

# Development of Trade Village and Rural Industrialization in Dong Ky, Tu Son Town, Bac Ninh Province, Vietnam

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**Abstract:** *Dong Ky wood craft village is one of the centers specializing in providing fine art wood products for domestic market and for export in Vietnam. The article analyzes the influencing factors and describes the actual situation of wood production, business and processing of the village. The role of Dong Ky wood craft village is reflected in its contribution of 97.8% to the local production value, contributing to restructuring Dong Ky economic structure towards industrialization and rural modernization. The development of Dong Ky wood craft village has also created jobs for thousands of workers in the locality and surrounding areas, increasing the income for local people. The need to expand production scale of the village has led to the formation of an industrial cluster of craft villages, and at the same time to a change in the landscape architecture of the village towards urbanization.*

**Keywords:** Craft village, wood products, rural industrialization, Dong Ky

## 1.Introduction

Craft villages are a special type of rural industry, playing an important role in the process of agricultural industrialization, improvement, upgrading and modernization of infrastructure in rural areas [1]. Maintaining a two-tier economic model (including large urban industry and development, multiplication of non-agricultural occupations in rural areas) is the most effective solution to realize industrialization in Asian countries with monsoon climate[2]. Traditional craft villages exhibit the dynamism and creativity of crafting farmers in the process of adapting to certain geographical and socio-economic conditions [3].

Dong Ky is among 12 communes and wards of Tu Son town, with a natural area of 5.53km<sup>2</sup> and a population of 17,284 people in 2020 [4]. Dong Ky is located in the Red River Delta, which is 12 km from Bac Ninh city and about 20 km from Hanoi's center. Regarding administrative boundaries, Dong Ky is bordered to the east by Dong Nguyen ward, to the west by Phu Khe commune, to the south by Trang Ha ward and to the north by Huong Mac commune.

General records of Crafts and Traditional Craft Village in Vietnam indicated that Dong Ky is a traditional craft village with a long history of making fine art wood products for more than 300 years [5]. Lineages in the village still pass on their own secrets about their carpentry from generation to generation.

Entering the reform period (since 1986), the role of

household economy in Dong Ky has been confirmed. It has quickly caught up with the market mechanism and risen strongly. From a village with predominant agricultural economy, Dong Ky has quickly transformed into a craft village which is famous for production of wood products nationwide. The conversion process of farm household economy to handicraft and service economy has made Dong Ky village's landscape and architecture change from tradition to modernity, from agriculture to handicraft and services, from rural to urban area. New streets sprouting up on the main road leading to the village, along with the formation of craft village industrial clusters, have affirmed the role of driving forces of industrialization and urbanization in the locality.

## 2.Materials and Methods

We used the following sustainable and participatory approaches. Research results based synthetic assessment of producers, businesses, local authorities and other sources of information.

Secondary data sources used in this article include published documents and new information from Bac Ninh province and Dong Ky ward. Besides, the primary data source is taken from the survey results about the Dong Ky wood-art craft village with 90 questionnaires.

The collected data were aggregated and processed using Microsoft Excel.

Regarding to research methods: Analytical, descriptive and comparative methods were mainly used in this article.

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### 3. Results and Discussion

#### 3. Factors affecting the development of Dong Ky wood craft village

##### 3.1. Production materials

Wood is the basic material for production process of Dong Ky craft village. Precious wood species that are commonly used consist of: burma padauk, Trac wood, mahogany, rosewood, ebony (black, striped), dalbergia tonkinensis prain, etc. There are about more than 100 wood trading shops in Dong Ky, in which large shop owners import wood in large volume of 200 to 250m<sup>3</sup>. Currently, Dong Ky has become the largest rare and precious wood market

in Vietnam. According to estimates in 2019, the total volume of wood materials used in Dong Ky is about 35 to 40 thousand m<sup>3</sup> of round wood, of which burma padauk, mahogany and Tracwood account for 85%, and other types such as rosewood, ebony and doussie account for 15%. Wood originates from Africa, Laos and Cambodia, of which the proportion of African origin accounts for the majority (80%) [4].

In addition to wood, the production process in Dong Ky also uses many other materials and chemicals, such as: adhesive (alcohol), powder, sandpaper, and for finished products, paint and varnish. The norm of raw materials for production in Dong Ky is shown in Table 1.

