be provided housing units (Ta Q.H, 2016).

In 2013, with the regulation No. 11/2013/TT-NHNN, the Vietnamese government provided a preferential loan program to finance 30 trillion VND through five banks of Vietnam to lend it to developers of social housing by providing preferential interest rates that are fixed and kept constant at six percent per year. However, this program was not implemented successfully and was terminated at the end of 2016 (UN Habitat, 2020). To promote the development of social housing and essential social infrastructure works for IZ workers, on May 12, 2017, the Prime Minister signed Decision No. 655 / QĐ-TTĐ approving the investment project to build trade union institutions in IZs, EPZs. The implementation of the project aims to ensure that all IZs and EPZs have the social infrastructure for basic IZ workers including accommodation, kindergartens, supermarkets, as well as medical, educational, cultural and physical facilities (MOPI & JICA, 2016). Decree No. 82/2018/ND-CP issued in 2018 does not only aim to provide government incentives for the development of housing, but also promotes the establishment of social, cultural and recreational amenities for the workers in IZs and EPZs (Vietnam legal document, 2018).

Although the Government of Vietnam has promoted the development of social housing including that of workers in industries through the provision of big incentives to the local government and the private sector, the local authorities are unable to implement these schemes. This is due to the limited financial resources in the administrative system, whereas the private sector has constructed housing developments for medium to high income groups, which are economically viable. The improvement of housing conditions for workers in industrial zones and the establishment of related policies have become urgent issues nationwide.

Up to now, in the whole country, there are 173 housing projects for workers with about 129,400 apartments, in which 100 projects have been completed with about 41,000 apartments to accommodate approximately 330,000 workers. This figure only meets about 28% of the total housing demand of industrial workers while the rest 72% of workers - have not been offered access to housing yet. Although the development of social housing for industrial workers has accomplished some important results as mentioned above, the target set out in the National Housing Development Strategy has not been fulfilled recently (Baochinhphu.vn, 2020).

There are many studies on housing issues in Vietnam, but only a few have been undertaken on social housing for low-income people, especially for workers in IZs. The report of the "Vietnam housing sector profile" (UN-Habitat, 2014) conducted by UN-Habitat in 2015 shows an analysis of the various dimensions of housing and highlights some constraints in terms of housing supply that require the attention of the public policy. However, this report does not explore housing conditions for specific groups of low-income people and workers as well as different housing concepts that should be developed for them. The research entitled "International models for delivery of affordable housing in Asia" published by the Royal Institution of Chartered Surveyors (RICS) in 2019 (UN-Habitat, 2014) provides a brief overview of the current housing situation and its provision of affordable housing for low-income households in eight Asian countries including Vietnam. The research identifies three models of affordable housing delivery applied in Asia and highlights the typical model of Vietnam (as well as other four countries: Indonesia, Pakistan, Philippines, and Bangladesh) as formal delivery model dominated by informal housing systems and underdeveloped financial systems, even though there are some government policies in place. However, this research does not contain so many data or any detailed information about the characteristics of informal housing systems as well as the contribution of informal housing systems in housing provision for factory workers.

In addition, "The study for improvement of living conditions for workers around industrial areas in the Socialist Republic of Vietnam" funded by Japan International Cooperation Agency (JICA, 2016) provides an overall view of living conditions for industrial zone workers that includes the current legal framework, current living conditions of factory workers and some recommendations for the improvement of living conditions for IZ's workers. This report focuses significantly on technical aspects of factory workers living environment but does not examine the different models of housing for factory workers these days or workers' affordability to access social housing. Moreover, all the aforementioned studies do not identify broader aspects related to spatial planning and design, financial solutions, management mechanism with the collaboration among stakeholders so as to improve housing quality.

Therefore, the hypothesis given by the authors is that in order to develop sustainable housing for workers, there should be different housing models available and affordable to industrial workers, and the housing models should provide

more opportunities for social integration. Social housing development with incentives from the State and support from IZ's investors could be the major housing solutions to deal with housing issues for IZ workers in Vietnam. Furthermore, the informal housing sector is also an important part to contribute to housing solutions for industrial workers in Vietnam's context.

With these in mind, the research paper aims to: 1) Understand clearly the context of social housing development for IZ workers in Vietnam in recent years; 2) Demonstrate major characters of different types of housing for factory workers; 3) Highlight critical issues related to social housing and informal housing for factory workers; 4) Propose solutions including legal institutions, management mechanisms, and basic technical solutions (planning and spatial organization) to create suitable models of social housing for industrial workers towards social sustainable development.

## 2. Literature Reviews

In developed countries, social housing is defined as "...housing provided for people on low incomes or with particular needs by government agencies or non-profit organizations" (Oxford English and Spanish Dictionary, 2020), or "social housing is houses and flats that are owned by local government or by other organizations that do not make a profit, and that are rented to people who have low incomes" (Cambridge Dictionary, 2020). According to Ngo (2018), social housing is a type of house that meets basic demands which are provided by the government and/or non-profit organizations to low-income sector. Both definitions of social housing emphasize that the subject of social housing is low-income people and that the Government plays a very important role in housing provision and development for low-income people. The popular type of social housing is rental housing (Ngo L.M, 2018).

In Vietnam, social housing has been defined in the Law on Housing issued in 2005. The Law on Housing encompasses a chapter on Social Housing Policy (Chapter IV), which stipulates the policy for the development and management of social housing in different types as rental housing, housing on hire-purchase, housing for sale (NASRV, 2005). The Law also provides social housing policy to facilitate households and individuals for self-built and self-upgraded housing. However, the social meaning of social housing was not fully recognized and developed in reality. From 2013 until now, with Decree No. 188/2013/ND-CP issued on November 20th, 2013 by the Government on developing and managing social housing, the definition of social housing was clarified with the true social meaning as: "*Social housing is the type of house invested and constructed with the support of the State or non-profit organization and is sold or leased to some priority subjects in the society that are mentioned in Clause 1 Article 14 of this Decree including low-income people, urban poor households, industrial workers etc.* (Vietnam Legal document, 2013).

In the world, apart from the definition of social housing, several concepts also mentioned the models of housing to provide for people that cannot afford to buy commercial houses. In Western countries such as the US, Canada, UK, and Australia, the notion of housing affordability became widespread in the 1980s. Affordable housing in the UK includes "social rented and intermediate housing, provided to specified eligible households whose needs are not met by the market." In the US, affordable housing is housing that is deemed affordable to those with a median household income or below as rated by the national government or a local government. Alain Bertaud in his research on housing affordability states that workers' spatial mobility and housing affordability are two serious matters that planners should focus on recently (Alain, 2014).

In these countries, social housing development policies are regularly reviewed and deeply interested by the whole society. The housing policies for low-income people (including workers in factories) focus on two main priorities: encouraging businesses to invest in social housing projects and provide financial support for low-income households so that they can gain access to housing. In the US, Canada and Australia, the financial support policies include tax incentives for individuals buying, renting-buying houses, and the social housing tax credit programs for housing providers (Housing Affordability in Australia, 2006).

Internationally, several studies about industrial workers housing have already been conducted in Malaysia (Chia, 2001; Sahabuddin et al., 2015), Thailand (Yap et al., 1993; Tanaphoom, 2015), Vietnam (JICA, 2016), and Indonesia (RICS, 2019, Lilananda, 1993). These studies provide an overview of social/public housing characteristics with different types of housing related to different tools of housing provision. Arifin in his research mentioned six typical factory worker housing patterns in developing countries that are categorized based on the type of payment and providers: Enterprise' Housing, Rental Public Housing, Rental Public-Enterprise's Housing, Rental Private Housing, Rental NGO's Housing, Rental Spontaneous Housing. The research raises questions related to the provider of factory workers housing, the suitable type of housing ownership, the role of enterprises in providing factory workers housing, and the provision of facilities in housing supply (Arifin, 2001).

In Vietnam, research on low-income housing policy has been conducted by many experts in the different fields and is reflected from various angles of scientific topics. Studies on social housing for workers mainly focus on the process of accessing and using social housing as well as accessing social services (World Bank, 2015). A research of Ngo (2018) shows that there are many difficulties and conflicts in the development of housing for workers in Ho Chi Minh City – one of the two biggest cities in Vietnam. Workers' housing demands are very high, but factory enterprises do not pay attention to housing construction, or if so, the housing built by the state and businesses cannot compete with rental housing of individuals. Ngo's research proposes two new development models for investment and management of social housing

for industrial workers in Ho Chi Minh City: 1) Upgrading social housing model which is built by enterprises, in coordination with household families and individuals; 2) Newly constructed the social housing model, with the combination of state and business, built and managed by enterprises (Ngo, L.M, 2018).

