

## **Participation of the Communities' Physical Contribution for Developing Rural Traffic Infrastructure of Dong Nai Province, Vietnam**

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**Abstract:** Dong Nai province locates in the southwest region of Vietnam. In order to have a good rural development of the province, the first step is to develop rural traffic infrastructure. However at the present, the province's concreting covering is only 51.8%. Investment demands are huge while state-funded resources limited, therefore asset contribution of the community is indispensable. This study is carried out in order to analyze existing situations and to suggest solutions to promote participation of community in contributing physical assets for developing Dong Nai province's rural traffic infrastructure. Questionnaire surveys are conducted with 438 households in 04 districts of the province shown that: (i) Physical contribution is most popular in the community, mainly for labor (99.3% of households), money (85.8%), land (78.0%) and material (64.4%); (ii) Factors impacted on physical contribution include participated organizations, authority leaders, contribution mechanism, households' economics, income resources, income rates of agriculture, education and gender of household heads, social relationships, household benefits from rural traffic infrastructure; (iii) Recommended solutions are to establish suitable participatory model and mechanism; to train for community and its representatives; to communicate and mobilize physical contribution; to support for economic development of community and its members.

*Keywords: Community, Dong Nai, Infrastructure, Participation, Rural*

### **1. INTRODUCTION**

The Resolution No. 26 / NQ-TW on "Agriculture and rural agriculture" (Party Central Committee, 2008) and the Decision No. 800 / QD-TTg on "Targeted National Program for new rural construction in the period 2010-2020" (TTCP, 2010) are pilot implementation. Even these programs have gained some initial achievements, the overall socio-economic aspect of rural areas is still underdeveloped. One reason is the weakness in rural traffic infrastructure. Up to 2020, Vietnam needs about 150-160 billion USD for infrastructure investment, including 53 billion USD for land traffic (Ministry of Transport, 2011). With the current capacity, the State only meets about 50% investment, so it is necessary to contribute to all components, including communities and people. Rural infrastructure is a part of the traffic infrastructure, mainly including roads, waterways, bridges and ports to serve rural travel and linking with other infrastructure systems and to develop agricultural production, cultural and social exchanges of localities.

Dong Nai province locates in the southwest region of Vietnam, adjacent to Binh Thuan Province in the East, Lam Dong in the Northeast, Binh Duong and Binh Phuoc in the North,

Ba Ria-Vung Tau in the South and Ho Chi Minh City in the West. One condition for rural development in Dong Nai is the development of rural traffic infrastructure (Figure 1). At the end of 2018, the province had 8,506 km rural roads with the proportion of hard covering (concrete or asphalt) accounted for 51.8% (Dong Nai Department of Transportation, 2018). This is the province 's remarkable achievement under community participation on physical contribution. However, rural infrastructure development still has many limitations. Therefore, this study is to promote and encourage continued community participation at higher levels. Study objectives are as: (i) Analyze existing situation of community participation in physical contribution for developing rural infrastructure in Dong Nai province; (ii) Analyze factors affecting community participation on physical contributions, (iii) Propose solutions to promote continued community participation on physical contributions.

Figure 1. Conditions of traffic infrastructure on Dong Nai province



## 2. LITERATURE REVIEWS

Community participation in developing rural traffic infrastructure has been studied by many authors in the world and Vietnam, such as: Rostow (1962), Jupp (1995), David (2012), Ben F. (2015), Tuan (2008), Nam and Doan (2001), Hai (2013) .... They consider the development of rural transport needs mobilizing all social resources, including community participation (local residents, enterprises, unions and authorities). From practical summaries, World Bank (2010) also stated that strengthening Public-Private Partnership (PPP) based on community is a method for rural infrastructure development to be applied in many countries in the world. Due to characteristics of rural traffic infrastructure, construction and development processes usually take long time with many community activities, such as: Determine planning needs; Establish budgets and policies for community participation; Contribute physical resources (money, labor, materials, land); Direct construction; Monitoring and acceptance; Management and maintenance; Using and evaluation on effectiveness. In particular, the contribution of physical resources are fully recorded in studies by Dinh Pham Hien (2007), Luong Tien Dung (2008), Luu Thi Nho and Pham Bao Duong (2013), .... Thus, community participation in rural infrastructure development is affected by 10 influencing factors as: age; sex; qualification; cultural level; key persons of households; household types; household members as officials; average incomes; rate of income from agriculture; living conditions.