**Table 1:** Raw materials and production norm

Raw Materials	Norm (per table & chair set)	Purpose of use	Amount used/year
Wood	0.25-0.33 m <sup>3</sup>	Raw material	20,000 m <sup>3</sup>
Sandpaper	0.2-0.4 kg	Wood surface processing, smoothing	90,000 kg
Alcohol adhesive	0.2-1 kg	As a binder and curing agent during assembling process, creating raw products	75,000 kg
Powder including rock powder, soil powder	0.25 kg	Surface processing, alcohol adhesive preparation, defect overcoming	30,000 kg
Gasoline, polish	0.3 liter	Polishing to create surface	36,000 liter
Paint, varnish	0.37-0.5 liter	Surface treatment, polishing	45,000 liter

Source: People's Committee of Dong Ky Ward, 2019, Environmental Impact Assessment Report of Dong Ky craft village industrial cluster

##### 3.2. Investment capital

Due to the expansion of production scale and the rapidly increasing price of wood materials over the years, the amount of capital needed for production has increased over the years. However, the investment capital of households in Dong Ky is usually not large with an average of about 1.55 billion VND/household, of which 0.48 billion VND is fixed capital including workshop and machinery, equipment. The average working capital invested by each household is about 1 billion VND (1 USD ≈ 23,186 VND). Capital of production enterprises and households in the village is raised mainly from two main sources: self-financed capital and loan capital. Up to 75% of the surveyed households use their own capital, or loans from friends and relatives to invest in production; the remaining 25% borrow from banks. In Tu Son town, there are up to 20 bank branches which are operating. In Dong Ky, there are transaction offices of the banks such as: Bank for Agriculture and Rural Development, Bank for Industry and Trade, Bank for Investment and Development, Saigon Commercial Bank, etc. to meet the capital needs of local people.

##### 3.3. Workforce

As of 2019, Dong Ky had 4284 households with 17,284 people, of which the number of households engaging in production was 4052 households (accounting for about 94.58%). Dong Ky craft village not only creates jobs for local workers but also attracts workers from other regions. In the village, workers are assigned in the direction of

specialization in each stage of the production process, as well as in the field of commerce, services for production and life in the village.

Furthermore, although the number of workers in Dong Ky craft village increases every year, the quality of workforce is still low, mainly based on experience and techniques passed down from generation to generation without formal training. Therefore, to maintain and expand production, Dong Ky needs to have support policies aimed at improving workers' skills.

##### 3.4. Workshop premises

In Dong Ky, most households have their residences as production workshops. Only a few have separate workshops from their residences. Space for production is quite narrow, and most production areas are adjacent to residential areas. People build their own workshops in the area of their houses, install a series of saws, scrubbers, planers in their yards and produce there. Roads in front of the houses or alleys are used as a place to gather materials.

The average area of a production and business enterprise in Dong Ky is 801.2 m<sup>2</sup>, of which the areas for a shop, workshop, and warehouse are 112.2 m<sup>2</sup>, 589 m<sup>2</sup>, and 100 m<sup>2</sup>, accounting for 14%, 73.5%, and 12.5% of the total area, respectively. Meanwhile, the average area of local production households is only 175 m<sup>2</sup>, of which the workshop area, shop area, and warehouse area account for 69.4%, 13.2%, and 13.2%, respectively (Table 2).

**Table 2:** Land use structure for carpentry in Dong Ky (unit: m<sup>2</sup>)

Indicator	Company limited		Cooperative		Production household	
	Quantity	Structure (%)	Quantity	Structure (%)	Quantity	Structure (%)
- Production workshop	589.0	73.5	333.0	69.0	121.4	69.4
- Shop	112.2	14.0	89.5	18.6	30.4	17.4
- Warehouse	100.0	12.5	60.0	12.4	23.1	13.2
In which: Leased land area in industrial cluster	332.0	41.4	178.0	36.9	43.3	24.7
Total	801.2	100.0	482.5	100.0	175.0	100.0

Source: Summary of survey data

However, only the majority of companies and cooperatives can rent premises in the craft village industrial cluster, while production households are mainly interspersed in densely populated areas. Lack of production space is a major obstacle in the development process of Dong Ky craft village.