According to research conducted by Pham (2015), Hanoi is the premier city in the country to promulgate housing policies for low-income people and pilot investment from the State budget to build social housing in North Thang Long Industrial Park. Also, several enterprises have invested in building housing for workers, such as in Phu Nghia Industrial Park, Thach That Industrial Park, Quang Minh Industrial Park and so on. However, housing demand is still a pressing requirement of industrial workers since the total housing units in the IZs can only meet 10% of accommodation for their workers, and about 90% of workers still have to rent houses in a residential area nearby with a narrow floor area and low quality of living conditions. Therefore, it is necessary to find housing development models for workers in industrial zones across Vietnam in general and in Hanoi in particular, to meet the people's right to have housing and living environments (Nguyen, P.D, 2016).

Trinh Duy Luan (2011) in his paper highlights that housing policies in Vietnam have changed significantly and frequently over time. Nevertheless, housing policies for low-income people and workers are still largely based on subsidized policies. Social housing issues are being restarted with both old and new content (Trinh, D.L. 2011). Regarding credit policy for low-income people to access social housing, some investigations show that there is a lack of effective and sustainable credit policies to support low-income people, particularly industrial workers, to access social housing.

### 3. Materials and Methods

#### 3.1 Research Area

The study was primarily conducted in Hanoi, one of the two largest cities in Vietnam, with the highest rate of urbanization across the country. Since the Economic Reform in 1986, the city's population has increased quickly by about three percent per year and had reached 2.8 million by 2000. According to the UNDP's World Urbanization Forecast, the expansion of the city's administrative boundaries in 2008 doubled its population to nearly 6.4 million. The metropolitan area is reported to cover 3,436 km<sup>2</sup> and accommodate more than 15 million people by 2025 (Ta, Q.H and Pham, D.T., 2015). Hanoi city - located in Vietnam Northern Economic Region - has a high concentration of industrial zones, high-tech parks-and export processing zones. The data announced in 2019 by the Trade Unions of IZs and EPZs shows that currently there are about 142,800 industrial workers (about 2,000 workers more than the number of workers at the end of 2018) working in industrial zones and export processing zones. Over 60% of the industrial workers are migrant workers and have housing needs. However, over 90% of these industrial workers do not have the needs of housing and social services satisfied (JICA, 2016). In a total of 13 approved IZ projects in Hanoi, there are eight industrial zones in operation with a total of 140,000 employees in which, only four housing projects for workers have been implemented, providing about 13,680 houses and apartments for workers. It is reported that current social housing projects only meet 8% of the workers' demand (Nguyen, P. D., 2016). The rest of the migrant workers are currently living in individuals' rental houses adjacent to the IZs. It is estimated that by 2020 Hanoi city will need about two million square meters of floor area (equivalent to 45,000 apartments) for workers in industrial zones (JICA, 2016). Several social housing projects that were built to provide housing units for low-income people and workers' households. However, this housing stock can only provide less than 10% of the total accommodation demand for industrial workers. The inadequate living areas and the poor quality of housing and social services put great impacts on the physical and mental health of the workers, affecting workers' working efficiency and failing to ensure sustainable social development (MOPI & JICA, 2016). The research chose Hanoi city as a case study to provide a typical picture of the current housing situation for industrial workers in big cities of Vietnam, to identify critical technical and social issues related to social housing development, including housing management.

#### 3.2 Research Methodology

The methodology of this research is displayed in Figure 1. To reach these objectives, the following methods have been used in the research project including sociological investigation, observational surveys on spatial planning and architectural design of social housing projects for industrial workers and site surveys on industrial workers rental private housing.

• **Sociological investigation including questionnaire surveys and in-depth interviews.** Acknowledging that a more effective evaluation of social housing can only be achieved through a combination of methods that include opinions of experts and ordinary users alike. Therefore, this research used both questionnaire surveys of industrial workers and interviews of experts in the major of architecture and planning. Fifty six individuals and households that work in industrial zones (Phu Nghia Industrial Park; North Thang Long Industrial Park) and live in social housing projects in Hanoi (Kim Chung urban area, Dai Mo - Tu Liem urban area, Dang Xa urban area and Sai Dong urban area) were asked to provide a set of information: i) worker's background information, workers income, and expense for housing needs; ii) current living conditions and social services; iii) workers satisfaction regarding their accommodation; iv) worker's opinions of the most

important factors in social housing that should be considered. Additionally, the in-depth interviews were conducted with the participation of forty experts working in the fields of urban planning and architectural design to collect their assessments on different aspects of social housing for industrial workers: i) current situations of social housing for industrial workers: building quality, comfort of living, suitable price, spatial planning and architecture design, suitable location in view of connectivity; ii) key factors that should be considered when developing social housing models for industrial workers in terms of planning and design, materials and technology, management mechanism and incentive policies. Semi-oriented interviews were also carried out with six staff in the fields of construction management that mainly focus on the stakeholders' collaborative mechanism to ensure the effective management and development of housing for IZ workers. These investigations were conducted in October 2015.

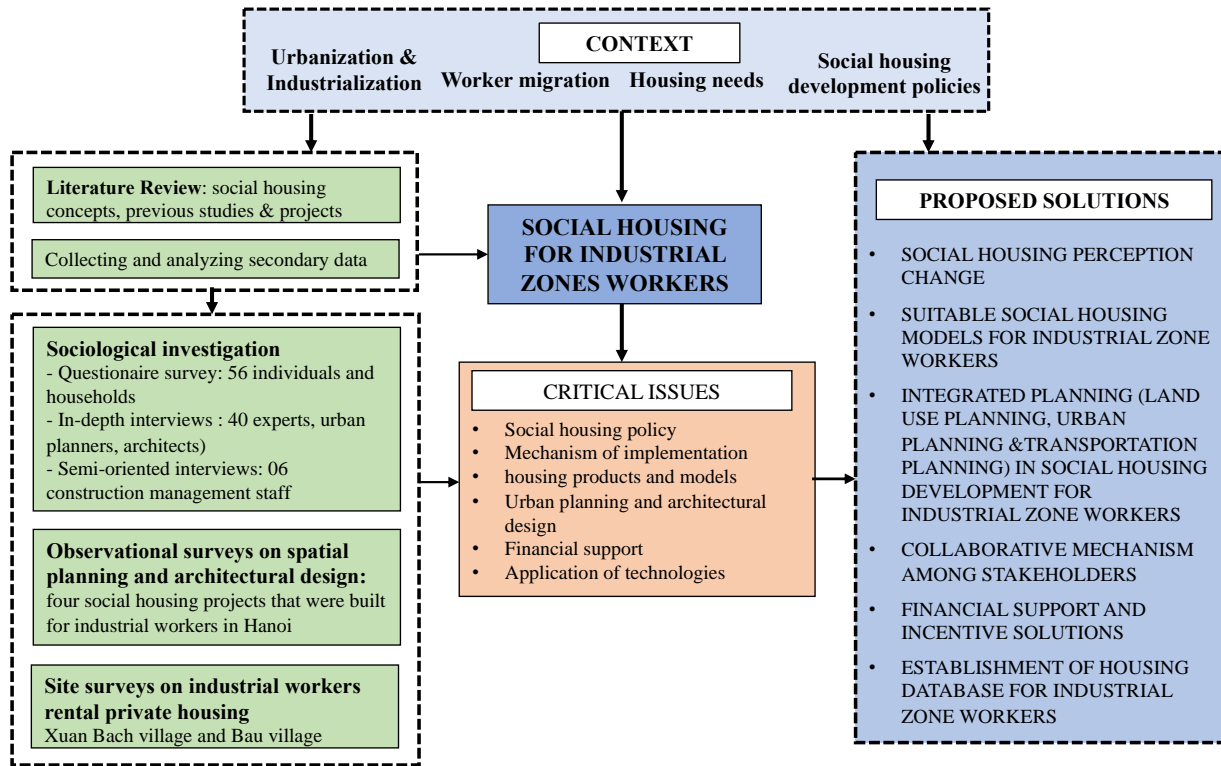


Fig. 1 - Diagram of research methodology on social housing for workers in industrial zones in Vietnam

• **Observational surveys on spatial planning and architectural design of social housing projects for industrial workers.** Observational surveys were conducted in four social housing projects that were built for industrial workers in Hanoi. The planning and architectural characteristics of these projects were examined and analyzed. Key information of these projects (including name of projects, project owners and project location) can be found in Table 1.

