

INFRASTRUCTURE IN TRA VINH PROVINCE, VIETNAM: PROBLEMS AND PROPOSED SOLUTIONS

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ABSTRACT

To meet developmental needs, implementing of the five-year socio-economic master plan of Tra Vinh province, Vietnam from 2016 to 2020, which was improved in accordance with Decision No. 438/QĐ-TTg (Mar 24th 2011), and to evaluate the changes of the world, area and Mekong Delta as well as their impact on the conditions for socio-economic development of Tra Vinh, analyzing and identifying strengths, opportunities, weakness and threat are necessary. On the other hand, they demonstrate indicators need to be adjusted for stable development, fair and civilized society and ones that are applicable in practice of operating and managing the government in the way of suitable with Tra Vinh's conditions and potential from now to 2030. On that basis, this essay summarize the research results and reports for agencies and departments in Tra Vinh province (about public economy, housing, water supply, transportation and pollution treatment system) to take a general assessment of Tra Vinh infrastructure and propose some solutions and development orientations in the coming time.

Keywords: Infrastructure, Stable Development, Tra Vinh Province

INTRODUCTION

Implementing the master plan on socio-economic development of Tra Vinh province by 2020 through the 5-year plans 2001-2005 and 2006-2010, 2011-2015, Tra Vinh's society and economy have achieved significant achievements in growth, and economic restructuring. The development in many sectors; industries, constructions and important projects in the area have been implemented as reported by People's Committee of Tra Vinh province, Vietnam (People's Committee of Tra Vinh Province, 2017). However, in the new context and conditions, new advantages and challenges have also arisen. The world recognized the important of international economic integration that is considered to be "a defense against the negative impact of globalization". That's the reason for international economic integration trend is getting deeper and broader. With Vietnam, since becoming the 150th member of WTO, the vision of development under the national development strategy in the next decade has many major breakthroughs that aim to make this country an industrialized country. And for the Mekong Delta region in particularly, in recent years, there have been obvious developments. Many provinces in the region have grown more strongly, especially those adjacent to Tra Vinh province such as Vinh Long, Ben Tre and Soc Trang also have new visions for development in the next 10-15 years (People's Committee of Tra Vinh Province, 2018). Besides, after the XI National Party Congress with Vietnam Socio-Economic Development Strategy to 2020 (People's Committee of Tra Vinh Province, 2015), new requirements were set out in the national socio-economic development strategy, the socio-economic development planning of the regions and major industries and fields till 2020 and

orientations to 2030 (approved by the Prime Minister) has been greatly impacting the views, objectives and orientation for Tra Vinh province socio-economic development (Construction Research Center for Experimental Architecture, 2014; People's Committee of Tra Vinh Province, 2015). The requirements of regional connection and international economic integration create many opportunities, while posing new challenges for the province in the context of Vietnam's proactive and active international integration (People's Committee of Tra Vinh Province, 2017).

OVERVIEW OF TRA VINH PROVINCE SINCE THE RE-ESTABLISHMENT (1992)

Geography and Natural Conditions

Tra Vinh province is one of 13 provinces and cities of the Mekong Delta. Located between Co Chien River (a branch of Tien River) and Hau River, the East is adjacent to the East Sea and the West is adjacent to Vinh Long Province, Tra Vinh Province with a natural area of 2,292 km² with 09 administrative units including: Tra Vinh city, Duyen Hai town and 7 districts: Cang Long, Chau Thanh, Cau Ke, Cau Ngang, Tra Cu, Tieu Can and Duyen Hai (People's Committee of Tra Vinh Province, 2016). Tra Vinh has a system of national highways 53, 54 and 60 which facilitates the province to connect and trade with other provinces in and outside the region, serving the development of local industrial parks. Along with the 65 km coastline, the province has conditions to develop marine economy, wind power, thermal power. The density of axis channels is fairly evenly distributed in the provincial area with a density of about 4-10m/ha. However, the low density of inland canals does not guarantee the ability to supply fresh water in the dry season as well as flood drainage in the rainy season (Department Resource and environment, 2015). Besides, the plain terrain and tropical monsoon climate with stable high temperature, sunny and less affected by natural disasters, is quite favorable for agricultural production. However, low rainfall concentrates seasonally, combined with low terrain, high tidal peaks, causing local flooding in some areas during the rainy season, or local drought to promote alum, increasing saline intrusion, causing difficulties for agricultural production (Vinh Provincial Committee for Propaganda and Education Tra, 2017).

