

## City History Study: Reconstruction of Sinabang City Infrastructure After the Tsunami, 2005-2009

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### ABSTRACT

This article knows the state of Sinabang City's infrastructure before the 2004 earthquake and tsunami disaster, and also gets a brief explanation of the impact of the 2004 Sinabang City earthquake and tsunami disaster, knowing the concept planned to reconstruct the infrastructure of Sinabang City after the 2005-2009 Tsunami. In this article, we use a qualitative type of approach in combination with historical methods. The technique data collection is carried out by means of documentation, literature studies and interviews. Analysis of the findings that Sinabang City before the 2004 tsunami was still under construction so that the infrastructure in Sinabang City was still simple and not yet comprehensive. Akibat disaster of the 2004 earthquake and Tsunami had an impact on the light damage to the existing infrastructure in Sinabang City, and there are 9 concepts that BRR plans to reconstruct the infrastructure of Sinabang City referring to the concept of a city spatial plan designed for Sinabang City.

**Keywords:** Reconstruction, Infrastructure, Sinabang City.

### ABSTRAK

Artikel ini mengetahui keadaan infrastruktur Kota Sinabang sebelum bencana gempa bumi dan tsunami 2004, dan juga mendapatkan penjelasan secara singkat dampak bencana gempa bumi dan tsunami 2004 Kota Sinabang, mengetahui konsep yang direncanakan untuk merekonstruksi infrastruktur Kota Sinabang pasca tsunami 2005-2009. Pada artikel ini menggunakan jenis pendekatan kualitatif dipadukan dengan metode sejarah. Adapun teknik pengumpulan data dilakukan dengan cara dokumentasi, studi pustaka dan wawancara. Analisis penemuan yang bahwa Kota Sinabang sebelum tsunami 2004 masih dalam tahap pembangunan sehingga infrastruktur di Kota Sinabang masih sederhana dan belum menyeluruh. Akibat bencana gempa bumi dan tsunami 2004 berdampak terhadap kerusakan ringan terhadap infrastruktur yang ada di Kota Sinabang, dan ada 9 konsep yang direncanakan BRR untuk merekonstruksi infrastruktur Kota Sinabang mengacu pada konsep rencana tata ruang kota yang dirancang untuk Kota Sinabang.

**Kata Kunci:** Rekonstruksi, Infrastruktur, Kota Sinabang.

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## INTRODUCTION

The history of the city is a study that discusses the events and events that occurred in the city. The study of the history of the city is different from the study of history in general. The existence of development in a city cannot be separated from the economic, political and socio-cultural conditions of the people in the city. Thus the study of urban history cannot be separated from other fields of historical studies, such as the study of social history, political history and economic history. The city is a place of various aspects of complex life, the city is also a relatively large, dense and permanent settlement consisting of heterogeneous groups of individuals with materialistic and non-agrarian patterns of life (Basundoro, 2012: 14)

Sinabang City is one of the cities in Aceh Province located in Simeulue Regency which is pronounced with a regional accent is *Si navang* which comes from the legend of Navang. Simeulue Regency which was inaugurated on October 12, 1999 based on Law (UU) Number 48 of 1999 concerning the formation of Bireuen Regency and Simeulue Regency. It has only been a few years since it became the capital of Simeulue Regency, which when viewed from the aspect of development has not been evenly distributed and is still in the development stage in various sectors, on December 26, 2004 there was an earthquake and tsunami disaster that resulted in damage to several infrastructure buildings in the Aceh and Nias regions, including Simeulue Regency in general, Sinabang City in particular. (Khairullah & Kesuma, 2022)

With the earthquake and tsunami disaster in 2004, the government of the Republic of Indonesia through Presidential Decree No.30 of 2005 stipulated the establishment of the Rehabilitation and Reconstruction Agency (BRR). This agency was formed in order to accelerate the rehabilitation and reconstruction of the Nanggroe Aceh Darussalam area after the tsunami, BRR played an active role in development in several areas affected by the 2004 earthquake and tsunami, one of which was in Sinabang City, although the 2004 tsunami disaster did not have much impact on infrastructure destruction in Sinabang City, but there was damage due to the impact of the earthquake before and after the 2004 tsunami disaster, With the establishment of BRR, the Simeulue Regency government and its

community strongly support the rehabilitation and reconstruction program because it is a good opportunity for various infrastructure reconstructions in Sinabang City which were previously still very simple, this opportunity was utilized by providing support, planning and sincere strategies in regional development (Munadia & Umar, 2022).

