

RURAL AREA DEVELOPMENT BY  
UNDERSTANDING BASIC INFRASTRUCTURE  
NEEDS THROUGH LOCAL SURVEY IN SIBU,  
SARAWAK

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SCHOOL OF CIVIL ENGINEERING  
UNIVERSITI SAINS MALAYSIA  
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INFRASTRUCTURE NEEDS THROUGH LOCAL SURVEY IN SIBU,  
SARAWAK

By

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This dissertation is submitted to

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## **ABSTRAK**

Kini, Malaysia masih menghadapi masalah kekurangan infrastruktur asas di luar bandar. Banyak tempat di Sabah dan Sarawak masih kurang berhubung dengan luar malah liputan bekalan air dan elektrik juga terhad. Kawasan kajian ditetapkan pada 3 lokasi berlainan di Sibul, Sarawak. Antaranya ialah bandar Sibul yang merupakan lokasi yang paling maju dibangunkan; diikuti dengan Sibul Jaya yang berstatus sebagai sebuah bandar baru di pinggir Sibul, dan akhir sekali Selangau, sebuah pekan kecil yang memberi tumpuan kepada agrikultur. Kajian ini mempunyai dua objektif, iaitu: memahami dan membandingkan keadaan infrastruktur asas dan akses infrastruktur di Sibul; dan menganalisis dan mencadangkan penambahbaikan infrastruktur berdasarkan perspektif penduduk tempatan di Sibul. Analisis data dilakukan dengan menggunakan analisis deskriptif, Pearson's Correlation Analysis and Multivariate Analysis of Variance (MANOVA). Hasil penyelidikan boleh menjadi rujukan kepada kerajaan atau pengkaji yang berminat untuk mengetahui perspektif penduduk tempatan terhadap keadaan infrastruktur. Hasil penyelidikan menekankan kekurangan pengangkutan awam di Sibul Town boleh diselesaikan dengan menggunakan teknologi maju yang sedia ada untuk memperkanalkan jadual bas dan lokasi secara atas talian. Cadangan kedua untuk menyelesaikan masalah ketidakpuasan penduduk Sibul Jaya terhadap pengangkutan awam ialah meningkatkan keselesaan dan keadaan pengangkutan awam.

Akhir sekali, kemudahan asas Selangau perlu dimajukan termasuk hubungan jalan luar bandar dan jalan raya yang bandar dengan luar bandar perlu dibina.

## **ABSTRACT**

In Malaysia, there are still issues circulating the inadequate rural basic infrastructure. In many parts of Sabah and Sarawak, there are still lacking in connectivity and have limited coverage of water and electricity supply. The research area is set at 3 locations in Sibul, Sarawak. Sibul Town is the most populated and developed location among the 3, Sibul Jaya which is a new township on the outskirts of Sibul Town and last but not least, Selangau District, a small town that focuses on agriculture. The two objective of this research are: to understand and compare the basic infrastructure condition and infrastructure accessibility in Sibul; to analyse and suggest infrastructure improvements based on local perspective in Sibul. Data analysis was done by using descriptive analysis, Pearson's Correlation Analysis and Multivariate Analysis of Variance (MANOVA). The research results can also be taken into consideration by policymakers or future researchers who are keen to know local perspective on infrastructure. The results highlight solving Sibul Town's low public transportation access by utilizing the local's advance technology connectivity to bus schedules and locations, solve Sibul Jaya's dissatisfaction of public transport and high amount spent on travel by improving comfort and conditions of the public transport. Lastly, for Selangau, to start improving basic amenities, rural roads and rural to city connecting roads.

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# CHAPTER 1

## INTRODUCTION

### 1.1 Preface

#### 1.1.1 Rural Development

The indigenous people in Malaysia represent around 12% of the 28.6 million population in Malaysia. In Peninsular Malaysia, they number at 180,000, representing a mere 0.6% of the national population. In Sarawak, the indigenous constitute around 1,198,200 or 45.5% of Sarawak's population of 2,633,100 people. And in Sabah, they make up 2,140,800 or 60.5% of Sabah's population of 3,540,300 (IPHRD Network, Malaysia, n.d.). The reality in Malaysia stated from World Bank (n.d.) shows 25% of our population still lives in rural area in 2015 and rural areas cover almost 75% of total land area in the country. Given the population data, there are obvious improvements that are needed to be done between urban and rural to balance out the difference between developments.