Table 1 - The list of social housing projects for industrial workers in Hanoi

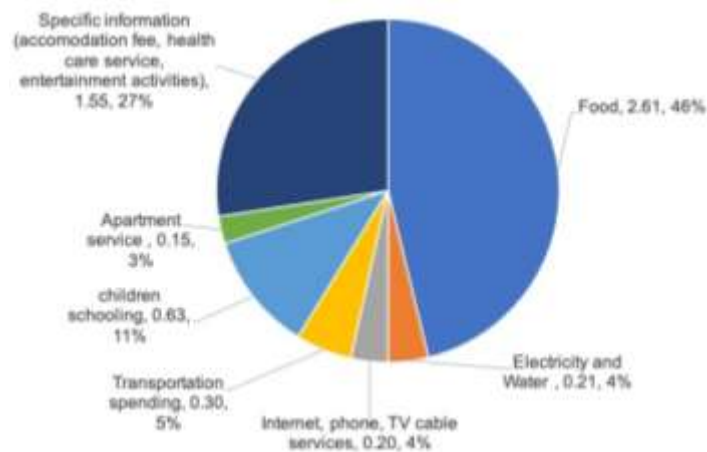
No	Name of project	Project owner	Location
1	Kim Chung IZ workers urban housing project	Hanoi Construction Investment Company (HANCIC) Nam Duc IZ	Kim Chung commune, Dong Anh district
2	Quang Minh IZ workers housing project	infrastructure investment and development Company	Nam Duc IZ, Me Linh district
3	IZ workers housing project - Phu Nghia IZ	Phu Nghia Joint stock Company	Phu Nghia IZ, Chuong My district
4	Thach That IZ workers housing project	MEIKO Youngfast Company	Quoc Oai IZ – Thach That district

• **Site surveys on industrial workers rental private housing.** Rental private housing (provided by local households or individuals) is one of the important products of social housing that has not been properly investigated. The surveys were conducted in two villages (Xuan Bach village and Bau village) near Noi Bai Industrial Park and North Thang Long Industrial Park in Hanoi city that accommodated a large number of workers working in these IZs. The surveys aim to grasp information related to users’ characteristics, current housing situation and use of space, housing quality, rental rates and services offered.

## 4. Results

### 4.1 Results from Industrial Worker Questionnaire Surveys and Expert Interviews About Social Housing

• **Industrial zone worker’s income sources and expenses.** The worker’s average monthly income as one of the results from the questionnaire survey is 5.65 million VND (about 257 USD). This level of income still belongs to the low-income group regulated in the Circular No. 17/2014/ BXD issued by the Ministry of Construction. Figure 2 below shows the average expenditure on different items in everyday life of an industrial worker.



**Fig. 2 - IZ worker’s expenditure distribution per month (Source: Ta, Q.H & Pham, D.T., 2015)**

The household's largest amount of expenses is spent on food and children schooling (46.2% and 11.2% of total income, respectively). The spending on food of a worker is about VND 2.61 million per month (equivalent to USD 118). For the families that have two or more than two people, food expenses are from VND 2.7 million to VND 4 million (from USD 120 to USD 181) - accounting for nearly 40%. Compared with the average household income, food expense accounts for the majority of workers’ household income. Monthly payment for electric and water bills ranges from VND 150,000 to 250,000 (USD 6.8 to USD 11.4). The rest of the total income (about 27%) is spent on accommodation and other expenses (including entertainment and health care service). The average income and spending distribution per month of a worker household are important factors that affect the study of affordable housing for industrial workers.

• **Workers’ opinions on their current social housing conditions.** In general, most of workers who have chances to access social housing provided by state or IZ enterprises are satisfied with some physical elements of their houses including the size of a flat, number of bedrooms, space for a living room, common lobbies, staircases and lifts (accounting for more than 75% of users’ satisfaction). However, some elements that do not have much users’ satisfaction are open and green spaces (37% of users are unsatisfied), infrastructure of water and electric supply (41%) and community space (49%). Other elements, such as kitchen and toilets, washing and drying places, balconies and loggias, rubbish collection places, flat construction finishing quality only gain less than 70% of users’ satisfaction (See Table 2).

According to the opinions of users, the five most important elements related to the quality of indoor housing unit are identified as follows: 1) Total living area; 2) Number of bedrooms; 3) Number of toilets; 4) Adequate equipment; 5) Good lighting and ventilation. In addition, the five most important elements for common spaces outside houses and apartments are: 1) Clean and large common lobbies; 2) Green open spaces, parks and gardens; 3) Social and infrastructural facilities; 4) Good community room; 5) Clean and hygienic waste collection places. Regarding the housing price, most of interviewed workers state that social housing price are still very high compared to the financial capacity and income of the workers. Many worker households have to borrow money from their parents or relatives to pay for their accommodation. Most of these workers complain about the lack of basic social services as kindergartens, primary schools, markets, sports and healthcare centers in the social housing development areas.

**Table 2 - The satisfaction of industrial workers on their current living conditions**  
(Source : Ta, Q.H & Pham, D.T., 2015)

No.	Elements	Satisfied (%)	Neutral (%)	Unsatisfied (%)
<b>I</b>	<b>Inside housing unit</b>			
1.1	Size of a flat (Total area)	76	10	14
1.2	Number of bedrooms	83	4	13
1.3	Living room	83	0	17
1.4	Kitchen, Toilet	67	3	30
1.5	Washing and drying places, balconies, loggia	68	4	28
1.6	Building finishing quality	67	0	33
1.7	Lighting and ventilation	69	3	28
<b>II</b>	<b>Outside housing unit</b>			
2.1	Common lobbies	76	0	24
2.2	Staircases and lifts	83	0	17
2.3	Waste collection places	65	4	31
2.4	Community rooms	51	0	49
2.5	Common playgrounds	71	0	29
2.6	Open green spaces and facilities	56	7	37
2.7	Environmental quality in the area	65	3	31
2.8	Infrastructure (Electric and water supply)	56	3	41

• **Experts' opinions of the current situation of social housing development.** The results of interviews with experts from architecture and planning backgrounds show critical problems related to housing for workers.

Firstly, in terms of policies, 67% of interviewed experts state that the policies issued by the Government to deal with housing for workers were not effectively implemented. The reason is the lack of specific regulations on the scale and required social as well as technical functions that industrial worker housing projects need to include when industrial zones are developed. Moreover, the roles and responsibilities of local authorities and IZ investors are not clearly defined in the settlement of housing for workers. Currently, the selling/renting price of an apartment is determined based on of construction investment cost which is not suitable for most of the workers' income while it is difficult for them to access credit loan programs from the State banks or to have industrial enterprise' support for buying/renting apartments from social housing stock.

Secondly, regarding the current situation of housing planning and architecture, 72% of the interviewed experts said that spatial planning solutions of social housing projects are not integrated so well with the geographical and socio-economic context of the locality. The spatial plans were made regardless of the investment resources that have resulted in suspended planning or unimplemented projects. Some housing projects are built with limited resources. Consequently, the investors only carried out a basic part of the projects but other public social infrastructure work such as kindergartens, schools, community halls, etc. have not yet been implemented while the land plots that were designed for green open spaces or flower gardens turned out to be abandoned.

Thirdly, in the aspect of construction quality of living environment, most of the interviewed experts insist that the quality of social housing construction for workers is fairly average. Some housing blocks are assessed as medium quality without new technologies or energy-saving solutions which should have been applied in these social housing projects to reduce construction and infrastructural service costs.

According to the experts, when developing social housing models, it is important to consider the following factors (that are ranked in order of priority): 1) Planning (including location, infrastructural services for residents, infrastructure and common landscape of the building); 2) Architectural solutions (for public space, private space of apartments); 3) User's affordability; 4) Construction technology and structure engineering; 5) Management and operation mechanism. These are factors that need to be analyzed and evaluated in order to have suitable social housing models for workers in industrial zones.