The establishment of BRR and the support of the local government, there was the implementation of post-tsunami reconstruction in the infrastructure sector of Sinabang City. In terms of the aspects of the implementation of the reconstruction that was planned and determined, there were obstacles that were passed so that the concepts that had been planned were sometimes not implemented properly, causing dissatisfaction from the community (Faiza et al., 2021).

Based on this description, the researcher is interested in studying infrastructure redevelopment in one of the cities in Aceh Province, precisely in Simeulue Regency, namely Sinabang City. Researchers want to research the city after the 2005-2009 tsunami in terms of its infrastructure. The main problem in this study is whether the results of the reconstruction of Sinabang City are in accordance with the concepts and expectations of the community.

City History a study that discusses the events and events that occurred in the city. The study of the history of the city is different from the study of history in general. The existence of development in a city cannot be separated from the economic, political and socio-cultural conditions of the people in the city, thus the study of the history of the city cannot be separated from other fields of historical studies, such as the study of social history, political history and economic history. According to Menno and Alwi in Basundoro (2012: 18) in terms of physical aspects, the city is a settlement that has residential buildings whose distance from one another is relatively tight and has adequate facilities and infrastructure and facilities to meet the daily needs of its citizens. City facilities, infrastructure, and facilities include roads, drinking water, lighting, worship facilities, shops, markets, government institutions and buildings, recreation and sports, worship, electricity, institutions that regulate the common life of its citizens, education

and others (Waty, 2022).

According to Sirjamaki the so-called cities are commercial and industrial centers, cities are also centers for learning as well as places of progress of civilization (Basundoro, 2012: 16). This opinion can be concluded that the city is the place of progress of a civilization which is characterized by the use of the city as an industrial and commercial center and the city area is a nonagrarian area (Riseman, 2020).

Judging by the origin of a city is usually associated with a village, that is, that the city is a logical consequence of the development of a village. In the beginning the town was a village and a place where farmers lived which began with a culture of farming. People began to settle in certain territories that is villages, they were interconnected, communicated, so the accumulation of knowledge gave birth to the city (Basundoro, 2012: 19).

From this explanation, it can be concluded that a city is a development of a village that experiences stages so that it becomes a city. A city can be said to develop if the city has adequate city facilities and infrastructure, city facilities and infrastructure which are referred to are roads, ports, means of transportation, residential areas, government buildings, educational institutions, health facilities and places of worship. Based on this explanation, it can be concluded that infrastructure is a physical system needed to meet basic human needs in the social and economic sphere (Muchsin & Manan, 2019).

Previous research is a very important thing for researchers to conduct research related to the same aspect, namely the study of cities. Checking previous studies can help researchers to simplify the process of this research. A description of Candra Seba's work with the title "Calang City After the Tsunami (One Review of Infrastructure Development, 2005-2017)" in this study explained that Calang City, which was established in 2002, has experienced significant infrastructure development, especially after the 2004 tsunami. From 2005-2016 various infrastructures that stand out can be seen in the road aspect both in terms of the physical condition of the road and its area and length. In addition, the infrastructure that continues to develop can also be seen from educational institutions from the kindergarten, elementary, min, junior high school, MTs, high school, ma and vocational levels. The infrastructure of houses of worship has also increased such as mosques, meunasah and dayah sulok. Industrial

infrastructure, markets, offices, companies, restaurants, electricity and incination infrastructure such as public hospitals, puskesmas, posyandu, polindes and so on (Fatimayin & Jacob, 2022).

The development of various infrastructures above is influenced by factors of land availability for development (urban ecology), local government support and financial assistance from abroad, especially after the tsunami disaster and natural conditions that encourage the acceleration of infrastructure development for the benefit of the community and tourists who visit the area. Although there continues to be a development in a more direction, it also cannot be separated from the obstacles faced such as the lack of regional income to accelerate development, the lack of accommodating laws and regulations for urban development and the lack of social and political support for development projects both from planning to implementation (Arisandi et al., 2020).