According to the 10th Malaysia Plan, some of the issues and challenges that are currently faced by include inadequate rural basic infrastructure and other amenities. For example, rural areas lack connectivity and have limited coverage of water and electricity supply. Many parts of Sabah and Sarawak, especially in the remote areas are still without road network. Also, public amenities which was initially aimed to bring local communities together have not achieved its full potential due to inappropriate location and poor maintenance of these facilities.

There are efforts done by our Malaysian government towards overcoming rural issues. Therefore, by developing focusing on the development of rural areas is needs to be done aligned with the Eleventh Malaysia Plan.

### **1.1.2 Infrastructure Development**

According to the Eleventh Malaysia Plan (2011), in reference to the progress during the Tenth Plan rural road coverage expanded by 11.7% from 45,905 kilometres in 2009 to 51,262 kilometres in 2014. In Sarawak, 250 kilometres of ex-logging roads were upgraded to provide accessibility to 31,512 people in underserved rural areas. In terms of utilities, coverage of rural electricity has reached 97.6% and water supply at 93.8%, 188,270 water tanks were also provided to supply clean water to 251,200 rural households in remote areas of Sabah and Sarawak.

According to Barrios (2008), development intervention can be broadly classified into four (possibly overlapping) categories:

- economic infrastructure (e.g. credit, production support);
- physical infrastructure (e.g. roads, irrigation);
- capacity building (e.g. training, information dissemination);
- support services (e.g. marketing services, facilitation of access to basic social services).

## **1.2 Background**

Sibu Division is one of the twelve administrative divisions of Sarawak, Malaysia being the third largest divisions after Kuching Division and Miri Division. Sibu Division consists of three districts: Sibu, Kanowit, and Selangau.





Figure 1.1: The administrative districts of Sibuan Division

In reality, Sibuan Town (the capital of Sibuan District in Sibuan Division) is more developed compared to the outskirts of Sibuan such as Sibuan Jaya and Selangau. The profile of the 3 locations are: Sibuan Town as the most populated and developed location among the 3, Sibuan Jaya which is a new township at the outskirts of Sibuan Town and last but not least, Selangau District, a small town that focuses on agriculture. The State Planning Unit (2013) show that citizens of Sibuan are mainly dominated by Chinese (46.71%), Bumiputera (46.40%) including Malay, Iban, Bidayuh, Melanau and other Bumiputera, followed by Indian and others (0.71%) and non-Malaysian citizens (6.18%).

### 1.2.1 Public Transportation Issues

The public transportation available in Sibuan is bus. Unlike big cities in Kuala Lumpur where most public bus schedules can be easily found on the internet together with the bus reaching time and bus route. Towns in Sarawak like Sibuan, information of the bus schedules are limited and is less tourist friendly for anyone who has never use the public bus services. Another issue to be reflected is the conditions of the stage bus in where most stage bus were without air-conditioning and in poor conditions.



Figure 1.2: The condition of intra-city buses which can be soon old and undermaintained

### 1.2.2 Connecting Rural Areas and Cities

Throughout Sarawak, the main connection between the people in the rural areas with the cities are by water services. The river that provides the most accessibility to the rural areas in Sibu is the Sungai Rajang (567km). River play an important role in Sarawak's economic activities and is considered as one of the transportation mode other than the road transportation. Unlike Sabah and Peninsular Malaysia, the road network in Sarawak are still underdeveloped and the absence of rail network connecting the rural areas with main towns.



Figure 1.3: Sibu Harbour at the Rajang River

Rural people rely on these boat services to access the cities for job opportunities and education. For example, shops in Kapit travel to Sibuh by boat to get their stocks from suppliers to run for their business. Business activities in rural areas also depend on the water transport services to get their stocks and supplies from towns. The most importance reason to give priority to the development of Sarawak Inland Water

Transportation is that water transportation is always cheaper compared to land transportation (UNDP, 2008). Giving support to the preparation of an Inland Waterway Transportation Master Plan can help benefiting the rural people living in the scattered settlements along the river (UNDP, 2008).