The Situation of Socio-Economic Development

Tra Vinh Province is the last province of Tra Vinh-Soc Trang-Vinh Long triangle area, so traffic is not favorable. Besides, with low economic development, less attractive to investment projects, since the re-establishment of the province in 1992, Tra Vinh is still one of the poorest provinces in the Mekong Delta region (People's Committee of Tra Vinh Province, 2015).

The main income of the local economy is agriculture, which accounts for 39.61% of the proportion in 2016. However, the provincial economic structure has also shifted significantly in recent years. The value of construction sector industry has the highest increase of 10.72% in the period from 2010 to 2016. The service also has a significant progress, from 25.37% in 2010 to 34.99% in 2016 (Figure 1) (People's Committee of Tra Vinh Province, 2017; People's Committee of Tra Vinh Province, 2018).

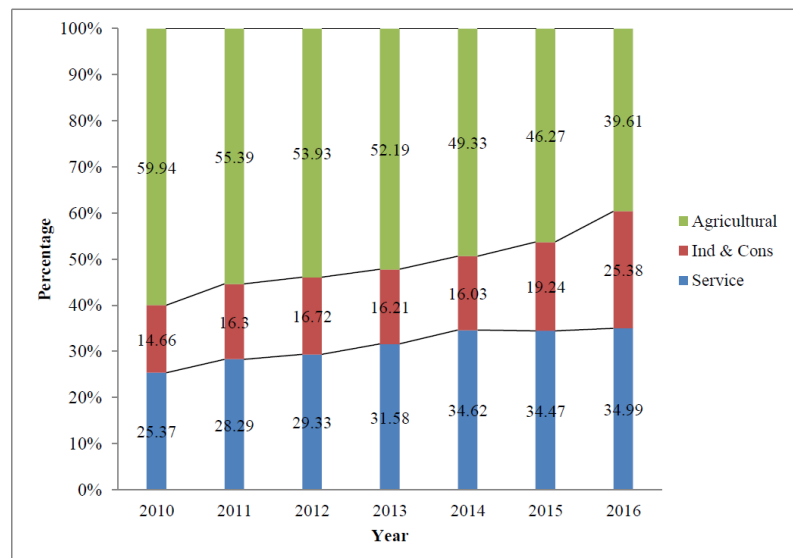


FIGURE 1
ECONOMIC STRUCTURE BY SECTOR (Office General Statistics, 2017b)

About im-export activities, exports surpassed the planned targets; the total export turnover is estimated at about USD 420 million in 2015, reaching 140% of the plan, increased USD 120 million compared to the target, increasing 3.3 times compared to the period of 2006-2010. Exports of rice, aquatic products, coconut products, continue to account for a high proportion of the total export value of the province (Department Resource and environment, 2015; People's Committee of Tra Vinh Province, 2011).

Average GRDP of Tra Vinh during this period grew 13.15% per year. This growth rate is quite high compared to other provinces in the country but due to low starting point, the total value of GRDP is only VND 25,112 billion, average GRDP is about VND 34.43 million per person in 2016, lower than average value of the region and the whole country (Figure 2). Compared to the whole country (63 provinces/cities), Tra Vinh province only accounts for about 0.69% of the area, with the population of 1,003,012 people accounting for 1.23% and GDP by about 71% compared to the national average (Construction Research Center for Experimental Architecture, 2014; Department Resource and environment, 2015). The Table 1 describes the population in Tra Vinh (Office General Statistics, 2017a; <http://travinh.gov.vn/wps/portal/en>).

TABLE 1 THE POPULATION IN TRA VINH		
Name	Status	Population (2009-04-01)
Tra Vinh	Rural District	1,003,012
Cang Long	Rural District	143,389
Cau Ke	Rural District	109,592
Cau Ngang	Rural District	130,608
Chau Thanh	Rural District	136,786
Duyên Hai	Rural District	76,705
Duyen Hai	District-level Town	48,502
Tieu Can	Rural District	109,122
Tra Cu	Rural District	149,609
Tra Vinh	District-level Town	98,699

The Development of Local Education and Small and Medium Enterprises

As a determining role to the development of society, Tra Vinh local education had a shape step forward in the period of 2010-2015. There are 474 schools, education center in which there are 82 schools meet national standard (increased 41 schools from 2010). There 105/106 districts, wards and town have education centers that provide short-term vocational and technical courses for local people. Higher education including one university, one college, two vocational schools devote for local economy by attracting 38,970 students from Tra Vinh and other localities and international experts to live and spend locally (Cook et al., 2016). Moreover, Tra Vinh University, one of two sustainable development universities in Vietnam (ranked by UI Green Metric), is an education center in Mekong delta and Vietnam provides qualified human resource the most important factor for local development (Construction Research Center for Experimental Architecture, 2014; Ngoc Son et al., 2010; Office General Statistics, 2017a). The small and medium enterprises (SMEs) Tra Vinh project funded by Canada (Global Affairs of Canada) has been carried out from 2014 to 2020 and disbursed nearly VND28 billion. Beside, local SMEs have enhanced their management capacity and strengthened their connectivity with partners to expand their markets, while receiving support to realise ideas on developing key products of the province. Currently, Tra Vinh has about 2,200 businesses operating with a total investment of more VND25.6 trillion and a combined workforce of nearly 90,000 people.