The next work is still in the form of a thesis written by Hamdia with the title "Autonomy and Economic Growth: Sinabang, 1999-2010". In this thesis, it is explained that the implementation of regional autonomy in the city of Sinabang can increase the growth and economy of the city of Sinabang, namely by increasing facilities and infrastructure that support the economic growth of the city of Sinabang. The factors that trigger the economic growth of the city of Sinabang are the accumulation of capital, population and labor force growth and technological advances, all of which are very basic in growing the economy of the city of Sinabang. While the inhibiting factors are unemployment consisting of frictional unemployment, structural unemployment, and cyclical unemployment, this factor really needs the attention of the government to overcome the increase in the number of unemployed in Sinabang City.

## **RESEARCH METHODS**

### **Approaches and Types of Research**

The approach used in this study is a qualitative approach. (Sugiyono, 2007) stated that qualitative research is research that is descriptive and tends to use analysis with an inductive approach. While this type of research is historical research. The method used in this study is the historical method. Sjamsuddin (2015: 30) proposed the historical method starting with the stages of data collection, criticism or verification,

interpretation, and writing history as a framework of thought in a research that is historical in nature.

The procedure or work steps used refer to the procedure proposed by Kuntowijoyo (1999:89), consisting of topic selection, heuristics, verification, interpretation and historiography. Data Collection Techniques use documentation, interviews, and literature studies.

## **RESULTS OF RESEARCH AND DISCUSSION**

Simeulue Regency is located in the Southwest of Aceh Province, only 105 nautical miles from Meulaboh and 85 nautical miles from Tapak Tuan, South Aceh Regency, Simeulue Regency is a cluster of islands including inhabited islands such as Simeulue island, Siumat island and Teupah Island. The overall area of Simeulue Regency is 1,838.09 km<sup>2</sup> or 183,809 Ha (Desfandi, 2019: 2). Simeulue Regency is also one of the newest and youngest districts in Aceh province, Simeulue Regency is a division of West Aceh Regency since 1999 with its capital Sinabang, the purpose and hope of the expansion is that later development will be further improved in this island area.

Sinabang City is the capital of Simeulue Regency which is the center of crowds, government and administration located on the east coast of Simeulue island which consists of seven villages namely Cold Water, Suka Jaya, Suka Makmur, Suka Maju, Suka Karya, Amaiteng Mulia and Amiria Bahagia. Simeulue Regency has a variety of languages including Devayan, Sigulai, Leukon and Jame (Jamu) languages which are more often spoken by the people of Sinabang City (Faiza et al., 2021).

### **Sinabang City Infrastructure Before the 2004 Tsunami**

A city can be said to develop if the city has adequate infrastructure. Infrastructure is a variety of infrastructure facilities that support the growth and development of a city's economy. Before the 2004 earthquake and tsunami disaster, various infrastructures in Sinabang City were still very simple because at that time Simeulue Regency only became an autonomous district separate from West Aceh Regency on October 12, 1999 so that the state of Sinabang City was still under construction. One of the most important infrastructures for Sinabang City is the port because of the location of the Simeulue Regency

which is an archipelago area so that all the needs needed will go through the port. Some of the infrastructure of the city of Sinabang that existed before the 2004 earthquake and tsunami disaster are ports, government buildings, highways, markets, sanitation, electricity and residential housing (Canudas-Romo et al., 2021).

The following is an explanation of the state of some of the infrastructures of the city of Sinabang before the 2004 earthquake and tsunami disaster in Hamdia's thesis with the title "Autonomy and Economic Growth: Sinabang, 1999-2010" and the results of interviews with leaders and the community in Sinabang City: (1) The port is the most important infrastructure facility for Simeulue Regency located in Sinabang City, East Simeulue District. Before the 2004 earthquake and tsunami disaster, the port in Sinabang City already existed in the village of Sinabang in the simpang lima area because of various needs for Simeulue Regency and especially Sinabang City was transported by ferry through several ports outside Simeulue Regency, such as the port from South Aceh and the port of Aceh Singkil. Related to the condition and form of the port in Sinabang City is adequate (interview, Junaidi, December 09, 2021). (2) Road infrastructure is what connects to the growth and development of the economy of an area, because the existence of adequate road infrastructure will make it easier for job seekers to do their jobs. Before the 2004 tsunami, the condition of the highways in the city of Sinabang had been hardened, especially in the Suka Karya area because this area was a connecting road with the area outside Sinabang City (Hamdia, 2010: 28).