### **1.2.3 Rural Roads**

In the rural areas of Sibuh, the types of agriculture are from the sago, pepper, oil palm, coconut and rubber plantations. Examples include the exploitation and development of oil palm plantation, the construction of rural roads allows the contribution to the agriculture. Rural workers are hired to be a part of working in these plantation. Aside from these roads, there are presence of high percentage of the rural roads are unpaved and made up of gravel and earth roads. For longhouse residents who have road access must put up with many large potholes.

### **1.2.4 Electricity and Water Supply**

There are still many longhouses in Sarawak which do not have much access to electricity and water supplies.

### **1.3 Problem Statement**

Development of infrastructure plays a role in serving socio-economic ends. The development focuses is on providing infrastructure to promote the development of the less developed regions of the country, including rural areas.

Existing news and statistics show that there are still lacks in present infrastructure conditions in Sarawak whether in public transportation, roads, electricity and water supply just to name a few. So by understanding the local perspective about their perception of the infrastructure is needed in order to shed some light on infrastructure characteristics in Sibü.

### **1.4 Study Objective**

The purpose of this study is to propose a focus area for infrastructure development based on the 3 different profiled locations in Sibü: Sibü Town, Sibü Jaya and Selangau.

In order to ensure the study meets its purpose, the objectives are:

1. To understand and compare the basic infrastructure condition and infrastructure accessibility in Sibü.
2. To analyse and suggest infrastructure improvements based on local perspective in Sibü.

### **1.5 Scope of Study**

1. The location of this research will be conducted in 3 main location which is Sibü Town, Sibü Jaya and Selangau.
2. Survey will be distributed physically and virtually on local perspective towards current infrastructure.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Overview

With data from the World Bank showing a 46.1% of the total population still living rural areas (World Bank, 2015). And from the World Bank, rural development is defined by the strategy to improve the economic and social life among those who seek a livelihood in rural areas. The physical infrastructure, it includes public utilities (water supply, electricity, sewage system), public works (roads), public centers (healthcare and education) and public transportation. The study will show insights of local efforts around the world towards rural area development for affordable housing and infrastructure.

#### 2.2 USA: Rural area defined by population density, service accessibility and gaining local insights

In the United States of America, there is a distinct definition of rural area which is by population density. Taking the example of the state of Massachusetts, it has 351 towns, with the definition of rural area with the population density of less than 500 per square mile or the criterion of population less than 10,000. There are 181 towns that can be considered rural by their population density, and 183 by their total population (Umass.edu, n.d.).

In addition, to increase the service accessibility of the state, Massachusetts has total of 13 regional planning agencies (RPAs) The Rural Eleven Prioritization Project was recently completed under Central Massachusetts Regional Planning Commission (CMRPC) with the objective creating a 30-year region shared framework for identifying regional and local priorities for growth, development, higher education and land

preservation, as well as transportation and other infrastructure investments in the 11 towns (Administration and Finance, 2016).

Aside from relying on the RPAs, the local efforts in the identifying of priority development areas allowed the consensus of several areas to be the focus in the recent years. Example:

Areas within the Route 122 (the Lost Villages Scenic Byway) and Route 9 corridors (Rural-11 Prioritization Project, 2013);

1. Several mills and brownfields;
2. Business districts;
3. The downtown centers of Hardwick, Barre and West Brookfield; and
4. Several industrial areas.

Using local opinions towards the development, they collected insights of local PDA and developed into regional insights.

### **2.3 UK: Annual Assessment and Process of Identifying Site location**

Rural Housing Association (RHA), Northern Ireland works closely with all local communities in assessing needs and delivering appropriate housing solutions, specialised in rural market. There is a Rural Design Guideline that is active throughout rural Northern Ireland providing and managing high quality affordable homes for rural people in rural areas, contributing to maintaining and sustaining rural communities. RHA currently manages 416 houses, across 16 districts, with an emphasis on the more marginal and disadvantaged rural communities (Ruralhousing.co.uk, n.d.).

RHA provides accommodation to rural areas throughout Northern Ireland there are two village layout that can be referred: Poiny pass and Killyleagh.