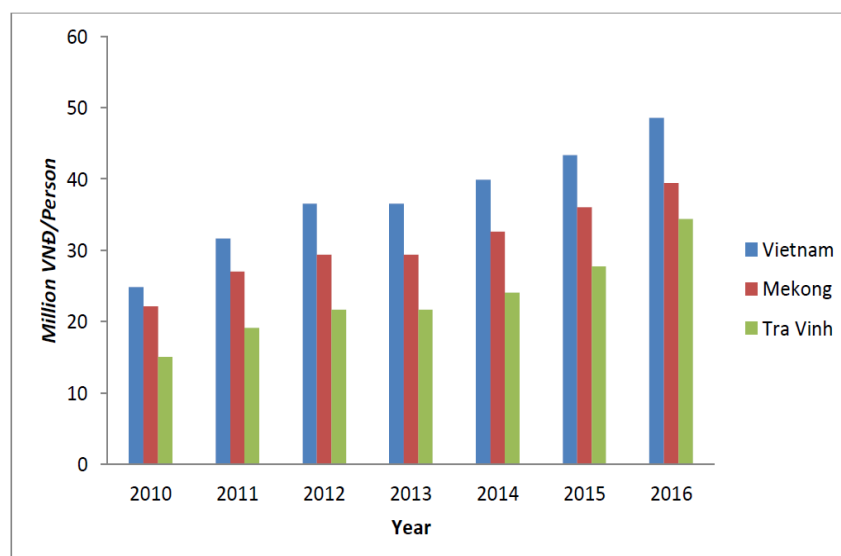


FIGURE 2
GRDP PER PERSON OF TRA VINH PROVINCE COMPARED TO MEKONG DELTA AREA AND THE WHOLE COUNTRY IN THE PERIOD OF 2010-2016
 (Office General Statistics, 2017b)

PHENOMENON OF DEVELOPING VARIOUS TYPES OF INFRASTRUCTURE

Housing System

With the province's characteristics, there are many ethnic groups living and distributing population in each ethnic area that has its own characteristics. The Khmer live on

sand dunes according to the Phum-Soc (village); each village has a Khmer pagoda as a religious, cultural and social center of the community in Soc. Pagoda is centrally located with a unique architectural complex. Housing of the people built near pagodas, lying on both sides of the road to pagodas, to the village nearby and on the way to the field (Department Resource and environment, 2015). Houses are built close to each other; each household has a garden of 150-400 m². Meanwhile, Vietnamese people are less concentrated, often scattered on rivers and canals or on provincial roads. The phenomenon of housing in Tra Vinh as well as in the Mekong Delta with low housing quality, the difference in organization of residential space, living conditions and practices in activities among ethnic communities.

Water System

Urban water supply, in Tra Vinh province, only Tra Vinh city has a complete water supply system with a capacity of about 18,000 m³/day. Other urban areas have incomplete water supply systems with a small capacity of 1,200-2,400 m³/day to serve on-site offices and residential areas (People's Committee of Tra Vinh Province, 2015). The whole province has 09 urban water supply and drainage stations with a total design capacity of 52,480 m³/day (exploitation capacity of 35,559 m³/day) to serve the demand of using water in the inner city of Tra Vinh and towns in the province. The province is also implementing a water supply project of 10,000 m³/day and night to serve Tra Vinh city in 2020 (Construction Research Center for Experimental Architecture, 2014; People's Committee of Tra Vinh Province, 2018; People's Committee of Tra Vinh Province, 2015). The rate of urban population supplied with clean water on the provincial average reaches 92.02%, of which: Tra Vinh city 97.28%, Duyen Hai town 80.72%, 132 the remaining cities average 86.11%.

Rural water supply: water source used in rural areas is a combination of surface water, rain water and groundwater. Currently, people still keep the habit of storing rainwater in jars and reservoirs for use. At present, the whole province has 251 rural clean water and environmental sanitation projects invested in construction, contributing to meet the demand of domestic water for households in rural areas. The proportion of people using clean water in rural areas by 2015 is 98.2%.