## 4.2 Current Housing Models for Workers in IZs

Observational survey's results show that there are three typical housing types that industrial workers are living currently as listed below:

- + Type 1: centralized social housing provided by state or state-owned companies in housing construction development projects
- + Type 2: non-centralized social housing provided by IZ developers
- + Type 3: rental housing provided by local households or individuals;

• **Type 1. Housing for workers to rent or “rent to buy” from centralized social housing development projects.** Only fifteen percent of interviewed workers live in this centralized social housing model that is invested and developed by State or State-owned construction enterprises (SOEs). Products in the social housing projects are mainly apartments. Apartments in the projects for low-income people and workers in IZs often have about 5 to 15 stories. The apartments with more than 15 stories (up to 40 stories) are mostly located near the city center. From the surveys, it is noted that the average area of flats for a worker's family is ranged from 30 m<sup>2</sup> to 70 m<sup>2</sup>. Workers' families with a total monthly income of VND 11 million (equivalent to USD 500) or more can pay the costs of living in these apartments. The price of an apartment is about VND 600 million to VND 800 million (equivalent to USD 26,000 to USD 37,000). With an average income level of a household (that has two working people) is VND 11.3 million per month (equivalent to VND 135.6 million per year), the financial ability to save for housing (twenty seven percent) is about VND 40.68 million per year. As a result, it takes a worker family 17 to 20 years to buy a house. It can be stated that social housing prices for workers are still very high compared to workers' spending power for buying their houses.



**Fig. 2 - Social housing for low-income people including industrial workers in Sai Dong IZ, Gia Lam district, Hanoi (Source: HANCO 3, 2018),**  
 a) Aerial view of a social housing project in Sai Dong new urban development area; b) Current situation of the social housing apartments;

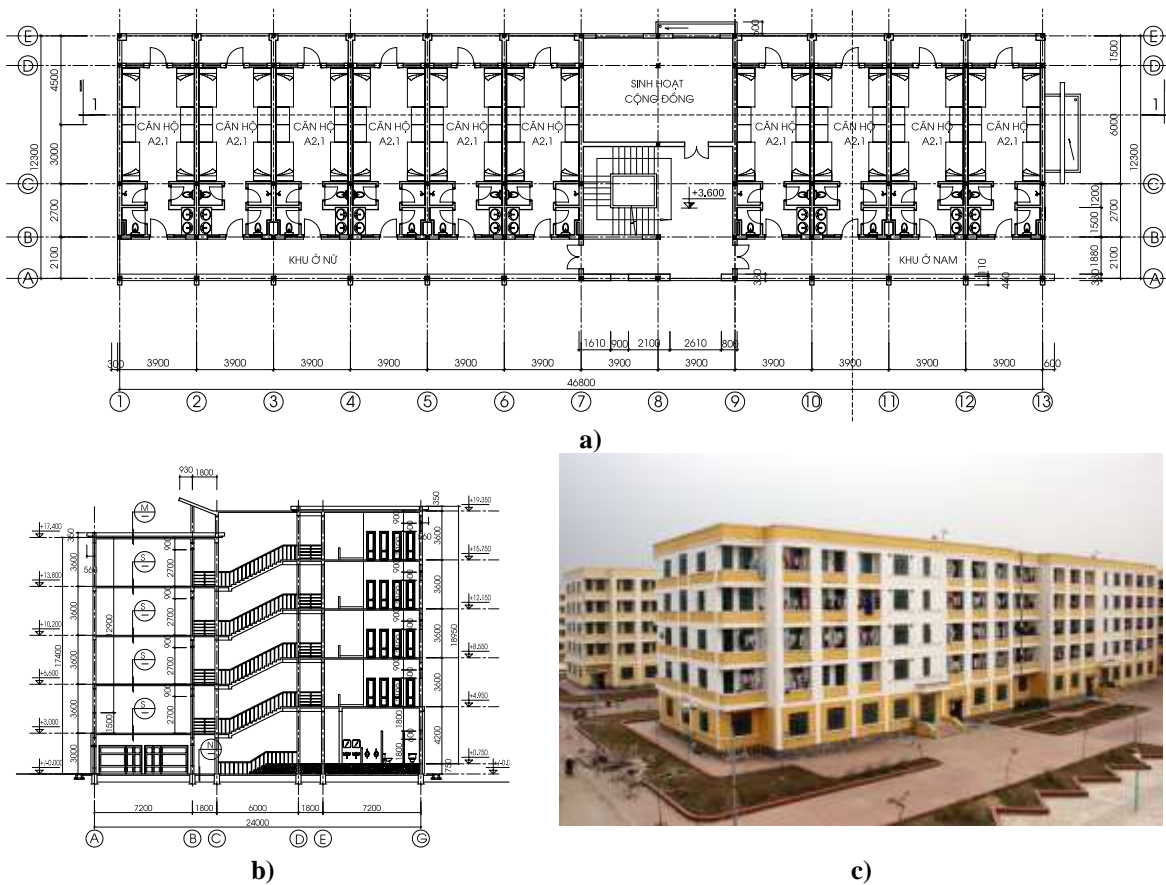


**Fig. 3 - Three typical flat layouts for low-income households and worker households in Sai Dong new urban development area, Gia Lam district, Hanoi**  
 a) a two-bedroom flat, total area is 57 m<sup>2</sup>; b) a two-bedroom flat, total area is 62 m<sup>2</sup>; c) a two-bedroom flat, total area is 61 m<sup>2</sup>



• **Type 2. Non-centralized social housing for workers to rent that provided by IZ enterprises.** Currently, this model of housing is still limited. A few IZ developers and factory enterprises invested in housing for workers. In some projects, IZ enterprises leased their projects to secondary investors who have the function of commercial housing development to invest in building rental housing for workers. Until now, in Hanoi there only have four industrial zones that are able to provide rental housing for workers in industrial zones.

According to the results of the questionnaire survey obtained from workers who are renting houses in Phu Nghia workers apartment located in Phu Nghia Industrial Park (Chuong My district), Kim Chung workers housing area (Dong Anh district) that have been constructed for workers in Thang Long Industrial Park, this housing type is low-rise apartment (three to six floors) without elevators. One apartment accommodated from 8 to 20 workers. Most of the workers are young and single people. The accommodation fee is partly supported by the company, so they only have to pay VND 250,000 to 300,000 per month (USD 12 to USD 18) excluding electricity and water consumption fees. The quality of living space is however not so good. Our survey of housing apartment for workers in Bac Thang Long Industrial Park shows that in an apartment, every eight units with 20 workers per unit only have two toilets. The current housing conditions are inadequate for workers' basic demands. For workers with families, they can rent entire flats at a cost of VND 1.2 million to VND 1.5 million per unit per month (USD 55 to USD 65). The residential quarters in industrial zones often lack basic social services to meet the needs of living and entertainment activities for workers, such as sports grounds, clubs, cinema centers, kindergarten, etc.



**Fig. 4 - Apartments for industrial workers in Kim Chung commune, Dong Anh district**  
(Source: Homedy.com, 2017)

- a) Typical layout of a worker housing apartment;
- b) Cross section of a five-story apartment;
- c) Existing conditions of an apartment complex for industrial workers that lack green areas and basic services

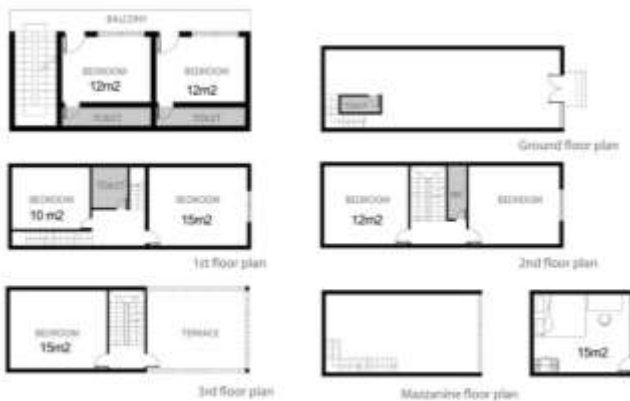


**Fig. 5 - Apartment for workers in Phu Nghia IZ, Chuong My district, Hanoi (Source : Authors, 2017)**



**Fig. 6 - Apartment for workers in Bac Thang Long IZ, Dong Anh, Hanoi (Source: Homedy.com, 2017)**

• **Type 3. Rental housing is provided by local households or individuals.** Most of the rental houses are built by local households and individuals without standard plans and designs. The housing design is mostly based on the shape of land plots, with limited investment and financial sources. An average plot area is about 120 m<sup>2</sup> with an average construction density of 82 percent. That housing model is often two to three stories high. The floor area ratio (FAR) is about 1.85. In one house there are normally eight rooms for rent, each room can accommodate two to three worker tenants. The average area of one room is 13.3 m<sup>2</sup>. The price of a room is about VND 600,000 to VND 850,000 per month (equivalent to USD 26 to USD 37) that is reasonable for low-income people to spent for their accommodation (about 30% of the monthly income of a worker that starting from VND 3.5 million per month). All surveyed private rental houses have not met the minimum Vietnamese standards for open playground and green area per person.