### 3.5. Production technology

In order to improve labor productivity and product quality, production facilities in Dong Ky have gone deep into production specialization (specializing in wood formwork, chiseling, carving, mosaic, polishing, finishing of products, etc.). A variety of machinery has been used to mechanize production such as saws, wood cutters, lathes, planers, drills, and polishing machines, and picture saws have been used to cut motifs of bulk production items. Wood processing technology, semi-automatic carving technology have been applied and paint spraying machines have been used to finished products, creating fine art wood products with high uniformity and good quality. So far, in Dong Ky, there are about 30 CD saws, 3 industrial wood dryers, and 22 CNC (Computer Numerical Control) machines in the rough chiseling stage. 50% of enterprises and 10% of households have punching machines. There are also milling machines (average 2 units/enterprise, 1 unit/household); polishing machines (average 6-7 units/enterprise and 2 units/household), planers, paint spraying machines, etc.

The majority of machines in Dong Ky are of domestic origin and imported from China, of which machines of Chinese origin account for about 40%, the rest are of domestic origin. The machinery and equipment of

production and processing facilities in Dong Ky are equipped according to the needs of the production facilities and in line with the scale and efficiency of the production process. The renovation of some technologies and specialization of production has resulted in higher labor productivity, better product quality, and the ability to execute large contracts in a short time, etc.

### 3.6. Consumption market

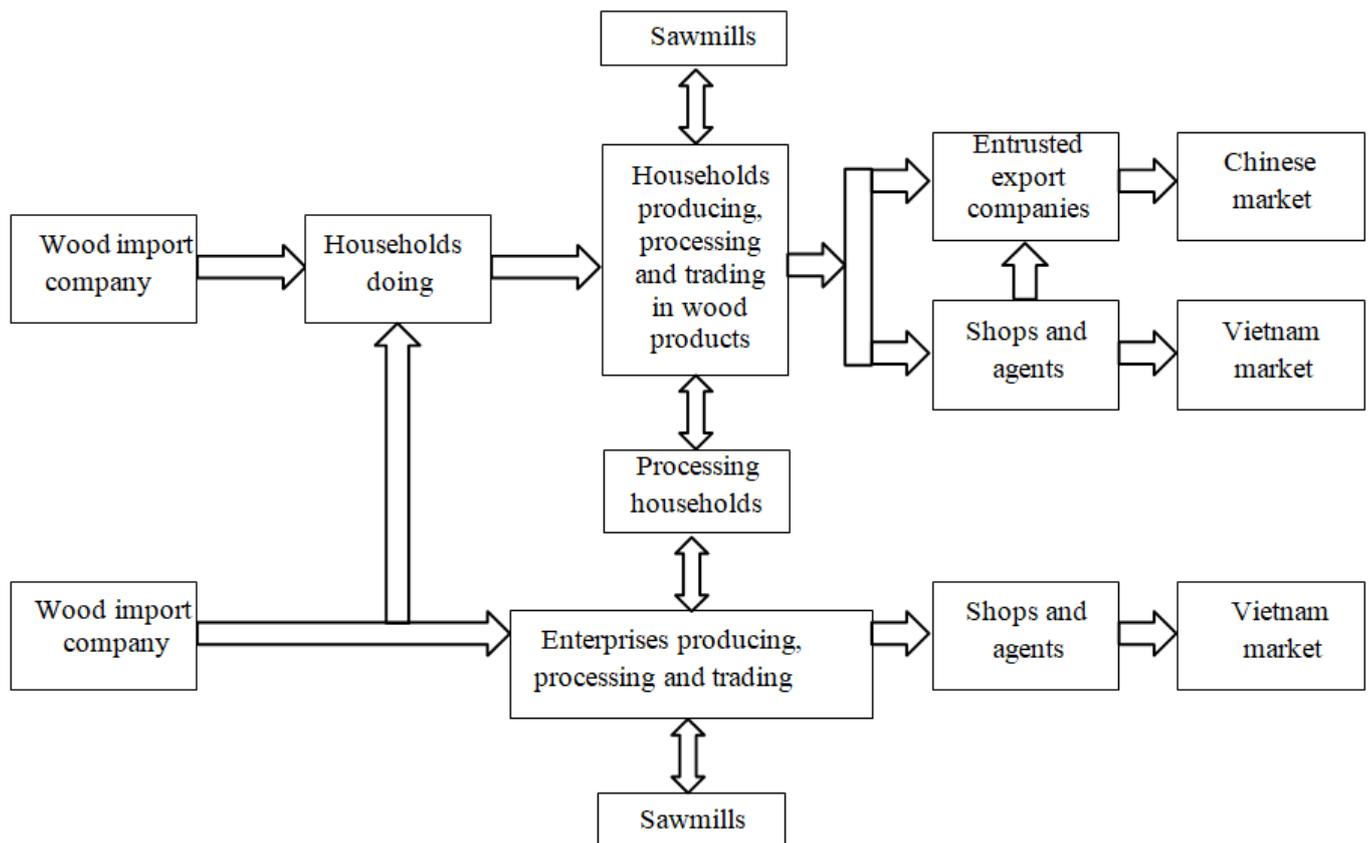
Market is a very important factor that is crucial to the survival and development of each craft village, especially the product consumption market [6]. Along with the expansion of production scale, enterprises in Dong Ky have regularly researched and expanded product consumption markets in both domestic and international markets.