Figure 2.1: Site of 9 homes in the Povntzpass area



Figure 2.2: Site of 20 homes in the Killyleagh Area



## **2.4 Poland: Detailed Research on rural settlement before housing construction**

In Poland Bański and Wesołowska (2010), a basis for the work has been provided by detailed research (field surveys, questionnaires and interviews) carried out in 15 villages located in Lublin voivodeship, eastern Poland. Changes in the spatial structure of villages under the influence of the new building are presented by reference to three villages representative of the residential, tourist-recreational and agricultural functional types.

Rural settlement is a distribution of type and density depending on both natural and socioeconomic conditions. The major contribution of the effort shows the directions of the development of housing construction in the rural areas of the Lublin voivodeship as well as to determine the factors influencing its quantitative and structural diversity.

The study draws on detailed research carried out in 15 villages within eastern Poland's Lublin voivodeship. Data on residential buildings were collected in the course of fieldwork, plus surveys of households and interviews with representatives of local government. A total of 2627 households were studied.

Jakubowice Koninskie is a satellite village in the immediate vicinity of the city of Lublin and hence serves residential functions first and foremost. It should be stressed that, in Polish rural areas, it is single-family construction that prevails, thereby ensuring that numbers of residential buildings are closely similar to numbers of dwellings. To put it another way, most residential buildings in villages comprise just a single dwelling.

According to Michalek and Zarnekow (2011), the list of domains linked to various important aspects of rural development in individual regions, together with examples of indicators used in our study. Examples of aspects focused on in infrastructure includes: Electricity supply system; Gas supply system; Heat supply; Urban transport, transport lines, bus lines in km per km<sup>2</sup>; household consumption of low-

voltage electricity; Roads owned by the powiats; hard surfaced roads of which improved-surface roads; Municipal infrastructure, Sale of heating energy during the year by destination.

## **2.5 Romania: The focus of rural tourism as a tool for family enterprises and development of rural areas**

Romania is still a largely rural country. In 2007 the percentage of rural population still reached 45% of the total (Institutul Național de Statistică, 2008). The quality of life in rural areas is generally poor. Currently, only 33% of rural residents are connected to a water supply network, only 10% to a sewerage system and only 10% of rural roads are of adequate standard (Institutul Național de Statistică, 2008). Basic social infrastructure (health and education systems, finance and credit provision, etc.) is also much less developed than in urban areas. The development of rural tourism, in particular, is expected to play an important role in the revitalization of rural areas, in line with common beliefs and practices in several other European countries (Hall, 2004). High expectations related to the creation of new local development opportunities, offering an alternative to emigration and urbanization, embrace job creation, income growth, productive specialization, infrastructure development and cultural heritage protection.

Tourism, according to Iorio and Corsale (2010) has long been considered as a potential means for socio-economic development and regeneration of rural areas, in particular those affected by the decline of traditional agrarian activities. The tourism activities has contributed in improvement of basic infrastructure activities such as tourist infrastructures.

The aim of the study has been to provide insights on how families living in Romanian rural villages might enhance their livelihood through tourism.

## 2.6 Egypt: Governance system to close gap between urban and rural areas

Shorouk is a National Program for Integrated Rural Development in Egypt which was developed by the Organization for Reconstruction and Development of the Egyptian Village (ORDEV) within the Ministry of Local Development, to build on the participatory methods of local council planning that were developed in projects during the 1980s. Its ultimate goal was to close the gaps between development in rural and urban areas through the efficient utilization of local resources, and expanding opportunities for productive employment by diversifying the rural economy. (Elmenofi, El Bilali and Berjan, 2014).