**Fig. 7 - Typical layouts of a mini – apartments for workers to rent (Source : Pham, D.T., 2015)**



**Fig. 8 - Typical layouts of row houses for workers to rent (Source : Pham, D.T., 2015)**

When conducting observational surveys and interviews at numerous private rental houses in the villages adjacent to the IZs such as Xuan Bach village, next to Noi Bai industrial park and Bau village in Kim Chung commune near North Thang Long Industrial Park, the quality of the living environment is clearly reflected. The living spaces are narrow and in poor quality . Rental rooms are usually built in low-rise row-houses (one to three stories). In these rental houses, three or four rooms share one toilet and one bathroom. There is no separated kitchen or laundry area. Workers often cook inside their rooms without considering the hygiene and safety of their living place (Fig.9, Fig.10).



a)



b)



c)



d)

**Fig. 9 - A row-house for industrial workers in Xuan Bach village, Soc Son district, Hanoi city  
(Source : Authors, 2017)**

- a) Flats in a row-house with poor living conditions
- b) A 9 m<sup>2</sup> room for two young female workers to stay
- c) Simple cooking place inside the room
- d) No parking place for workers then their motorbike was parked inside the room that is dangerous for the workers



a)



b)

**Fig. 10 - Private rental houses for industrial workers in Bau village, Dong Anh district, Hanoi city  
(Source : Authors, 2017)**

- a) Small common space for clothes drying; b) Old and narrow spaces of living for industrial workers

**Table 3 - Housing model for IZ workers in Hanoi (Source: Authors, 2017)**

Development model	Developer	Type of house	Price (VND/USD)	Community service
Model 1: Centralized social housing	State or State - owned companies with financial support from Government or local authority	five to 15-story apartments 15 to 40- story apartments a unit : 35 m <sup>2</sup> to 62 m <sup>2</sup>	To buy: VND 600 to 800 million /unit (USD 26,000 to 34,000) To rent: VND 1.55 to 2.00 million/flat/month (USD 65 to USD 90)	Some basic services as convenience stores, laundry No schools or clubs or health care centers
Model 2: Non-centralized social housing	IZ's technical infrastructural company, Factory owners	three to six- story apartments	Rental fee (exclude water and electric bills): VND 180,000 to 300,000/person/month (USD 8 to USD 15)	No social services, good living conditions
Model 3: Private rental housing	Local households or individuals	Small apartment or simple houses with 12 to 15 m <sup>2</sup> rooms.	Rental fee: VND 400,000 to 600,000/person/month (USD 18 to USD 25)	No social services, poor living conditions

### 4.3 Issues of Social Housing for IZ Workers

It is undeniable that the need for housing of IZ workers is really urgent and the development of the social housing model is a pathway for sustainable urban development. However, through the results of the practical survey of the current housing conditions and the current model of social housing for low-income people in Hanoi, some outstanding problems can be found and summarized as follows:

- Mechanisms and policies for social housing development.** The Social Housing Development Strategy is implemented at the very first stage while the need for social housing is absolutely urgent, especially housing for low-income people and IZ workers. However, specific development methods for social housing have not been formulated yet and mainly based on development methods of commercial housing or urban development projects of some big construction enterprises. In Hanoi, there are a few large enterprises such as Housing and Urban Development, and Investment Corporation (HUD), Viglacera Group, Hanoi Housing Investment and Development Corporation (Handico), etc. that participate in the social housing development projects type 1 for low-income people, including workers in IZs. Nevertheless, the mobilization of resource and participation of small and medium enterprises (SMEs) in this field has not achieved many positive results due to the lack of an effective mechanism to attract the SMEs' investment while the procedures to require for the support from the State for social housing project development is still very complicated.

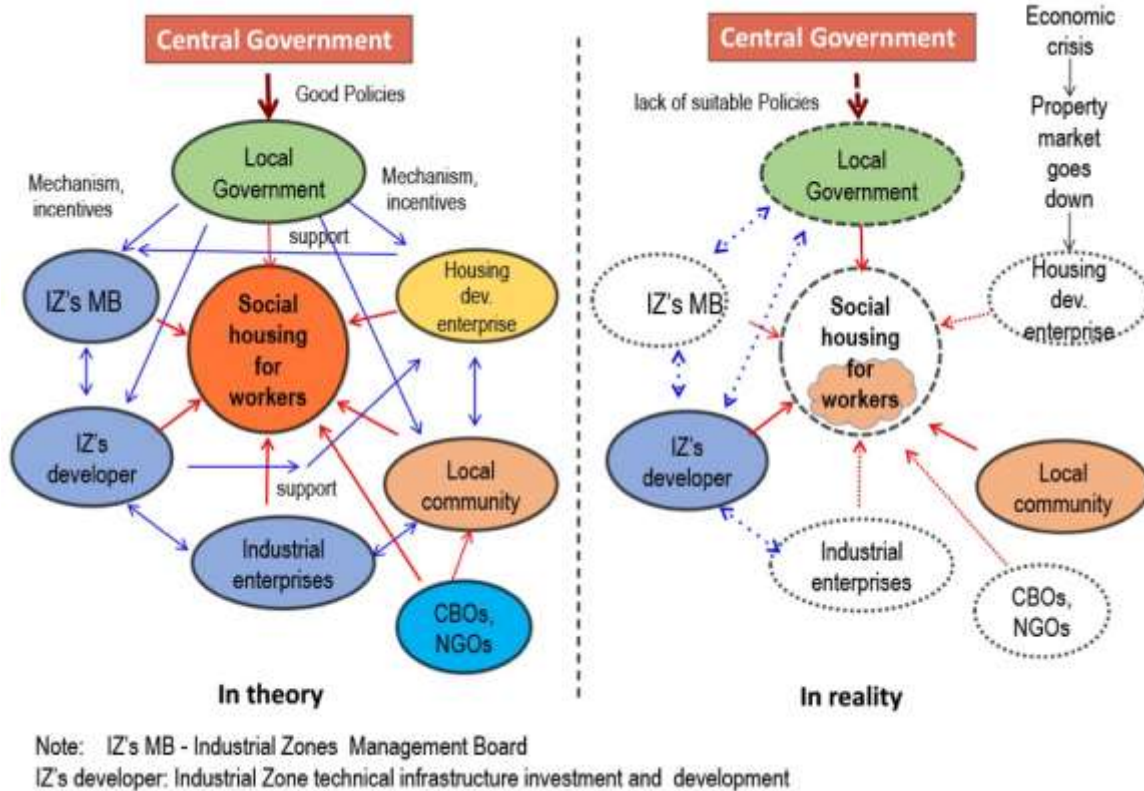
- Urban planning issues.** It is drawn from the fact that the orientation for social housing development has not been integrated into the urban spatial planning and transportation planning of the city and region. Factors related to residential spatial planning and the ability to connect with social infrastructure services (E.g.: hospitals, schools, sports centers, entertainment, etc.) are very important factors. However, at present, these factors are not considered important in the planning of social housing and improving social infrastructure services for workers. Consequently, land plots for social housing project investments have not been planned in convenient locations that allow easy access to urban public transport and basic services, such as commercial activities, educational and health care services, etc. The plannings of IZs have not taken into account the planning of social housing for workers. Many IZs have been established but have not allocated land plots to build houses for workers. The lack of connection with the technical and social infrastructure of social housing projects for IZs workers causes a problem that some apartments have been completely built but the workers do not want to live there because the planning, design and management are not suitable for living and working environment of industrial workers. According to the survey results, currently, among nine industrial zones in operation in Hanoi city, none of them have built kindergartens, schools and medical centers to serve the essential daily needs of the workers.