Currently, about 55%, 40%, and 5% of Dong Ky products are consumed in China, the domestic market, and other markets such as Laos, Europe, USA, Russia, Singapore, Malaysia, etc.

## 4. Current Situation of Production and Role of the Village

### 4.1. Production and consumption supply chain

The chain starts with raw wood, which is imported and domestic wood. This source of wood is provided to production facilities through households and enterprises trading in wood materials.



**Figure 1:** Supply chain from wood to wood products in Dong Ky

Figure 1 depicts the supply chain from wood to wood products of Dong Ky craft village in 2018, showing each link between household group and enterprise group, along with two channels of product distribution to Vietnamese market and Chinese market, in which:

- Households doing business in raw wood often have stalls at the wood market. There is a total of about 250 households, including 50 wholesale households and about 200 retail households. This is the main source of raw wood materials for households producing and trading in wood products.
- Households producing, processing and trading in wood products: including households with shops and households without shops. Households producing, processing and trading with shops will often produce at larger scale than households without shops. In Dong Ky, there are about 400 households producing, processing and trading in wood products. About 100 households have shops and only trade in wood products without engaging in processing. Households with shops will place orders or buy back products from households engaging in the production and processing of wood products. Production and processing households often buy wood from households that trade in raw wood at the wood market, then send it to households that specialize in wood sawing for sawing into planks and then take it to their workshops for processing into wood billets. Wood billets will be transferred to processing households for processing according to each product's details. Finally, the details are sent to the workshops to assemble and complete the raw wood products (not spray-painted). Raw carpentry products can be exported directly to China or spray-painted at households with painting workshops.
- Enterprises producing, processing and trading in wood products: in Dong Ky, there are currently about 150 companies and 10 cooperatives engaging in wood product production, processing and trading. These enterprises often buy wood directly from import companies, then organize production and processing in the form of association as shown in Figure 1 (sawing according to specifications at sawmills, sawing of wood billets at the enterprises' workshops, chiseling of details at processing households, and finally assembling and finishing at the enterprises' workshops). Finished products after painting are displayed and sold at the enterprises' shops in Dong Ky craft village.
- Sawmills: All sawmills in Dong Ky are household workshops. There are about 50 households engaging in sawing processing, with each household being equipped with 1 to 2 sawing machines. Most of the households are equipped with large and computer-controlled sawing machines with small saw blades to reduce the amount of material loss during sawing process. Most households and enterprises producing, processing and trading in wood products have to saw wood in the sawmills because no sawing machines are installed at their workshops due to lack of space.
- Processing households include households engaging in chiseling processing, such as chiseling of product motifs (by hand or by CNC - Computer Numerical Control machines), households chiseling to assemble and finish products, and households painting processed products.
- Shops and agents: In addition to the Chinese market, 70% of Dong Ky products are sold in the domestic

market through shops in Dong Ky and agents in the provinces.

- Entrusted export companies: Around Dong Ky area, there are about 5-6 entrusted export companies; however, due to cost competition, only 2-3 companies receive entrusted export contracts. Normally, entrusted export companies only charge a service fee for preparation of export documents including customs declaration, entrust contract signed with households' representative, and delivery and receipt contract signed with a partner company in China to receive goods upon shipping across borders. Shipping is not undertaken by the company. Households will be responsible for hiring trucks to transport goods to border gates and deliver goods across borders. The delivery and receipt contract

will include a list of goods and a bill of lading which clearly states product name and type of wood material.