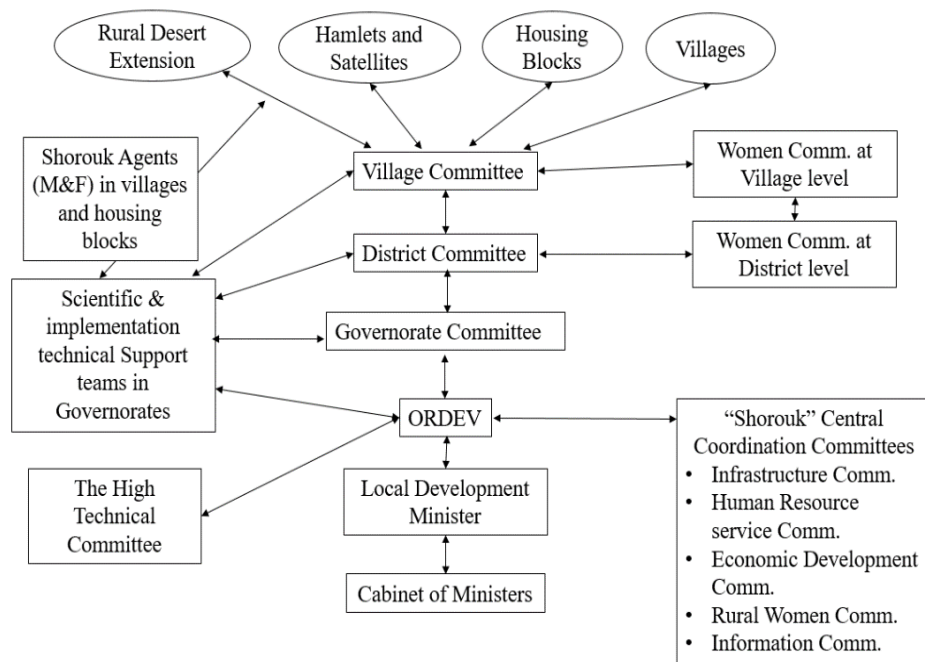


Figure 2.3: Shorouk Program Governance Mechanism

Shorouk programme was designed to be phased in over the period 1994-2017. Sohag Governorate is the poorest area in Upper Egypt and exhibits some of the lowest human development indicators in the country.

By 2006, the Sohag Project disbursed over 90 percent of its funds, covering every local administrative unit of the governorate. More than 400 subprojects were undertaken

in water supply, rural roads, schools, health facilities, irrigation canals, sanitation systems, veterinary services, post offices, and social centers for women, youths, and other groups. The Project had served nearly 2.5 million people (Building Infrastructure and Social Capital in Rural Egypt, 2007).

In total, 438 infrastructure sub-projects were completed. The sub- projects cover 10 sectors and are located throughout the entire Governorate, in Sohag's eleven "Markaz" and benefit around 650 villages - around 2 million persons. The percentage of infrastructure and services benefiting isolated hamlets reached 84% exceeding the targeted percentage in the beginning of the project (75%) (Nassar, 2010).

## **2.7 Turkey: Focus on developing basic infrastructure in rural areas to contribute to agricultural activities**

KÖYDES, which was launched in 2005 as a pilot project, was transformed to an integrated rural development program by the addition of small scale irrigation and wastewater components respectively in 2010 and 2011, in addition to essential road and drinking water components. By the end of 2012, approximately 7,000 km of unpaved, 74,000 km of stabilized, 98,000 km of asphalt concrete base, 2,500 km of concrete and a total of 181,500 km of village roads were constructed. 32,000 km of village roads were repaired and 2,600 km of stone pavements were made. Moreover, sufficient and clean drinking water services were delivered to 47,461 rural settlements with no or partial access to clean water. In this period, the village road network was expanded to 35,000 km, asphalted-concrete road ratio increased from 33 percent to 45 percent. The ratio of rural settlements with access to sufficient drinking water also rose from 81 to 91 percent (Republic of Turkey Ministry of Development, 2014).

## **2.8 India: The Development Plan (DP) of a New Township in Ahmedabad, Gujarat**

The DP is a macro strategic plan document that defines the direction of growth and envisions the citywide infrastructure for the entire development area (Ballaney, 2008). It is a comprehensive document that looks at all components of development and makes specific proposals with respect to each. These include the following:

- Land development—land use zoning, areas to be opened up for new growth, development control regulations (which determine the built form), and allocation for public uses
- Road network and transportation
- Water supply
- Sewerage
- Storm water drainage
- Open spaces, green areas
- Environment and pollution control
- Reclamation of areas
- Any other