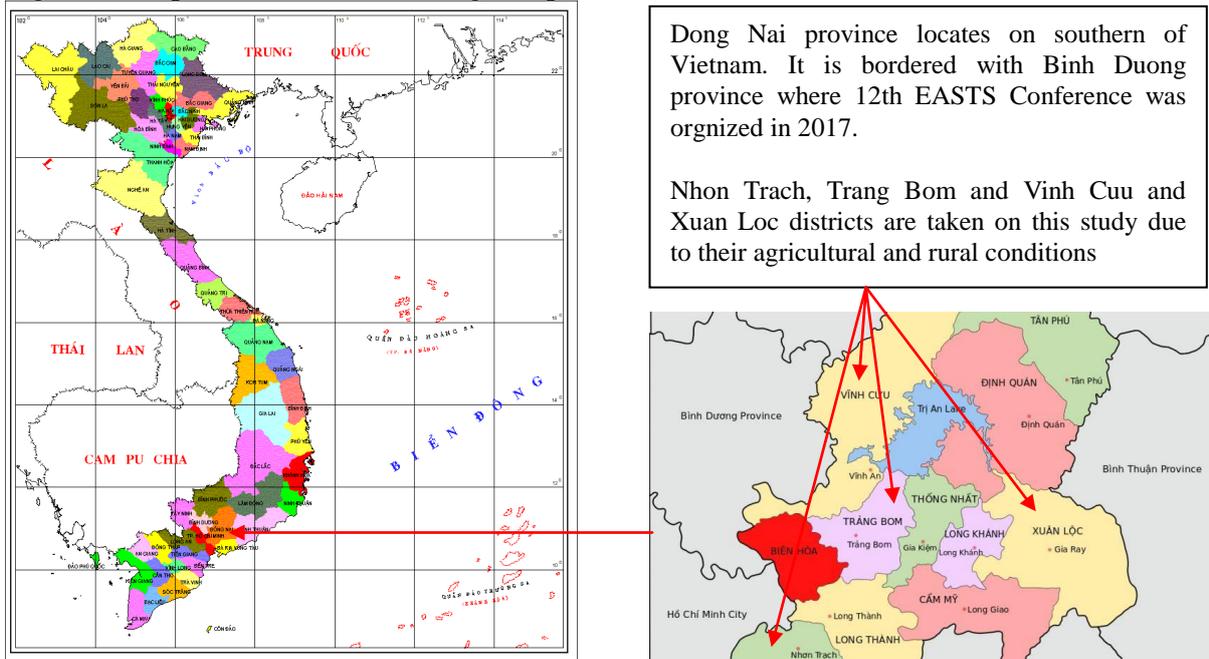
## 3. RESEARCH METHODOLOGY

### 3.1. Data Collection

In addition to exploit the available information, this study mainly uses primary information from questionnaires with 438 households representing local communities of four districts in

Dong Nai province: Nhon Trach, Trang Bom and Vinh Cuc and Xuan Loc (Figure 2). Questionnaires are designed to collect general information of households, degrees of participation in physical contributions, reasons of contribution, ability and readiness for future contribution. Collected information is entered and processed via Excel and SPSS programs. Some in-depth interviews have also carried out with some key community members for additional information. Information is presented through boxes to illustrate general statements.

Figure 2. Maps of Vietnam and Dong Nai province



### 3.2. Analysis and Evaluation Method

- Descriptive statistical method: analyze and assess communities' participated situations in physical contributions for developing rural infrastructure.
- Comparison method: use information and data collected to compare key indicators related to degrees of community participation in physical contributions.
- The econometric method: analyse factors affecting to community participation on physical contributions.