- The roles and the collaboration among stakeholders.** The main stakeholders involved in the development of social housing for IZ workers include the local authorities, the management boards of IZs, the IZ infrastructural development enterprises, factory management boards, housing development companies (public and private), NGOs, NPOs, communities and individuals. Theoretically, stakeholders must have a close interaction with each other to implement strategies and policies to develop housing for workers. The local authorities and the management boards of IZs must coordinate with each other to provide policies that will attract enterprises in investing in IZ development within the locality. Furthermore, these policies must encourage enterprises and offer them land and taxes to invest in housing for workers. The IZ infrastructural development enterprises that invest in the development of housing and public services



for workers in IZs can call secondary investors to support in building social housing for workers. NGOs, NPOs and individuals also involve in the provision of workers housing, ensuring a high-quality living environment that is consistent with workers income levels.

However, in reality, the relationship among these stakeholders is still loose and not mutually supportive in achieving the goal of providing adequate housing for workers. Local authorities do not make good policies in time to support investors in terms of land rental prices, investment capital, technical infrastructure, etc. to ensure that housing developers can conduct social housing projects smoothly and quickly. The procedures for accessing loans from the local budget are very complicated. Moreover, the IZ developer has no suitable mechanisms to cooperate with factory enterprises to invest in housing constructions for industrial workers to rent. Recently, NGOs and NPOs have not played a role in policy advocacy, supporting the development of social services for workers while raising the awareness of stakeholders in planning, management and development of social housing models for industrial workers. The local government has not provided any effective mechanism so far to encourage and support the private sector and individuals to participate in the development of suitable housing models for workers. Additionally, the mechanism for management and monitoring of housing products as well as service quality is relatively weak that has largely affected the housing provision and living environment for workers.



**Fig. 10 - The collaboration of stakeholders to develop social housing for industrial workers in theory and in reality (Source: Authors, 2017)**

• **Issues of models and products of social housing projects for workers.** The current social housing model is not suitable for the per capita income of low-income people in urban areas in general and in Hanoi in particular. The prices of social housing apartments provided to low-income people, especially workers, are still high and very difficult to afford. It takes at least 20 years for a low-income household to be awarded homeownership, which is obviously a very long time compared to social housing models in other countries around the world.

Social housing projects for workers to hire are facing many difficulties and disadvantages: Firstly, the rental price is still high in comparison to the average income of workers and the market price. Secondly, enterprises do not want to develop social housing projects for rent, because they have to invest a large amount of capital while the profit is not so high as they expect and it may take 10 to 15 years to regain capital with numerous risks. Moreover, to apply for rental social housing, workers have to go through a complicated and even bureaucratic procedure of document review which is another barrier for IZ workers to meet their housing needs.

• **Lack of research projects on information technology application and database formulation on social housing for workers.** Currently, housing for IZ workers is capturing great attention from the Government and local authorities. However, information about these housing projects is very sketchy, not updated, causing difficulties for management, research-and-development as well as finding stable accommodation for factory workers.

The development of a database system in the housing sector is an important foundation for efficient planning, management and distribution of housing for workers. In Vietnam, there are only a few studies as well as products applying digital technology in building databases on land, transport, environment and urban management. In the housing sector, there are a number of research projects related to the housing database establishment, and there are no in-depth studies on building databases for worker housing either. The study of Le, L.H et al (2018) recently only showed the content framework for the database on IZ workers housing in Hanoi. The application of information technology and the Internet to building open resources so that people can directly access the social housing distribution process and support the management of social housing development has not been explored yet.

## 5. Discussion

### 5.1 How To Change The Perception and Policies to Develop Social Housing for Industrial Workers?

Housing is the most important factor to develop the human resources and to contribute to the progress of the society. If guaranteed, this factor will help industrial workers to have good physical and mental health, and to reproduce their labor force, then to contribute to the provision of a qualified workforce for the society.

There should be major changes in perception and principles of social housing development for people in general and workers in particular: Social housing development approach should be "*towards people*" instead of "*towards buildings*". The policies in social housing development shall include two main priorities: 1) To encourage social housing projects for low-income people and IZ workers (both centralized and non-centralized housing projects); 2) To provide financial support for IZ workers to assess housing stock in different ways, for example renting, buying, "renting to buying" or self-building and self-upgrading their houses.

The development of social housing for workers must be taken integrally and comprehensively along the whole housing production and supply process. Social housing for workers is not only a product of the enterprises, but a product of the whole society. It is very important to provide a variety of housing products to meet the different needs of workers.

### 5.2 What are Suitable Social Housing Models for Industrial Workers That Need to be Further Developed to Increase Workers' Assessibility to Housing?

There are four typical social housing models for IZ workers that should be developed in relation to the socio-economic context and the role of different stakeholders that involved in social housing development process:

- **Model 1: Centralized construction social housing.** This model is based on social housing projects that are invested by state-owned enterprises or private enterprises to provide complete housing products with several apartment types. IZ workers can buy or rent a flat unit.

- **Model 2: Non-centralized construction social housing that is developed inside IZs or adjacent to IZs.** This model is based on social housing projects for workers in IZs, which is invested by enterprises of all economic sectors. In this model, the IZs infrastructure development enterprises invest in the construction of the basic technical and social infrastructure. The IZ infrastructure development enterprises may call for secondary investors to invest in the housing construction for workers to rent. This model requires a cooperation with enterprises in the IZs in reducing the cost of house rent and public service fees in the IZs by arranging and investing in public transport, child care centers, clubs, sports centers, etc.

- **Model 3: Local private social housing model.** This housing model takes the form of housing development by local households or individuals for rent or sale. The most common form is rental small apartments or rental houses located near IZs. This housing model is very popular today and provides accommodation with low rental prices for many migrant industrial workers. Local authorities should make policies to encourage private sectors and individuals to participate effectively in the process of housing development for workers to reduce land tax and license tax, to upgrade local technical infrastructure, to provide technical consultation for individual investors and to ensure good quality of rental housing. Apart from these tasks, the local authorities also need effective management tools to control the social and environmental impacts of migrant workers' settlement in the existing villages near the IZs.

- **Model 4: Self-built housing model.** In this model worker families or individuals built or upgrade their houses by themselves. Workers who are placed in the low-income group and cannot pay for renovating or constructing their houses will receive financial and technical consultancy in design and construction so that they will be able to build or renovate their own houses.

### 5.3 How to Integrate Social Housing Development For Industrial Workers With Land Use Planning and Urban Planning at Locality?

The planning and development of IZs and EZs must be linked to the land use planning of social housing projects for industrial workers. The master planning of a local community must define the spatial planning orientation for IZ



development that integrates housing development for workers as well as social infrastructure such as kindergartens, schools, clinics, public spaces, convenience stores, sports centers, etc. It is very important to link worker housing planning with urban transport planning including public transport systems to increase workers' accessibility to urban service areas. The model of transit oriented development model (TOD) in which housing areas for workers should be well planned as a major function of the urban development can be applied in new urban development areas in the big cities of Vietnam.

### 5.4 How to Develop Appropriate Financial Solutions for Low-Income People Including Industrial Workers to Meet Their Housing Demand?

From the survey results, it is stated that developing financial markets in relation to worker housing is an essential factor to realize social housing models. Some financial solutions should be applied, such as State banks should provide loans with deferred payment from monthly salary, encourage and support for the "rent to buy" model, provide workers mortgages with a low-interest rate.

In the meantime, the local authorities should develop markets of building materials and services related to housing for workers. Especially, it is necessary to establish a Local Housing Fund (LHF) specializing in supporting workers in rental and "rent-to-buy" housing. The LHF's financial resources are diversified but mainly made up of the state budget, the resettlement project budget, the auction money for land use rights and public assets and other sources of income. The LHF's main tasks are to support housing development for resettlement projects and to develop a social housing fund to serve middle and low-income working classes in the society, including workers in IZs.

### 5.5 How to Establish Database System of Housing for Industrial Zone Workers?

It is necessary to establish an information system on housing for workers to serve the management, research and development of housing for workers as well as to promote the provision of housing information for workers. Currently, in Vietnam, housing management and development structure is very complicated and could be roughly divided into three main levels as follows: provincial/city level, district level and ward/commune level. The housing management and development bodies are presented in Fig. 12.