Highway repairs in the city of Sinabang are always carried out but not simultaneously so that if it is repaired in one area and others are not then the area that is not repaired has suffered complete damage and there is no two-lane type highway in Sinabang City and the road condition is not too wide / wide. Thus, it can be concluded that the state of road infrastructure in the city of Sinabang before the 2004 tsunami has been carried out construction and repairs but has not been carried out properly (interview, Junaidi, December 09, 2021); (1) Clean Water. Water is a facility that is needed by humans in living daily life, so the supply of clean water in an area or city must always be considered. The state of clean water supply in Sinabang City after changing its status from a district to a district and before the 2004 tsunami experienced development every year because it could meet the supply of clean water to the people of Sinabang City (Hamdia, 2010: 30). The community also uses water sources from the mountains, well water and rainwater (interview, Junaidi, December 09, 2021).

(2) Electricity is a lighting system used by the community, apart from being an electric lighting system, it is also used by the community to facilitate work in daily life. The condition of electricity supply

after the change in status from kewedanan to district has increased, which can be seen from the increase in the number of users or customers. The increase began in 2002 due to the increase in villages, namely Amaiteng village and Amiria Bahagia village (Hamdia, 2010: 33). (3) Sanitation is one of the facilities that must exist in every region because sanitation or medical health facilities are indispensable needs to be used as an indicator to measure whether or not the public health condition in an area is good or not. The condition of the number of health facilities and medical personnel in Sinabang City before the 2004 tsunami was that there was only one building that was built with concrete types and was located in Suka Karya village, the building was a combination of a general hospital and a health center, so it was called the East Simeulue health center (interview, Junaidi, December 09, 2021). (4) A means of communication is a tool used to communicate with one another. The state of communication facilities in Sinabang City before the 2004 tsunami was still very lacking, namely in 2001 there was 1 unit of public telephone, 5 units of wartels and 1 unit of internet cafes. Furthermore, in 2002 1 unit of public telephone, 31 units of wartels and 2 units of internet cafes (Hamdia, 2010: 37).

The market is also one of the most important facilities in a city because the market has an important role in developing the community's economy. The state of the market infrastructure of Sinabang City before the 2005 earthquake and tsunami disaster was still fairly simple because it was still made of wood and was a row building type (interview, Junaidi, December 09, 2021).

Housing is a collection of houses as part of a settlement that is livable by the community. The condition of the housing infrastructure of the residents of Sinabang City before the 2005 earthquake and tsunami disaster was still in the form of wooden buildings and there were no buildings. The location of residential housing is adjacent to the outskirts of the coast (Interview Junaidi, December 09, 2021). The condition of government infrastructure in Sinabang City before the 2005 earthquake and tsunami disaster was still relatively rough because it was not as complete as it is today, but there was only the regent's office and the DPRK office which was built of wood and was not yet in the form of a building but like an ordinary house building and built side by side located in the village of Air Dingin. Furthermore, for security infrastructure such as the Police station located in Sinabang village and the Koramil post located in Air Dingin village (interview, Junaidi, December 09, 2021). The condition of the existing worship facilities in Sinabang City before the 2004 earthquake and tsunami disaster was adequate, it was seen that the Great Mosque of Baiturrahmah Sinabang City was located in the center of Sinabang City, precisely in Simpang Lima adjacent to the ship port and the type

of mosque building was permanent (interview, Junaidi, December 12, 2021).

### **Impact of the 2004 Earthquake and Tsunami Disaster on Infrastructure in Sinabang City**

The aftermath of the 2004 earthquake and tsunami disaster had an impact on the destruction of various infrastructures in the Simeulue Regency area such as roads, bridges, housing, government infrastructure, education infrastructure and other infrastructure.