The study uses the Binary Logistic regression model and multivariate nonlinear function (Dinh Phi Ho, 2012) with the following parameters:

$$\ln \left[ \frac{P(Y_j = 1)}{P(Y_j = 0)} \right] = \beta_0 + \sum_{i=1}^n \beta_i X_i$$

*In which:*

- +P(Yj=1): probability of community participation
- +P(Yj=0): probability of community not participating
- +β (0, i = 1÷n ): impact level

Xi is: independent variables. In which: X1-Age of household heads; X2-gender of the household heads; X3-professional of household heads; X4-education of household heads; X5-number of main employees in the household; X6-household economy; X7-someone in the household is an officer; X8-average income / person; X9-rate of income from agriculture; X10-livelihood.

## 4. DATA ANALYSIS

### 4.1. Community participation in physical contribution for developing rural infrastructure in Dong Nai province

Community contribution in term of money for developing rural infrastructure is increasing. For commune roads only, local communities contributed more than VND 38.7 billion on the period of 2010-2015, VND 97.64 billion for 2016, VND 89.93 billion for 2017 (Dong Nai Department of Transport, 2018). In terms of labor and material contributions, most of rural infrastructure development projects at commune levels involves community participation. Contributions are voluntary, exchanging, negotiating or binding, and the contribution of land is common with the expansion of transport infrastructure in general and rural transport in particular. Households can voluntarily exchange (compensate) so there are common complaints, grievances, disputes and negatives that are slow in the whole province.

According to survey results, 98.4% of 438 community households in the study have contributed, especially some localities had 100% contributions. Detailed survey of community participation in physical contributions (cash, labor, materials, land, ...) for rural infrastructure development is shown on Table 1.

Table 1. Participating in community 's physical contributions for developing rural infrastructure in Dong Nai province

No	Physical Contributions	Unit	Amount
1	Households surveyed	No.	438
2	Households contributing cash	No.	376 (about 85,8%)
	Lowest contribution level	Million VND	0,1
	Highest contribution level	Million VND	10,3
	Total cash contributed	Million VND	930,0
3	Households contributing labor	No.	435 (about 99,3%)
	Lowest level	Day	1,0
	Highest level	Day	20,0
	Total employees contribute	Day	3.864,0
4	Households contributing materials	No.	282 (about 64,4%)
	Lowest level	Million VND	0,1
	Highest level	Million VND	13,5
	Total materials contributed	Million VND	673,0
5	Households contributing land	No.	310 (about 78,0%)
	Lowest level	m <sup>2</sup>	1,0
	Highest level	m <sup>2</sup>	33,0
	Total land contributed	m <sup>2</sup>	2.953,8

(Source: 2018 survey data)

- Cash contribution: Trang Bom is the highest with 154 households (97.5%), contributing 353.5 million VND, the lowest is Vinh Cuu for 38 households (60.3%), contributing 67.8 million VND. Most of communities are actively involved but some localities have good economic conditions and organizations participating higher.
- Labor contribution: is the type of contribution for the highest rate with simple thinking "if not abling for cash contribution, then contribute by labor instead". It is important to note that community participation should take into account the condition of community participation so that the promotion of participation is most appropriate.
- Material contribution: depend on local conditions, communities contribute differently. Nhon Trach mainly contributes by land, stone pavements, cement and palm trees; Xuan Loc contributes by sand and stone pavements; Trang Bom contributes stone, soil and broken bricks; Vinh Cuu contributes mainly by broken bricks and stone pavements. The rate of material contributions is lower than other participation forms because living conditions in the community are different and with the opinion as "there is nothing to contribute ".
- Land contribution: 310 households (accounting for 70.8% surveyed households) contributed 2,953.8 m2 of land. The highest is Nhon Trach, the lowest is Vinh Cuu. Local land contribution is quite good and depends on the demand for rural infrastructure development and propaganda. Although there are complaints on land compensation policies, but encouraging people to contribute land for constructing and expanding rural roads is very effective.

## **4.2. Factors affecting community participation on physical contributions for rural infrastructure development**

### **4.2.1. The impact of the organization involved in physical contributons**

Each community has its own characteristics and components while the demand for rural infrastructure development is also different. Therefore, the organization has a great impact on physical contributions. Participating organizations include: propaganda, advocacy, determining the level of participation, types of physical contributions, traffic structures required.