The Town Planning Schemes TPS Preparation Process

1. Survey of the Area
2. Establishing the Ownership Details of Every Land Parcel
3. Reconciling the Survey and Landownership Records to Prepare a Base Map
4. Defining the Boundary of the Area
5. Marking Original Plots on the Base Map
6. Tabulating Ownership Details and Plot Size
7. Laying Out the Roads in the Area

8. Carving Out Plots for Amenities in the Area
9. Tabulating Deduction and Final Plot Size
10. Delineation of Final Plots
11. Tabulating Infrastructure and Betterment Charges
12. Owner's Meeting
13. Modification of the Draft TPS and its Approval
14. Appointment of the Town Planning Officer (TPO)
15. Individual Hearings to Each Landowner on the Preliminary TPS
16. Finalization of the Preliminary TPS and Its Approval
17. Individual Hearings to Each Landowner on the Final TPS
18. Finalization of the Final TPS, Its Approval, and Implementation

## **2.9 Mainland of China: Early planning effort of concentrating rural settlement for future urban township development**

According to Long et al. (2009), the fundamentals to lay a planning for a scientific urban–rural integrated development to build a new countryside, the planning needs to pay more attention to make the rural have certain functions that can serving for the urban.

In the Mainland of China, Qian and Wong (2012) mentioned urban and rural areas are closer now as the cities are still in rapid development process. For example, some industrial parks and projects of Nanjing are located in its surrounding rural areas. The deliberate use of the concentration settlement policy to create urban growth in the countryside can be seen as a fragmentation of traditional rural form. Despite the fact that these settlements are called ‘rural’, the reality is that they are planned and designed like an urban township.

The concentration of rural settlement should consider the reasonable size of a rural settlement, example some settlements are planned for 1,000 people or even more. That makes a town not a rural settlement.

## **2.10 South Korea: Development of rural infrastructure through top-down and bottoms-up effort**

According to Gevelt (2014), in fifteen years from 1965 to 1979, South Korea has grown from providing only 12% of rural households with electricity to providing 98% of rural households with electricity for lighting and productive uses. Rural households who are in the agricultural field often require electricity to generate the motive power required for modern farm machinery and irrigation systems.

### Top-down rural development

For the majority of infrastructure projects, villagers were expected to contribute their opinions, labor and, in some cases land, thereby creating a sense of community-ownership and management (Park, 1997).

### Bottom-up rural development

Villagers were provided with the means to improve their living conditions through participating in infrastructure projects. Villagers were able to communicate their needs and socio-economic aspirations to local government effectively for a common ground of mutual understanding.

Table 2.1: Rural infrastructure (1970-1979)

Type of infrastructure	Target	Output
Expansion of village roads (km)	26266	43558
New village roads (km)	49167	61797
Small bridges	76749	79513

Irrigation (km)	21282	13622
Village centers	35608	37012
Warehouses	34665	22143
Housing improvements	544000	225000
Sewage system (km)	8654	15559
Electrification (households)	2834000	2777500
Telephone lines	-	345240
Saemaul factories	950	717
Reforestation	744354	347153

### **2.11 Taiwan: Focusing rural development to complement rural tourism.**

An example taken from a research in Taiwan mentioned by Liu (2010), rural development focused on how it can complement to rural tourism. Rural development itself involves methods to improve production conditions and the living environment for village residents. When citizens are encouraged to be more involved with rural villages and to experience their lifestyle, interest and support for the promotion of local rural industry will increase. This is expected to create new income revenue for villagers, helping to achieve the goal of a prosperous rural development. Below shows from the research, how the village renewal are expected to be.

1. Generation of vitality to the village.
2. Preservation of historic sites and rural features and style.
3. Renewal of buildings, new use for old houses and modernization.
4. Expansion of land for construction (reservation of land for village development)
5. Development of agriculture and other local rural industries.
6. Improvement of traffic.
7. Construction of infrastructure, public and private facilities.



8. Beautification of park, green land, plaza, natural waterways and rivers.
9. Leisure, recreation and relaxation.
10. Conservation of natural resources, ecological environments and the landscape.

## 2.12 The Philippines: Minimum design standards for urban and rural areas.

In the Philippines, minimum design standards and requirements for economic and socialized housing project in both urban and rural areas. The purpose is to increase the purchasing availability of houses for average and low income earners in rural and urban areas. And the standards are as shown below (Housing and Land Use Regulatory Board, 2008).