Industrial water supply: Water supply for industry and handicraft in the province has not yet met the current demand. Recently, in the province, Long Duc Industrial Park has been put into operation and supplied with water for production. The remaining small production facilities in the districts mainly use well water, surface water or local water supply plants.

Pollution Treatment System

The situation of garbage collection in urban areas in districts is still limited; garbage is not managed and handled well. The number of arranged trash cans and garbage truck only meets about 40-60% of the average demand for garbage collection in the province. Percentage of households having daily garbage collection accounts for 23.3%. In areas far away from the center, far from traffic roads, there is still a situation where people collect and burn rubbish periodically outside, buried or indiscriminately discarded in vacant land and rivers, causing pollution and loss of urban landscape, affecting general environmental hygiene conditions.

According to the forecast of Tra Vinh Department of Natural Resource and Environment, the volume of industrial waste in Long Duc Industrial park is 422.53 m³/day in 2016 will be 3,219.2 m³/day in 2020 and the whole province industrial waste will reach

33,332.8 m³/day in 2020. If it is not well collected and treated, the ability to pollute the soil, surface water and groundwater in industrial zones and the surrounding environment will be very high. Besides, domestic waste generated in these industrial parks will also be huge (Office General Statistics, 2017b).

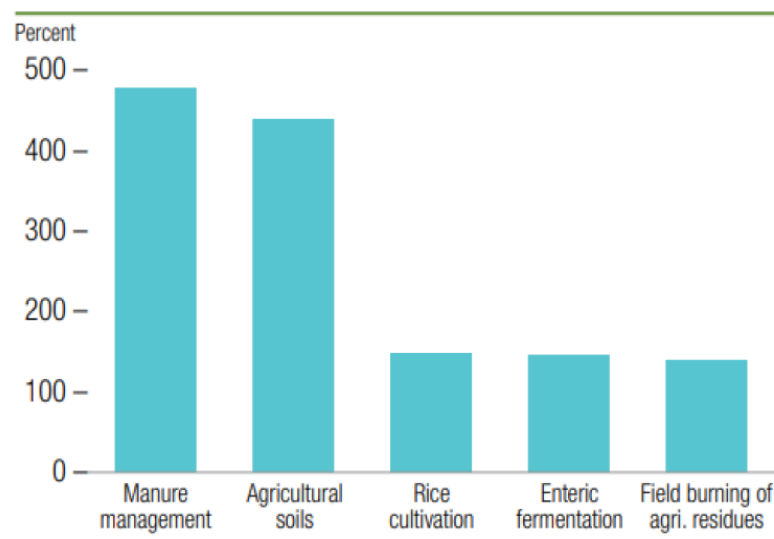


FIGURE 3
INCREASES IN VIETNAM'S REPORTED AGRICULTURAL GHG EMISSIONS, 1994-2010 (Cassou et al., 2017)

About medical waste, in 2015 hospital and medical centers in Tra Vinh discharge 1,604.8 kg/day of normal waste and 317.2 kg/day of toxic waste in average. These amounts will be 2,270.4 kg/day of normal waste and 448.8 kg/day (Cook et al., 2016). However, the problem of treating hazardous medical waste will not be a big problem in the coming time if the authorities and hospitals are concerned properly because most of provincial hospitals were equipped medical waste incinerators to treat medical waste generated in hospitals and treated for medical and clinics centers in the province.

In addition, the amount of solid waste from agricultural activities which will exceed 3,790 ton/day in 2020 and contain high levels of organic substances, nutrients, suspended solids and microorganisms is also very large (Figure 3). Therefore, Co Chien River, canals and coastal seawater where seafood waste is received will be a serious problem of water pollution. The greenhouse gas (GHG) emission from agricultural activities is a problem to concern as well. Base on World Bank report (Cassou et al., 2017), GHG emission in Vietnam in which Mekong Delta is the largest agricultural area increased rapidly (Office General Statistics, 2017a; Office General Statistics, 2017b).

However, due to many reasons, both in technology and finance, in the present and in the future, the management and treatment of pollution caused by aquaculture waste is difficult to achieve good results (Sanh et al., 2010).

Traffic System

The traffic system has developed rapidly. In the whole province, in the past there were only 02 national highways 53 and 60 with a length of 37 km; there are 04 provincial roads

with a total length of 126 km, of which only 21 km are asphalted roads, the rest are gravel stone roads, land and all roads are earthen roads. Up to now, the province has 03 national highways 53, 54, 60 with a total length of 246.8 km. Specially, rural roads have made a breakthrough. Six provincial roads are asphalted 77.5% and district roads are also asphalted 93.4%. Investing and putting into use many new projects such as Co Chien Bridge, Luong for large tonnage vessels to Hau River, Long Toan Bridge, Lang Chim Bridge, Long Binh Bridge 2, 3, National Road 60, Road to Temple worshipping President Ho Chi Minh (Table 2).