#### ***Box 1. Labour contribution***

*“When contributing by labor and cash, the psychology of the people wants to prioritize the alley and inter-village roads because it is practical to the people. Therefore, it is often necessary to register for labor surplus, while for other types of roads there is a shortage of people to work. So the community often mobilizes, sometimes asking for the transfer of people to work without humanity flexibly”*

*As for changing the form of contribution instead of contributing cash, it is quite common because some households have difficult economic conditions ... we also mimic ... For example, Ms. Doan's house, belonging to the poor household of the commune, ...*

*\* Source: Interview with Mr. Do Xuan Dai Hamlet 2, An Vien Commune, Trang Bom, ĐNai, May 17, 2018*

### **4.2.2. The influence of government leaders on community contributions**

The government is not only orienting, creating the environment and policies for community participation but also assures trust for the community. There are cases of community works, but if there is no government support, it cannot be solved.

***Box 2. Government encourages and creates trust for community participation***

*“Most people who contribute for rural construction infrastructure are because of their beliefs. When they believe results they give, they will voluntarily.*

*There are many projects calling for land contribution to make nostalgic roads, but it is very difficult, so the locality has recommended district leaders to meet village's seniors and ask for opinions about opening the way for the locality. Yet, instruments themselves suggested that we move households in the area that need land contribution, clear the road and results are very satisfactory because proposed instruments are each evening of radio broadcast with an additional section. households donate land voluntarily, ... ”.*

*\* Source: Interview with Mr. Hau, 42 years old, Head of Ban Tam Nong, Bien Hoa City, ĐNai, September 6, 2018*

**4.2.3. Effect of mechanism and management to physical contributions**

In practical due to many complicated procedures, many projects have long periods for settling capital (Nguyen Xuan Quyet, 2011) which affects community participations. There are cases where people register for physical contributions but must wait too long. There are households who register for cash contributions but must wait a long time due to formal procedures. Many localities opened recorded books to monitor community participation as a basis for paper certification, causing depressive psychology, coping and losing confidence in activities to call for participation ...

***Box 3. What to do with the participation procedure***

*"Government's legal procedures are still heavy on administrative matters, not only for the organization and management of rural infrastructure development, but for participation as well. For example: the election of a Community Representative for a project under the government's guidelines must carried out 2-3 times before it is completed, then wait for approval for a month. The meeting of community organizations also needs government opinion, avoid being said to be crowded, lose security ...*

*The community participation is quite rigid in my opinion because when registering the form of participation, it must be done, not changed while participation conditions of many households have the change due to the long waiting time. Why not establishing a set of principles for community activities and give proactive communities more recommendations? ...*

*\* Source: Interview with Ms. Tran Thi Ngoc Dung, 43 years old, Officer of the Fatherland Front in Xuan Thanh, Xuan Loc, Đai Nai on June 8, 2018*

**4.2.4. Influence of internal factors on community contributions**

a / Factors affecting participation in cash contribution

In which:

- + P (Yj = 1): the probability of the community contributing money
- + P (Yj = 0): probability of community not contributing money

Table 2. Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 <sup>a</sup> x1	.015	.014	1.180	1	.277	1.015
x2	-.184	.297	.383	1	.536	.832
x3	.075	.206	.131	1	.718	1.077
x4	.125	.297	.177	1	.674	1.133
x5	-.128	.121	1.128	1	.288	.880
x6	.425	.245	3.012	1	.083	1.530
x7	-.061	.405	.023	1	.881	.941
x8	-.037	.014	6.874	1	.009	.964
x9	.023	.008	8.281	1	.004	1.024
x10	-.051	.204	.062	1	.803	.950
Constant	2.975	1.277	5.428	1	.020	19.582

The regression test is based on the significance level (Sig.) of the Wald test showing:

- From X1, to X5 and X7 there are Sig. equally > 0.05, the correlation variables are not significant for variable Y1, 95% reliability.
- The X6 variable has Sig. < 0.1, correlation variables are significant for variable Y1, 90% reliability.
- The variables X8 and X9 have Sig < 0.01, the correlation variables are significant for the variable Y1, 99% reliability.