Table 2.2: The minimum rules and standards for economic and socialized housing in the Philippines

Minimum living space	Min . 18-22 m <sup>2</sup> of floor area per family (social housing) but not less than 3.4 m <sup>2</sup> per person excluding kitchen and bathroom
Minimum lot allocation	Single detached 64-72 m <sup>2</sup> , duplex/single attached 48-54 m <sup>2</sup> , row house 32-36 m <sup>2</sup>
Minimum height of ceiling	2m
Minimum distance between two single storey house	2m between walls, 1 m between roofs
Path walks	3m width (max 60m length)
Access roads	6.5 m width, slope: 1.5-9%
Access to water	Min. 150L per person/per day through water lines, deep wells (not farther than 100m) or reservoirs
Access to sanitation	All units should have appropriate sanitation (Individual septic tanks or community sewer system)

Storm drainage	Concrete lined canal with load bearing cover
Solid waste disposal	The appropriate, feasible system must be developed for timely and efficient utilization of solid waste (either by individual families or in conjunction with the public service provider)
Park/playground	Min. 100 m <sup>2</sup> per settlement or 3.5% of the total area per 150 housing units or below
Power	50 m between electrical poles/lighting
Elementary school	Min. 1 per 1500hh+
High school	Min. 1 per 2000hh+
Convenience/retail center	1 per 1500hh+

### **2.13 Cambodia: Infrastructure developments and guidelines for rural water supply storing.**

As shown in the Cambodia National Strategic Development Plan 2014-2018 (n.d.), the rural development contribution between the year 2009 to 2012 includes the rural transportation infrastructure development, constructing and rehabilitation of laterite roads, concrete roads, metal bridges, concrete bridges and culverts at a total of 2766 locations. Additionally, rural water supply improvements can be seen from the preparation of groundwater map for 8 provinces (Svay Rieng, Prey Veng, Kandal, Takeo, Kompong Speu, Kompong Chhnang, Kimpong Cham and suburb in Phnom Penh capital). Table 2.3 shows the progress for rural development in Cambodia.

Table 2.3: Progress for for Rural Development in Cambodia (Cambodia National Strategic Development Plan 2014-2018, n.d.)

Indicator	Plan/implemented	2008 Baseline	2009	2010	2011	2012
Rehabilitation of Rural Roads – out of total 40,000 (km)	Plan (Km)	24,140	25,658	26,658	27,658	28,658
	Implemented (Km)	24,484.89	25,236.89	25,686.07	26,293.87	26,900.56
Access to Improved Water Supply - % of Rural Population	Plan (%)	40.49	41.99	43.49	44.99	46.49
	Implemented (%)	40.49	42.20	41.10	43.20	41.90
Access to Improve Sanitation – % of Rural Population	Plan (%)	23.24	24.24	25.00	27.00	29.00
	Implemented (%)	23.24	23.00	29.20	33.20	33.30

#### 2.14 Thailand: Implementing bottoms up culture, creating a programme for what the community needed.

Community Organizations Development Institute (CODI), in Thailand plays a role in supporting and assisting community organizations and their networks in improving standard of living, income earning, housing and environment development both in urban and rural through integrated development process (Community Organizations Development Institute, n.d.),.

Taking the example of None Somboon, this village-like community is present in rural Khon Kaen Province. The Baan Mankong process in None Somboon began with a survey of all the households and a big meeting to bring everyone together to discuss their housing and land problems and to learn about the possibilities the program offers to help them bring about improvements. There has been a high level of enthusiasm and involvement from the start, where people saw a chance to determine what they need, to design and carry out real improvements themselves and further strengthen their community in the process.

Each of 15 areas in the community makes its own micro-plan: The None Somboon residents decided to divide their loosely-scattered settlement into 15 areas, and let the group of households in each area develop its own upgrading plan, including road

paving, drainage, solid waste collection points, tree planting, septic tanks, waste-water treatment and house improvements. Most of the groups decided not to make any major changes in the layout of their houses, roads and farming plots, but a few are doing a little reblocking of houses to make way for the new infrastructure or to regularize plots.