Furthermore, the impact of the earthquake and tsunami disaster that occurred in 2004 has destroyed various existing infrastructure facilities in the Simeulue Regency area but from the other side there were no casualties. For Sinabang City, the impact of the tsunami did not have much impact on infrastructure damage, but the damage to infrastructure in the Sinabang urban area was caused by the earthquake disaster before and after the 2004 tsunami disaster and aftershocks that occurred in early 2005 (Munadia & Umar, 2022).

From this explanation, it can be concluded that the impact of the 2004 earthquake and tsunami disaster has destroyed various infrastructure facilities in Simeulue Regency, especially for several districts adjacent to the coastline, but this did not happen in the Sinabang

City area due to the destruction of various infrastructure facilities in Sinabang City such as highways, Residential housing, government infrastructure, educational infrastructure and others were not caused by the tsunami disaster but were caused by the shock of the earthquake that occurred before the tsunami and the aftershocks after the 2004 tsunami. The following is an explanation of the impact of the 2004 earthquake and tsunami disaster on several infrastructures in Sinabang City that experienced.

Port. The impact of the 2004 earthquake and tsunami disaster on the infrastructure of Sinabang City was that there was a damage that was not too severe, only that there was cracking on several sides of the port so that the port could still be used by the community. However, after the 2004 earthquake and tsunami disaster during the leadership of regent Drs. Darmili, the ferry port was moved to the village of Batu City, East Simeulue District. The transfer was carried out because there was a density of population and shops built around the port, making the port area narrow (interview, Junaidi, December 09, 2021).

Highway. The absence of the impact of the 2004 earthquake and tsunami disaster on the destruction of road infrastructure in Sinabang City was due to the condition of the highways in Sinabang City at that time in the paving and hardening stage. After the earthquake and tsunami disaster, namely in 2005 the

highway in Sinabang City was again carried out with 11.4 km of paving and 3.3 km of hardening. Furthermore, the construction of a two-lane highway in the Sinabang urban area, namely in the village of Air Dingin to Suak Buluh village and a through road in the hilly area of Sinabang City from Suka Karya village to Amiria Bahagia village, which later along the road was built various government infrastructure, resident housing and regional general hospitals /RSUD (interview, Junaidi, 09 December 2021).

**Clean Water.** The occurrence of the 2004 earthquake and tsunami disaster resulted in the inability to distribute clean water sources such as PAM / PDAM to the community in Sinabang City which before the earthquake and tsunami disaster was a source of clean water supply for the people of Sinabang City. So that the community carries out other initiatives, namely using well water and rainwater for household purposes (Hamdia, 2010: 31).

**Government Infrastructure.** The occurrence of the 2004 earthquake and tsunami disaster had a positive impact on government infrastructure in Simeulue Regency, especially for Sinabang City, because the earthquake and tsunami disaster attracted the attention of various donor agencies such as GAA, Unicef, Cordait and BRR to carry out the rehabilitation and reconstruction of infrastructure buildings in Sinabang City. So that before the earthquake and tsunami disaster, the infrastructure buildings in Sinabang City were still simple and incomplete, so after the 2004 earthquake and tsunami disaster, it became better because the reconstructed buildings were already permanent building types. Some examples of reconstructed Sinabang City infrastructure buildings are the Simeulue Regency regent's office, the Simeulue Regency DPRK office which was originally built side by side but after reconstruction it was built separately. Furthermore, the construction of other government infrastructure buildings such as the Social Service Office, cultural arts building, the Simeulue Regency Sharia Court building, the Education Office office and others (interview, Mukhri Mayadi, October 07, 2021).

**Resident Housing.** The 2004 earthquake and tsunami disaster resulted in mild damage to the housing of residents around Sinabang City, but after the 2004 earthquake and tsunami disaster, damaged housing was rebuilt in the same place, only the type of building was permanent and some were built in different places due to land factors (interview, Junaidi, December 12, 2021).