No.	Road Type	Route Number	Length	Structure			PH asphalt + Concrete (%)
				Asphalt	Concrete	Stone +Land	
1	Highway	03	246.8	246.8			100.0
2	Provincial Highway (PH)	06	217.5	168.6		48.9	77.5
3	District road	42	438.3	409.6		28.7	93.4
	Total	51	891.8	814.2		77.6	91.3

Besides, thank to many important projects in the area like Co Chien bridge, Ham Luong bridge, Rach Mieu bridge, transportation from Tra Vinh to neighbor provinces and Ho Chi Minh city have been strongly developed. Along with Dai Ngai bridge project is planning, in near future the transport system in Tra Vinh will be improved.

DISCUSSION

Increase budget investment in combination with other sources of capital (central capital, ODA, people's contribution capital, preferential credit capital, NGO, etc.) to implement social programs like bringing electricity to rural households, purify water system in rural area and supporting rural housing solidification, developing urban housing funds for disadvantaged households, prioritize households and people with meritorious services.

Develop specific projects to call for international organizations' granting for rural clean water programs and improve community awareness about water resources protection as a "direct actions to conserve, protect and enhance natural resources" (Food and Agriculture Organization of the United Nations, 2019). Developing pollution treatment projects for agricultural activities which is the main production activity in Tra Vinh, industrial activities which is developing in Tra Vinh province. Constructing of drainage and wastewater treatment systems, especially wastewater drainage systems for industrial parks, factories, production and service establishments and daily-life waste water should be focus on some important below points (Food and Agriculture Organization of the United Nations, 2019).

1. Ensuring the treatment up to standards before being discharged out and researching to build a waste water treatment plant in Tra Vinh city
2. Collecting, treating domestic, medical waste, and hazardous industrial wastes according to regulations
3. Research to build of landfill and garbage treatment plant in Chau Thanh district
4. Strive for each town to build 1 landfill
5. 100% of households use hygienic toilets
6. Management and treatment of solid waste
7. Reduce sources of solid waste from the beginning
8. Strengthening waste treatment in concentrated urban and residential areas
9. Find burial places far away from residential areas or use recycle or fertilizer processing technologies for "Improving efficiency in the use of resources".

As “Rural transport plays an indispensable role in achieving more than half of the sustainable development goals” (Cook et al., 2016), Tra Vinh should focus on developing services of transporting goods and passengers in the modern method and improving service quality, reducing costs. contributing to improving the local competitiveness; organizing fairways, reasonable routes to ensure smooth traffic, strengthening inside-provincial and inter-provincial connections, strengthening road transport connecting rural and urban areas to connect agricultural areas to consumer market; rationally develop the quantity and types of transport means in the direction of modernity and comfort, meeting the technical standards of safety, energy saving and environmental friendliness. Developing public transport forms and encourages people to travel by public transport in urban areas. Maintain and improve the service level and frequency of public passenger transport routes. Extend the route Tra Vinh City, Cau Ngang District to Tat ferry channel; organize additional bus routes from Tra Vinh City to neighboring districts. In the period of 2021-2030, to open new inter-provincial bus routes linking Tra Vinh with Vinh Long, Ben Tre and Soc Trang and newly build bus stations in Duyen Hai town with an area of 3.2 ha speeding up promoting and calling for investment so that many large enterprises invest in transportation. Create favorable conditions for transport businesses to invest in development of infrastructure, transport means, management personnel, human resources, etc in accordance with the law. To transport enterprises in the province gradually grew stronger, providing transportation and freight services with better quality. Then, utilizing the development of transportation system to build Tra Vinh as a connection and product transition port between Ho Chi Minh city and province in the South of Tra Vinh. Draw intention of domestic investor to have more domestic capital flow to Tra Vinh to increase local citizens’ income to have more financial resources for public projects.

Maximize the role of Tra Vinh University in researching and finding grant for provincial public projects; especially waste water treatment project and rural clean water supply system. And attract experts, both Vietnamese and foreigner to live and work in Tra Vinh province to improve community knowledge of waste treatment.

CONCLUSION

To deal with infrastructure of Tra Vinh province, there some main obstacles that needs to be addressed: The first one is the synergistic among programs, projects and donors. Increasing the numbers of projects and their capital without management and instruction may have overlap and inconsistency. The lack of awareness around local people is another problem to consider. Although there are many campaigns for environmental protection and sustainable development, backward agricultural habits still exist. The future researches can focus on solving these problems for more detail solutions.

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