### **2.15 Indonesia: Transformation of rural areas to satellite cities**

In Indonesia Dieleman (2011) says the reality shows the overcrowded cities with poor urban infrastructures. A new class of wealthy urban Indonesians has created business opportunities for private developers, who have transformed rural areas into suburban satellite cities fully equipped with amenities, including roads, sewerage, schools and health care facilities, security personnel and plenty of space and greenery. Example of the good case practice in the implementing of this by the example of the well-known accelerated growth of Jakarta since the 1970s. This process, also known as new town development, is by no means a new phenomenon (Sujarto, 2003).

### **2.16 Pulau Pinang: Implementation of Programmes to overcome shortage in infrastructures and housing**

In Pulau Pinang, programmes have been focused by the government in providing upgrades in facilities, rural infrastructure and even the housing for the poor (Limpahan Pembangunan Pencapaian Kerajaan Persekutuan 2008-2016 Demi Kesejahteraan Rakyat Pulau Pinang, n.d.).

The aim of these projects is to increase the accessibility between peripheral and urban areas, develop infrastructure and social amenities. The development of village road infrastructure was envisioned not only to improve rural communities, but also to benefit the development of urban areas. Aside infrastructures, another focus was on

making water supply coverage wider. The result in 2014 shows a supply of reached 100% in urban areas and 99.7% in rural areas. The overall water supply coverage in the state had a rate coverage up to 99.9%. For the access to electricity specifically in the year 2015 the government had successfully implemented the External Electrical Supply program City to increase access to electricity rural areas. In addition, Lampu Jalan Kampung (LJK) programme was also carried out to further improve the quality of life in rural areas through the street lighting facilities. In the years 2012-2016, a total of 8,897 units LJK mounted involving 1,983 villages Penang.

Housing Assistance Programme (PBR) provides a comfortable home in rural for poor households. Within the timeline of 2010-2015, the Government has successfully constructed 733 housing units involved New architecture and Overhaul in urban areas and rural areas. In the same period, the Government has channelled Rent assistance to 1,452 low-income households in city area. In addition, a total of 257 housing units Rumah Mesra Rakyat 1Malaysia program (RMR1M) was built by Syarikat Perumahan Negara Berhad.

### **2.17 Johor Bahru: Low cost housing development and infrastructure**

In Johor, Kemajuan Johor Tenggara (KEJORA) played a major role in the housing project through the Organized Village Development Programme. The programme consists of low cost housing development and arranged housing base. The programme involves basic and social infrastructure and the preparation of commercial economic projects and groups for residential participation. KEJORA has developed 5 units of Organized Village complete with all utilities (Lembaga Kemajuan Johor Tenggara, n.d.).

Table 2.4: KEJORA's developed Organized Village (Lembaga Kemajuan Johor Tenggara, n.d.)

No.	Programme	Number of Houses	Amenities	Area (acre)
1	Organized housing of Tuan Seh	85	Hall, Community hall, Business space, Electrical and water supply	42
2	Organized housing of Kg Punggai	139	Hall (under construction), Community hall, Business space, Electrical and water supply	30.7
3	Organized housing of Kg Semanggar Dalam	65	Hall, Community hall, Business space, Electrical and water supply	72
4	Organized housing of Kg Mawai	169	Hall, Community hall, Business space, Electrical and water supply	42
5	Fisherman Village of Tg Balau	20	Surau, Business space, Electrical and water supply	54

### 2.18 Sabah: The assessment of the needs of and constrains in rural Sabah social scientific methods

The method to fully understand what was the needs of the locals, the method for this research was to stay at the village in gain insights of the actual village situation and ease the process of evaluating information (Bolliger et al., 2001). During the stay, in order to gain the insights needed, interview in the form of Household survey – questionnaires, Semi-structured interviews and Informal conversation was conducted. Participatory methods were also used which is to involve and engage community members in the methodology and to initiate dialogue as described by Mikkelsen (2007). Examples of participatory methods involved were the participatory observation and socialisation and participatory mapping. The main output gained from the evaluation in infrastructure showed that 57 % of the inhabited houses had piped water, while only 40% had access to electricity. The villagers generally perceived village infrastructure as poor to adequate, and most villagers stated that access to piped water and electricity were their major needs.