**4.2. Production value**

In the period of 2015-2019, the total production value of Dong Ky Ward was 3401.2 billion VND, of which the total value of wood production was 3330 billion VND, accounting for 97.9% (The remaining 2.1% is from agricultural production), with an average annual contribution of 680.2 billion VND. The development of Dong Ky village has made an important contribution to the development of the local economy, contributing to economic restructuring in the direction of industrialization and modernization (Table 3).

**Table 3:** Production value of Dong Ky village

Year	Total value (billions VND)	Agriculture (billions VND)		Wood production (billions VND)	
		Value	Percentage (%)	Value	Percentage (%)
2015	433,7	13,7	3,2	420	96,8
2016	564	14	2,5	550	97,5
2017	766	15	2,0	751	98,0
2018	794	14	1,8	780	98,2
2019	843,5	14,5	1,7	829	98,3
<b>Total</b>	<b>3401,2</b>	<b>71,2</b>	<b>2,1</b>	<b>3330</b>	<b>97,9</b>

Source: People's Committee of Dong Ky Ward, 2020 (1 USD ≈ 23,186 VND)

**4.3. Job creation and income improvement for people**

The production and business activities of Dong Ky village not only play an important role in creating jobs for households in the village but also attract a large number of workers from other places. Dong Ky is the place where the number of direct workers of the village (direct workers of households) is greater than the number of hired workers from outside. On average, each household in the village has about 3-5 workers, including both households' workers and hired workers. In 2018, Dong Ky has 15,000 workers, of which about 10,000 village workers are involved in woodcraft, 5000 workers are hired from outside.

In the strongest development period (2005 - 2012), the total number of workers in Dong Ky village is estimated at 24,000 workers/year including 8,000 local workers and 16,000 workers from other provinces such as Ha Tay, Bac Giang, Thanh Hoa, and Nghe An. In recent years, due to a decrease in wood material sources and a shrinking market, the number of workers has decreased by 38% to about 15,000 workers with 33.3% being hired workers from other places.

Field survey results in Dong Ky village show that: About more than 60% of the workers in the village are aged from 18 to 45; the rest are mostly people aged 46-60. Some

households also make use of family labor aged over 60; however, this percentage is negligible, accounting for about 1% of the total workforce in the village. About 68% of the workers in the village are men, the rest (32%) are women. Male workers are employed more often than female workers because they are considered to be able to participate in many production and processing stages such as selection, purchase of raw wood, use of saws, paint spraying (which are deemed arduous, hazardous, and unsuitable for women). In addition, most skilled wood processing jobs are performed by men. Women often manage finance, sales and shops, or take part in light work such as sanding and polishing.

The development of Dong Ky village in recent years has contributed to changing the economic structure of the locality, gradually bringing a decent source of income for the majority of households in Dong Ky. The average income of workers in Dong Ky village increases year by year. Master workers has the highest income; auxiliary workers engaging in cutting, sawing, chiseling, table or chair nailing work, etc., and hired workers who do simpler work such as sanding, varnishing, etc. also earn an income of 4-4.5 million VND/month (Table 4). Income improvement for people in Dong Ky village is the basic condition to improve the quality of life, meeting the physical and spiritual needs of the people.

**Table 4:** Average income of workers in Dong Ky village

Year	2015	2016	2017	2018	2019
Master workers	7,31	7,76	8,25	8,78	9,35
Auxiliary workers	4,60	4,82	5,06	5,31	5,59
Hired workers	3,98	4,14	4,32	4,52	4,73

Source: Summary of survey data

Compared to other pure farming villages, the average income of workers in Dong Ky village is about 3-5 times higher. The village's economy has developed, the people's life has been stable, the infrastructure and equipment have been invested with high quality, and the houses have been built spaciouly. So far, about 97%, 100%, and 20% of households have multi-storey houses, motorcycles, and their own cars, respectively [4].

#### 4.4. Preservation of traditional products and national identity

Products of Dong Ky village are those meticulously carved by craftsmen with sophisticated and virtuoso lines. Decorative images on products are exploited from the natural world, the rich and diverse society[7]. These products are not only suitable for the times and consumers but also describe the mind of carpenters, associated with the long-standing traditional values of the nation. The development of Dong Ky village has been spread widely, everywhere people come to learn. Even Dong Ky people who are dedicated to the profession have started their careers in other countryside areas of the country such as Quang Tri, Vinh (Nghe An), Da Nang, etc..., thereby providing vocational training for workforce in such areas. Therefore, of course, any form of vocational training and passing is also aimed at promoting and preserving the exquisite value of Dong Ky wood products, contributing to protecting the long-standing cultural values of the nation.