The factors of average income, the proportion of income from agriculture and the type of household economy have a direct impact on the contribution of community money to rural infrastructure development. In particular, the type of household economy / living standard (poor, near poor, medium, good) has the highest impact on the decision to contribute, because on one side of the household economy is good, the source of contribution will be good and vice versa. A good household economy also means higher demand for participation. This is taken as a note when mobilizing the community to contribute money.

b/ Analyze factors affecting community participation in labor contributions

In which:

- + P(Yj=1): Probability of the community to contribute public days
- + P(Yj=0): probability of the community not contributing to the verification

The results of the function and regression tests are based on the significance level (Sig.) Of the Wald test shows:

- From X1, X2, X4-X6 and X8-X10, there are Sig. equally > 0.05, the correlation variables are not significant for the variable Y2, the reliability is 95%.
- The X7 variable has Sig. = 0.012 < 0.02, the correlation variables are significant for the variable Y2, the reliability of 98%.
- The variables X3 have Sig < 0.01, the correlation variables are significant for the variable Y2, 99% reliability.

The qualification factor of household heads and households with local officials has a direct impact on labor contributions. In particular, the level of professional qualification is quite high to decide for participation because qualified people are more confident to participate; Households with people who work as officials often do propaganda through "officers as an example". However, before calling for contributions of qualified workers, professional surveys and assessments are needed to improve the effectiveness of participation and effective management and employment of the community.

c/ Analysis of factors affecting community participation in material contributions

In which:

+ P (Yj = 1): probability of the community contributing materials

+ P (Yj = 0): probability of community not contributing materials

The results of the function and regression tests are based on the significance level (Sig.) Of the Wald test shows:

- From X1, X2, X4-X9 has Sig. > 0.05, the correlation variables are not significant for the variable Y3, the reliability is 95%.
- The X10 variable has Sig. = 0.017 <0.02, the correlation variables are significant for the variable Y3, the reliability is 98%.
- The variables X3 have Sig = 0.002 <0.01, the correlation variables are significant for Y3 variables, 99% reliability.

Factors of professional qualifications and location of households have direct impacts on the material contribution of the community. In particular, professional qualifications have a high impact on decisions of community participation because people with professional qualifications often participate in different ways; The contribution depends on conditions of the household's ability, because there is a need for available materials and the ability to mobilize resources. In the case of other participation forms limited, this solution is considered very effective because it encourages many community members to participate, many forms of contribution, limiting difficulties of the community rural people, creating fairness in the community.

d/ Analysis of factors affecting community participation in land contributions

In which:

+ P (Yj = 1): probability of the community contributing materials

+ P (Yj = 0): probability of community not contributing materials

The results of the function and regression tests are based on the significance level (Sig.) Of the Wald test shows:

- From X1, X3-X6, X8, X10, there is Sig. > 0.05, the correlation variables are not significant for variable Y4, 95% reliability.
- The variables X2 and X7 have Sig. = 0.086 and 0.030 <0.1, the correlation variables are significant for variable Y4, with 90% confidence.
- X9 variables have Sig = 0.002 <0.01, correlation variables are significant for variable Y4, 99% reliability.

Proportion of income from agriculture, gender and households with staff directly affects the land contribution of the community. In particular, households with people who work as cadres and householders have a rather high impact on the decision to contribute land to the

community, as these are easily accessible objects. The impact of the proportion of income from agriculture is explained by the fact that rural people have low incomes and land prices are not high. However, participation in land contribution only relates to households close to the road while other households are not eligible.

### 4.3. Solutions for Promoting Communities' Physical Contributions to Develop Rural Infrastructure in Dong Nai province

#### 4.3.1. Develop models to promote participation and contribution in accordance with the characteristics of each locality

Building a participated model in accordance with local conditions for physical contribution to overcome barriers between participated needs and practice. On the basis of building a general principle, the model of physical contribution is proposed as shown on Table 3.

The model clearly defines the role of 5 components: (i) Government supports and creates a democratic, transparent, voluntary environment; (ii) Union can communicate and mobilize; (iii) Community representatives manage, communicate, lead, adjust and evaluate on participation; (iv) Individuals directly contribute physical and comments; (v) The implementing unit directly performs the work.