**Market.** The 2004 earthquake and tsunami disaster had a positive and negative impact on the state of the market in Sinabang City, the negative impact was the destruction of existing shopping buildings, but from the destruction it also had a positive impact because after the 2004 earthquake and tsunami disaster the condition of shopping buildings was built better than before and the addition of more modern shopping places such as supermarkets. The types of

shopping buildings are also built in the form of concrete and some are also built with wood types (interview, Junaidi, December 12, 2021). Means of Worship. The impact of the 2004 earthquake and tsunami disaster on worship facilities in Sinabang City was the destruction and collapse of the Baiturrahmah Mosque which was a type of concrete building. After the disaster, the earth and tsunami rebuilt a mosque made of wood (interview, Junaidi, December 12, 2021).

### **Concept planned to reconstruct the infrastructure of Sinabang City after the 2005-2009 tsunami**

The 2004 earthquake and tsunami disaster has caused damage to several infrastructure buildings in Simeulue Regency and the Sinabang City area has attracted attention from foreign parties and disaster observers so that it sent a team to areas affected by the 2004 earthquake and tsunami disaster including to Simeulue Regency to record various infrastructure damages so that the local government submits data on damage in Simeulue Regency, especially in the City Sinabang with the aim of proposing various concepts that have been designed to reconstruct and rehabilitate various existing infrastructure facilities in Simeulue Regency, especially in Sinabang City. so that BRR, which carried out infrastructure reconstruction in Sinabang City, planned several concepts that referred to regional spatial plans, especially in Sinabang City.

### **The Process of Implementing infrastructure reconstruction of Sinabang City After the 2005-2009 Tsunami**

The local government conducts a site survey such as paying attention to land conditions, then compiling a planning concept for the redevelopment of Sinabang City infrastructure, the local government only proposes the concept that has been planned but on the other hand the donor country, namely BRR also has its own concept, so in this case the process of implementing the reconstruction of Sinabang City infrastructure after the 2005-2009 earthquake and tsunami disaster was carried out with the second consideration the concept

Furthermore, the process of implementing infrastructure reconstruction in Sinabang City is also carried out by following the guidelines for the concept of a city spatial plan prepared for Sinabang City The following is the concept of the city spatial plan prepared by BRR for Sinabang City, which is as follows:

### **Concept of Space Structure**

The spatial structure is developed based on two principles, the first is sustainability which concerns the carrying capacity of the land by minimizing erosion and enlarging the infiltration of seawater and rainwater, the second aspect of safety related to the ease of evacuation in conditions of earthquake and tsunami disasters. Sustainability is translated into the concept of compact development, then the two things above can be brought together in the form of a drainage network concept and a road that connects the hill and the coast of Sinabang Bay. The drainage network for Sinabang must serve to direct the run-off flow so that it does not pass through the residential area and at the same time serve to protect the area from run-off flows coming from hilly areas in the western part of Sinabang. In accordance with the pattern of the drainage network, a road network is made so that it can also be oriented in the same direction as the hilly part in the Western part, thus the road in Sinabang can function as an escape-route in the event of a tsunami disaster (Helmisyah & Rosyad, 2021).

Based on the allocation of the existing function space, the Sinabang City space structure can be divided into four types, namely: (1) First type of residence, this type of residence is divided into two: (1) separate residences / detached houses and (2) row houses or shophouses. Furthermore, Sinabang City there is also a separate type of residence located in the southwestern part of Sinabang City, which is near the market complex between the hill and a row of warehousing functions and factories along the coast. Meanwhile, the row residence is located in the southeast of Sinabang City along the main road flanked by the foot of the mountain and the beach is also adjacent to the trade function.

The function of trade, this function is in the middle of Sinabang City which is flanked by residential areas in the southwest and southeast and the port on the coastal side. Government function, this function is in the middle of Sinabang City, but it is more inward. Protective and buffer functions, this function can be categorized into (1) buffer areas along the coast that function as protection from wind and waves while ensuring the cleanliness of the beach, (2) buffer areas at the foot of the hill that function as escape hills and escape routes.

### **The Concept of Land Use Intensity**

Optimization of land use by increasing the intensity of land use by encouraging vertical development, but land use in Sinabang City has not moved far from existing functions such as housing, offices and trade. In addition, one of the

functions that needs to be thought about is the function of factories and warehousing which are currently located along the coast in Sinabang City. Development control in the hilly part west of Sinabang City also needs to be considered and must be limited so as not to cover the escape-route so that it can guarantee the public's function as an escape-hill.