However, in the context of continuous development and

change of socio-economic life, those precious values are gradually being changed. Dong Ky village is gradually losing its self-production role. Under the impact of the market economy, Dong Ky village gradually becomes the center of the surrounding wood production villages. As a result, the direct production of products has been gradually reduced; Dong Ky young people and workers gradually move away from carpentry, mainly focusing on business. Moreover, the strong development of the wood material market has led many households to gradually shift from wood production to wood material trading. It is these which inadvertently lose the trade value and culture of Dong Ky people.

## 5.Changes in Dong Ky craft village

### 5.1. Change in production organization form

Since its formation, carpentry in Dong Ky has many different forms of production organization. Under the impact of conditions, historical circumstances, political situation of the country, depending on each period, the production organization form of the village flexibly changes to suit the social situation. The production organization of Dong Ky village can be considered in three stages: (1) Before 1945; (2) From 1945 to 1986; (3) From 1986 to present. In each period of production organization model, there have been certain innovations shown in Table 5.

**Table 5:** Production organization forms in Dong Ky

No.	Period	Production organization form
1	Before 1945	Household, craftsmen association
2	From 1945 to 1986	Cooperative, guild
3	From 1986 to present	Household, limited company, private enterprise

Source: Summary of survey data

Traditional production model in the village is household. On average, each household has a working capital of about 1 billion VND. Under this model, almost all household members are mobilized into different work in the production and business process. In addition, due to the nature of the work and the seasonality of the production, households hire additional workers. The current household production and business is suitable with the conditions of management capacity, capital scale, human resources as well as limited market access.

In addition to the household model, Dong Ky craft village also develops different production models such as cooperative group, cooperative, etc. This is a form of voluntary cooperation and association to overcome the limitations of the household model, create favorable conditions for management innovation, mobilize many sources of capital, create linkages in production, business and services in the village, thereby improving business efficiency.

The establishment and development of craft companies and enterprises in Dong Ky make the village take on the appearance of urban industrial production or concentrated

industrial zones. Limited companies are usually developed from a number of households or organizations with good economic potential, good level of organization and access to markets. This model acts as a center to link the households, execute contracts and ensure inputs and outputs for the production process. In Vietnam, this model also thrives in craft villages with high level of centralization, broad market relation, and the ability to innovate technologies to expand production scale [6].

### 5.2. Change in space and landscape

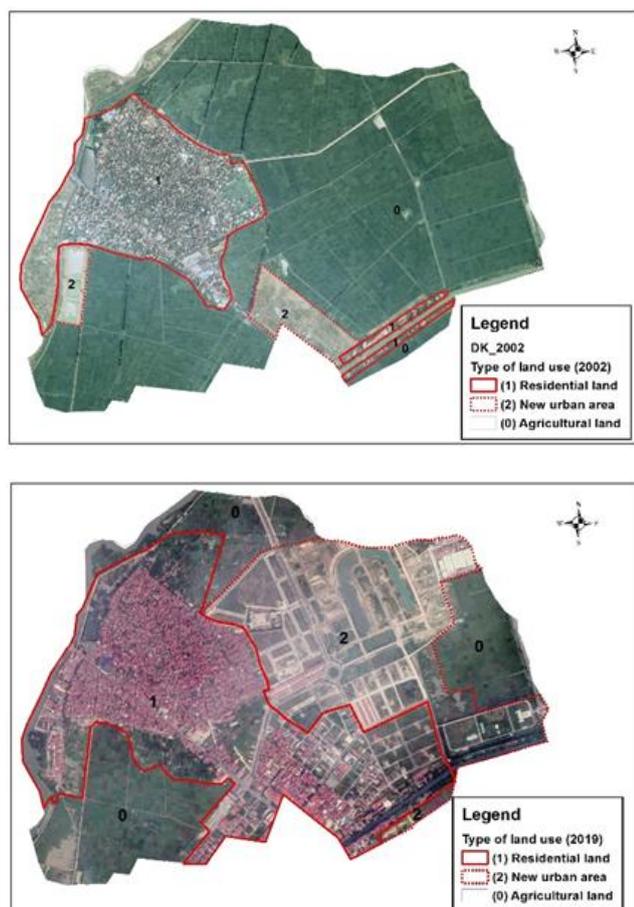
Population and workforce pressure is an internal cause contributing to the change in architectural landscape space of Dong Ky village. In addition to the number of village workers (about 8,000), Dong Ky is also affected by a large proportion of migrant workers (more than 6,000 workers) from outside the village. The reception of a large number of migrant workers has made the residential and production space in Dong Ky, even expanded, become increasingly cramped and stuffy. It can be said that this is another aspect contributing to the shift of agricultural and rural life to industrial and urban life. Such lifestyle changes have affected the needs and use of infrastructure,