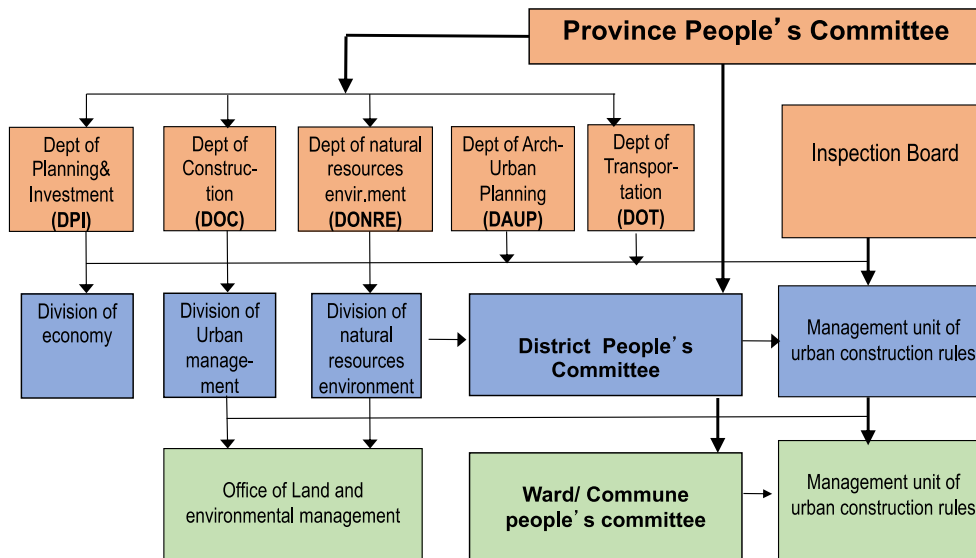


Fig. 11 - System of housing project's management and development currently in Vietnam (Source: Auhthors, 2015)

In order to establish a long-awaited industrial workers housing database, the sources of information include spatial planning data related to IZ housing development and data of social housing projects for IZ workers.

**Spatial planning data.** The data include existing conditions of housing development areas (geography, topography, land use, existing technical infrastructure), zoning plan of the area that housing project for industrial workers is located (scale 1/2000), detailed plan of the area (scale 1/500), technical plans and other plans (transportation planning, urban greenery planning, etc.).

The Department of Natural Resources and Environment (DONRE) and Province's /or City's Authority provide information on the existing conditions through GIS maps while the Department of Construction (DOC) will provide

information on master plans, zoning plans and detailed plans related to worker housing development areas. In addition, the information on technical infrastructure planning and transport planning will be given by relevant departments, such as the Department of Architecture and Urban Planning (DOAUP), Department of Transportation (DOT) and so on.

**Social housing project data.** Social housing project data include data of centralized and non-centralized social housing for industrial workers, and rental housing provided by individuals and local households. The Ministry of Construction (MOC) and the Department of Construction (DOC) ask the project investors and project management board to provide information of worker social housing projects in the area. The commune/ward People's Committee provides information on private rental housing that are owned by individuals or local households. With the role of holding and managing a database system on worker housing, the DOC needs to set up a social housing database center to collect all worker housing information in Vietnam. The center should use information technology applications to create an information portal to provide information with different kinds of data available to different users, for instance professionals and experts, social housing management agencies, investors and community (See Fig.13).

To facilitate the role of building a database system, the process of the information updating should be carried out periodically, and then be proceeded for implementation once a change has been made. This requires a close coordination between database management units at both national and local levels.

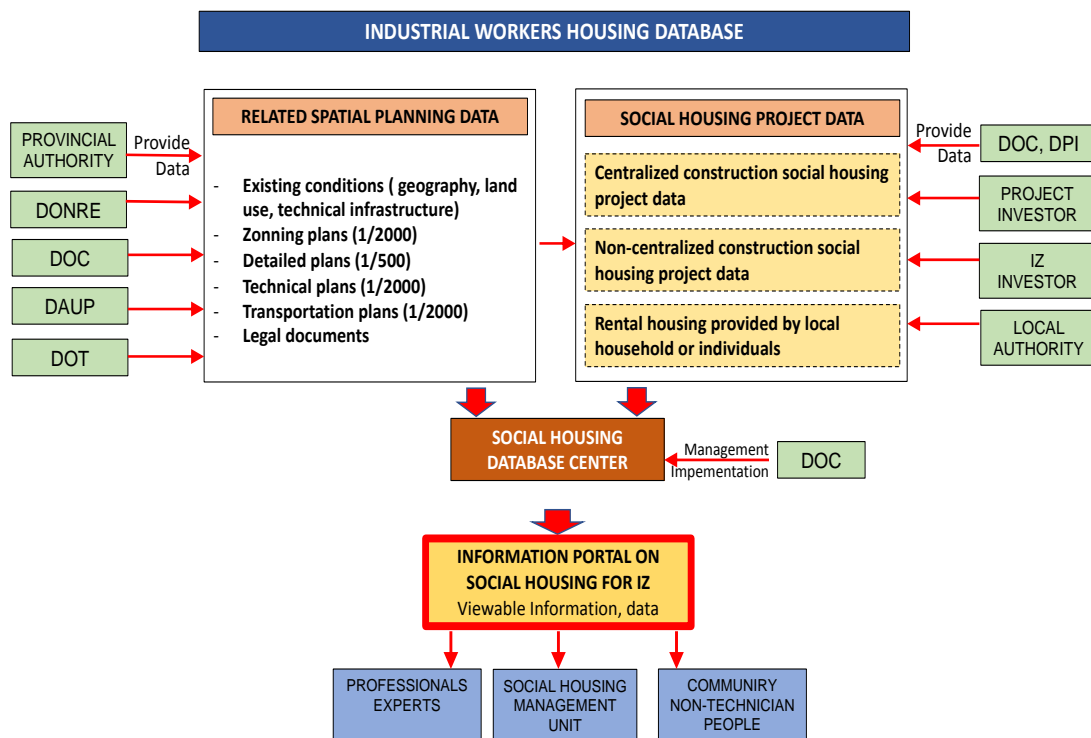


Fig. 12 - Conceptual diagram to formulate industrial workers housing database system

## 6. Conclusions

The development of social housing, especially for workers in industrial zones in Vietnam, is a long process that has just begun. The research results are mainly based on theoretical assessments and primary data from questionnaires and observational surveys. The research highlights the existing conditions of three social housing types for IZ workers through the case studies in Hanoi. Findings from the research show that it is very difficult for industrial workers to purchase social housing accommodation since the housing price is very high compared to their income. Only a small number of industrial workers can buy or “rent-to-buy” social housing flats. Through the questionnaire surveys, many workers who are living in social housing flats give their opinions of the important physical elements of social housing (both inside and outside their living quarters) that should be carefully considered when developing social housing. The experts’ interviews also explored three critical issues related to State policy including financial mechanisms to develop suitable social housing models for factory workers, the integration of social housing projects with urban planning, technical and social infrastructure planning in a region, and the construction quality of social housing projects.

To put forward practical solutions, the research needs to be carried out more systematically through specific pilot programs. It is useful to note that this research starts to explore a new perspective on science and technology innovation in the housing construction field: from theoretical research with the major role of scientists to move to the cooperation among different stakeholders with the key subject aimed at the workers. To encourage and facilitate the implementation of these studies, it is necessary to build a mechanism with a citywide and then nationwide database system on development and management of social housing for workers, hereby contributing to provide more reliable and up-to-date information on social housing for workers, strengthening the coordination between the *Government - Enterprises - Community* in solving housing problems, improving the quality of life and ensuring sustainable development.