Table 3. General model of physical contributions of community to develop rural infrastructure

Participation contents	Participation purpose	Participation elements	Job details	Expected results
Resources contribution	Which contribution	Government	Consulting, organizational training and community financial management	- Training materials on organization and management of community finance - Legal framework
		Union	Communication, community mobilization	- Report the results of movement and communication
		Community representative	Managing and supervising for the community	- Contribution minute - Report the results of contribution and use
		Community individual	Contribute; suggestions and feedback	-Material contribution -Idea contribution
		Implementation unit	Use contributions according to estimates and plans	-Progress reports -Reply to community comments

#### **4.3.2. Develop mechanisms to contribute and improve physical management in accordance with community conditions**

In order to help local communities on physical contribution in according with community's regulations and abilities, it is necessary to develop a unified mechanism that agreed by local communities. Mechanisms for physical contribution should show following contents: Forms of physical contributions; Requirement, discussion and voluntary; Required contribution level for each type of rural infrastructure.

Regarding to contribution management, it is necessary to plan in advance, discuss and agree timely. If it is not yet in use, it should be stored and stored so as not to be damaged or lost. The acquisition of artifacts should be clearly and publicly recorded to the community.

#### **4.3.3. Promote training activities for the community**

Community training is an indispensable task, function and content in the organization and community management. Because community organization is a collection of community individuals with different awareness, knowledge, conditions, ..., leading to the organization and management is difficult. Moreover, in each locality, each village has its own customs, habits, language, different project size, so it is necessary to train and train. Community training includes:

+ Training organization and community management related to organizational knowledge and community management; rural transport infrastructure development; participating in the community; labor and financial management ...; propaganda and mobilization of participation.

Trainees are representatives of the community, professional departments, representatives of government, mass organizations and related professional units.

+ Train the community on contents such as participation mechanisms, participation content, participation forms, participation level and participation conditions, participation benefits; methods and participation plans, participation requirements and feedback ....

The content, method, time and location of the training should be simple and appropriate to the conditions of community officials and members of the community.

#### **4.3.4. Strengthening propaganda and calling, mobilizing to contribute in kind contribution to rural infrastructure development**

Propaganda and calling for contribution of artifacts to the development of rural transport infrastructure should be integrated into propaganda according to local socio-economic development programs, the most effective method for the community to see benefits that participation brings. From there, will promote the highest self-participation.

Using a variety of advocacy forms such as using local social networks (mass organizations, groups, clubs), using family and friends relations among fishes community, use examples in the community ...

Based on the conditions and circumstances of the communities and individuals to propagate and mobilize in accordance with the circumstances, interests and concerns, there will be a higher contribution.

#### **4.3.5. Supporting economic development for the community**

Economic factors have an impact on the form of contribution and the level of contribution in kind. Economic development, the community has a high ability to contribute money and valuable materials. In the underdeveloped economy, the community mainly contributes labor and simple materials.

For the rural community of Dong Nai, supporting economic development for the community should be noted: Exploiting the strengths of different regions to develop agriculture and forestry in the purely agricultural districts; The districts with many industrial zones such as Trang Bom, the economic development of the non-agricultural community also focuses on trade in services, working in industrial parks; Economic development of poor districts with many ethnicities is the exploitation of support from the poverty reduction program and the sources of poverty alleviation through projects to support sustainable poverty reduction.

## 5. CONCLUSIONS

- Participating in physical contribution to develop rural infrastructure is very popular. In which, the highest contribution rate is labor (99.3% of households), followed by cash (85.8%), land (78.0%) and materials (64.4%). There is a large disparity in the level of contribution among communities because of the need for participation and diverse community conditions.

- Factors affecting physical contributions are the organization of participation, government leadership, mechanisms and management contributions and internal factors of the community such as household economy, income sources, the proportion of income from agriculture, the level and gender of the household head, social relations, benefits of rural households from rural infrastructure ....

- In addition to the general solutions to promote community participation with participation in contributing physical to rural infrastructure development needs to focus on the following points: Build up appropriate models of participation and contribution; Develop mechanisms to contribute and manage physical with each community; Promote training for communities, community representatives and stakeholders; Enhance propaganda and mobilize physical contributions; Support economic development for the community in appropriate directions.

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