communication, residential, entertainment, production and religious spaces.

In Dong Ky, many people wishing to accumulate land and having capital for production purchased the right to use public land to build workshops and wood trading area. The process of land accumulation, conversion of agricultural land into residential land, place of production and business or infrastructure construction takes place at a very fast pace. In 2003, realizing the need for development, the local government converted the area of agricultural land to build a commercial neighborhood zone, facilitating economic development and drastically changing the space and landscape of the village.

In addition to the demand for production land, Dong Ky is also under pressure from the demand for residential land. In 2008, the local government asked the district and provincial governments to convert 10.6 hectares of agricultural land in Ba Go, Bai Pot and Cau Moi into residential land.

Only after more than ten years of development in the direction of strong urbanization and industrialization, the mechanism of land use in Dong Ky has made significant changes towards narrowing agricultural land and expanding industrial, service, urban and infrastructure construction land (Figure 2).



**Figure 2:** The Land use - land cover change in Dong Ky from 2002 to 2019

Source: Exacted information from Google Earth

The process of industrialization and urbanization quickly took Dong Ky from a village consisting of 5 hamlets: Bang, Gieng, Dot, Tu, and Nghe to become a ward-level administrative unit consisting of 7 main streets: Thanh Binh street (Bang hamlet), Tu street (Tu hamlet), Dai Dinh street (Dothamlet), Nghe street (Nghe hamlet), Thanh Nhan street (Gieng hamlet), Tan Thanh street and Dong Tien section (Ba Go).

That transformation has created new architectural spaces with the function of rest, entertainment, and other services suitable for modern lifestyles such as restaurants, hotels, coffee shops, internet cafes, parking lots, post offices, banks, etc. and other entertainment services. The economy develops, the transactions are expanded, and the lifestyle of the people in the village has largely changed to the urban lifestyle. Urban colors are not only reflected in the architectural landscape space and infrastructure but also permeates and transforms the way people live.

The planning of a new neighborhood outside the old residential space helps Dong Ky avoid changes that disrupt the traditional residential space structure. The old residential space still retains the characteristics of the traditional hamlet and religious space layout. At the same time, the new neighborhood with characteristics of the urban ward such as planned houses divided into plots, new services and the administrative center of the ward have added modern elements to the picture of architectural landscape space in Dong Ky.

## 6. Conclusion

The formation and development of craft villages are objectively indispensable, which organically link to agriculture and rural areas. The development of craft villages is of great strategic importance to accelerate rural industrialization in Vietnam.

Dong Ky has a lot of potential to maintain and develop its fine art woodcraft due to the long history of establishment and development, and favorable geographical location to access the inputs and outputs of production process. The bold investment, innovation of production towards professionalization has opened up new prospects for Dong Ky village. Dong Ky fine art wood products not only create a sustainable brand in the country but also facilitate the export to many foreign markets such as China, Taiwan, Cambodia, Laos and some European countries.

In addition to the main form of production households, there have been forms of business organizations such as enterprises, limited companies, cooperatives, etc. That development has contributed to restructuring the rural economy and reassigning the workforce appropriately in Dong Ky towards industrialization.

The development of Dong Ky craft village not only brings great contributions to economic growth, promotes the development of related services, but also contributes to improving the material and spiritual life for people, practically contributing to preserving, maintaining and promoting the local cultural identity.

The expansion of Dong Ky craft village's production scale has gradually changed the spatial structure of the village in a prominent way, especially expanding the residential space, narrowing the cultivation space and forming new spaces. The change in spatial structure of Dong Ky village is an indispensable result, influenced by many factors. All these factors reflect not only the inner strength of the village but also the quick response of the village to urbanization and industrialization in the context of reform.

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