## References

- Ahuri (2006). Housing Affordability in Australia – Research and Policies ISSUE 68 February 2006 ISSN 1445-3428, [https://www.ahuri.edu.au/\\_\\_data/assets/pdf\\_file/0006/3021/AHURI\\_RAP\\_Issue\\_68\\_Housing\\_affordability\\_in\\_Australia.pdf](https://www.ahuri.edu.au/__data/assets/pdf_file/0006/3021/AHURI_RAP_Issue_68_Housing_affordability_in_Australia.pdf), last accessed 2020/9/23
- Alain, B. (2014). Housing Affordability: Top-Down Design and Spontaneous Order, <https://www.nyudri.org/assets/publications/2014/housingaffordability.pdf>, last accessed 2020/9/23. last accessed 2020/9/23.
- Arifin, L.S. (2001). Housing provision for factory workers, *Dimensi Teknik Arsitektur* Vol. 29, No. 2, Desember 2001: 110 – 116, <https://www.semanticscholar.org/paper/HOUSING-PROVISION-FOR-FACTORY-WORKERS-Arifin/177b3dd664ebfc13032095d79cb81037b35a3e73>, last accessed 2020/10/20
- Baochinhphu.vn (2020). Continue to implement 73 housing projects for workers, <http://baochinhphu.vn/Tra-loi-cong-dan/Tiep-tuc-trien-khai-73-du-an-nha-o-cho-cong-nhan/388222.vgp>, last accessed 2020/9/23.
- Cambridge Dictionary (2020). Social housing definition, <https://dictionary.cambridge.org/vi/dictionary/english/social-housing>, last accessed 2020/8/23.
- Chia, K. C. (2001). The housing Crisis of The Female Migrant Workers: A Case Study of The Bayan Lepas Free Trade Zone, *Dimensi Teknik Arsitektur* Vol. 29, No. 2, Desember 2001: 110 – 116. <http://puslit.petra.ac.id/journals/architecture/>
- HANCO 3 (2018). Social housing for low-income people in Sai Dong new urban development <http://chungcusaidong.net/nha-o-xa-hoi-nha-o-thu-nhap-thap/>
- Homedy.com (2017). Housing for worker in Dong Anh district <https://homedy.com/khu-nha-o-cho-cong-nhan-dong-anh-pj55422304>.
- JICA (2016). The study for improvement of living conditions for workers around industrial areas in Socialist Republic of Vietnam, [https://www.jica.go.jp/english/our\\_work/social\\_environmental/id/asia/southeast/vietnam/c8h0vm0000anjtuy.html](https://www.jica.go.jp/english/our_work/social_environmental/id/asia/southeast/vietnam/c8h0vm0000anjtuy.html), last accessed 2020/10/20
- Le, L.H. et.al. (2018). Building database on industrial factory worker housing in Hanoi, *Journal of Science and Technology in Civil Engineering*, [https://doi.org/10.31814/stce.nuce2019-13\(1V\)-09](https://doi.org/10.31814/stce.nuce2019-13(1V)-09).
- Lilananda Rudy P. (1993). Community Based Low-Cost Housing for Factory Workers in Rungkut, Surabaya, Petra Christian University.
- Ministry of Planning and Investment Socialist Republic of Vietnam (MOPI) and JICA (2016). The Study for Improvement of Living Conditions for Workers around Industrial Areas. Final summary report, [https://www.jica.go.jp/english/our\\_work/social\\_environmental/id/asia/southeast/vietnam/c8h0vm0000anjtuy.html](https://www.jica.go.jp/english/our_work/social_environmental/id/asia/southeast/vietnam/c8h0vm0000anjtuy.html), last accessed 2020/9/203.
- NASRV- National Assembly of the Socialist Republic of Vietnam (2005). Law on Housing, No 56/2005/QH11, Vietnam.
- Ngo, L.M. (2018). Social housing for workers – A new housing model for Ho Chi Minh City, Vietnam, *IOP Conf. Ser.: Earth Environ. Sci.* 143 012060 <https://iopscience.iop.org/article/10.1088/1755-1315/143/1/012060/pdf> (2018)

Nguyen, T.A.T. (1994). Housing for workers in Hanoi (Demand, Supply, and Housing Condition): A Case Study of Phuong Mai Subdistrict, Master thesis of Asian Institute of Technology, Bangkok

Nguyen, P. D. (2016). Social housing – Difficult to looking for, Journal of Architecture, No.3/2016, <https://www.tapchikientruc.com.vn/chuyen-muc/nha-o-xa-hoi-lan-loi-di-tim.html>

Oxford English and Spanish Dictionary (2020). Social housing definition, [https://www.lexico.com/definition/social\\_housing](https://www.lexico.com/definition/social_housing), last accessed 2020/8/23.

Pham, D.T. (2015). Social housing – Models of development, Scientific research, Vietnam

Pham, K.T.H et al. (2019). Health Inequality between Migrant and Non-Migrant Workers in an Industrial Zone of Vietnam, Int. J. Environ. Res. Public Health 2019, 16, 1502; DOI:10.3390/ijerph16091502, last accessed 2020/8/23.

RICS (2019). Internaitonal models for delivery of affordable housing in Asia, <https://www.rics.org/globalassets/rics-website/media/knowledge/research/insights/international-models-for-delivery-of-affordable-housing-in-asia-rics.pdf>, last accessed 2020/10/20

Sahabuddin, M.F.M., and Longo, C.G. (2015). Traditional values and their adaptation in social housing design: Towards a new typology and establishment of ‘air house’ standard in Malaysia, Archnet-IJAR, Volume 9 - Issue 2 – July 2015 - (31- 44).

Savills (2019). Vietnam industrial-H1/2019, Savills research spotlight, <https://pdf.savills.asia/asia-pacific-research/vietnam-research/quarterly-market-reports/vietnam-industrial-2019h1-en.pdf>, last accessed 2020/8/27.

Ta, Q. H. (2016). An assessment of social housing model for low-income people in Hanoi city - current situations, issues & proposed solutions, Journal of Construction, Ministry of Construction, 2016, No.1-2016, pp 96-99, Hanoi, Vietnam.

Ta, Q.H and Pham, D.T. (2015). Questionnaire surveys on housing for industrial workers in Hanoi, Vietnam.

Tanaphoom, W. & Bart,D (2015). An overview of public housing characteristics and living satisfactions: old and new public housing project in Bangkok, Procedia Environmental Sciences 28 (2015) 689 – 697.

Trinh, D.L. (2011). Social housing – new concept but old contents, Journal of Architecture Retrieved from <https://www.tapchikientruc.com.vn/chuyen-muc/kientruc-xahoi/nha-o-xa-hoi-khai-niem-moi-va-nhung-noi-ham-cu.html>.

UN-Habitat (2020). Support to Development of Low-Income Housing Policy and Strategy for Vietnam Cities. [https://www.fukuoka.unhabitat.org/projects/vietnam/detail06\\_en.html](https://www.fukuoka.unhabitat.org/projects/vietnam/detail06_en.html), last accessed 2020/8/23.

UN-Habitat (2014). Vietnam Housing Sector Profile, <https://unhabitat.org/viet-nam-housing-sector-profile>, last accessed 2020/10/20.

Vietnam investment review (2019). IP occupancy rate hits nearly 75 percent, <https://www.vir.com.vn/ip-occupancy-rate-hits-nearly-75-percent-70970.html>, last accessed 2020/8/25.

Vietnambiz.vn (2020). Vietnam has 260 industrial parks in operation, the occupancy rate is over 75%, <https://vietnambiz.vn/viet-nam-co-260-khu-cong-nghiep-di-vao-hoat-dong-ti-le-lap-day-dat-hon-75-20200327154939579.htm>, last accessed 2020/8/25.

Vietnam investment review (2019). Vietnam faces serious shortage of housing for workers, <https://www.vir.com.vn/vietnam-faces-serious-shortage-of-housing-for-workers-70808.html>, last accessed 2020/8/23.

Vietnam Legal Document (2013). Decree No. 188/2013/ND-CP, Vietnam.

Vietnam Legal Document (2018). Decree No. 82/2018/ND-CP, Vietnam.

World Bank (2015). Vietnam affordable housing – A way forwards, Retrieved from <http://documents.worldbank.org/curated/en/240541467995097856/pdf/100706-WP-P150619-PUBLIC-Box393231B-2015-10-16-05-45.pdf>

Yamaguchi, Y. (2019). Affordable Housing for Rural Migrant Workers in Urban China, [http://www.welfareasia.org/4thconference/papers/Yamaguchi\\_Affordable%20housing%20for%20rural%20migrant%20workers%20in%20urban%20China.pdf](http://www.welfareasia.org/4thconference/papers/Yamaguchi_Affordable%20housing%20for%20rural%20migrant%20workers%20in%20urban%20China.pdf), last accessed 2020/10/20

Yap, K.S and Aminur, R. (1993). Housing Women Factory Workers in The Northern Corridor of Bangkok, Working Paper No.7, Bangkok, Asian Institute of Technology, 1993