Land use should also give directions to determine the intensity of land use. The intensity of land use is determined in the form of KDB (Basic Building Coefficient), KLB (Building Floor Coefficient), GSB (Building Commensurate Line), JLMD (Maximum Number of Floors Allowed) and the expected skyline shape in an area. In general, the direction of land use intensity for Sinabang City can be determined based on existing conditions and predictions for the future when the plan is implemented.

### **The Concept of a Moving Network**

Movement between parts of the area is developed by optimally utilizing the potential of land, walking and water vehicle media. In accordance with the concept of developing the spatial structure that has been explained, in addition to being intended to be an escape-route in the event of a tsunami, the road in Sinabang City is also directed to circle residential blocks. The following are some types of movement networks are: (1) Motor vehicle movement networks, this network follows the road hierarchy conceptualized for Sinabang City. The concept of the Sinabang City road hierarchy is the first four primary roads that follow the foot of the hills in the western part of Sinabang City, the second skunder road that surrounds the residential block and along the coast of Sinabang City, the third is the local road that cuts the residential blocks of the type of row houses or shophouses, this type of road also functions as a human circulation space when conditions are normal and can also be an escape-route in the event of a tsunami and fire disaster, the four circulation rooms behind the building also serve as an escape route in case of disaster. (2) Type of pedestrian councorse road which is not only a pedestrian facility but also asa public space such as an arcade or park. This type of movement network is usually directed to commercial zones and buffer zones, especially coastal buffers. Pedestrian councorse along the coast are an important part of good waterfront development. (3) Water circulation, in this case the coastline of Sinabang City which is deep enough can be a good location to be developed as a place to moor private ships in the form of a Marina which although the commercial port is planned to be moved out of Sinabang City. To support

the creation of a good waterfront along the coast of Sinabang City, it was conceptualized to become a Marina where ships or private boats could be moored. The advantages of mooring boats or private boats can be a new source of finance for local governments just like parking cars along the City's roads.

### **Utility Network Concept**

The entire utility network is conceptually expected to be developed based on an underground trajectory following a network of movement paths, so utility infrastructure development does not cross residential areas so as to reduce development funds or losses if an maintenance is invasive. The concept of utility development in Sinabang City meets two criteria as follows: (1) First, conceptually utilities in Sinabang City should be developed to cover a residential block. So each residential block at the block boundary is surrounded by utility conduits, a section of utility conduit can be used by several network systems such as electricity, telephone and clean water. (2) Secondly, conceptually the conduit must also comply with a kind of hierarchy, in accordance with the concept of space structure development, the utility conduit system can be divided into three types, namely (1) the primary conduit which is conceptually allocated extending parallel to the coast near the foot of the hills in the western part of Sinabang City, (2) the skunder conduit allocated relatively straight the primary conduit towards the coast, (3) a tertiary conduit that ensures that the conduit system surrounds the residential blocks. (4) Third, the type of conduit slowly permeates the emergency that becomes a residential block in Sinabang City and eventually ends up in the sea.

### **Waterfront Area Development Concept**

The waterfront area is fundamentally defined as a water space such as sea water, lake water and rivers meet the land room, thus all waterfronts such as beaches and riverbanks or any space that is an interface between water and land can be categorized as waterfronts. Based on this definition, Sinabang City is the confluence of the sea, beaches, rivers and settlements so that it can be said to be a waterfront city. Since there are plans to move the port from Sinabang City to outside Sinabang City, the seaside area of Sinabang City is conceptualized as a marina. Thus the function of the port that has historically formed Sinabang City is not completely lost but rather undergoes a transformation from a port of goods and sea transportation to a tourist port where various ships or tourist boats.

The development of the Sinabang City waterfront requires the transfer of the warehousing functions and factories that now exist along the coast to a new port area, besides that the development of the waterfront must also shift the orientation of the settlements that originally considered the waterfront as a backyard to be a public front yard.

### **The Concept of Public Space Movement**

Public spaces along the waterfront are developed by utilizing enriched movement pathways by encouraging private property to open up some of its space to be accessible to the public. Conceptually, there are five types of public spaces that will be developed in Sinabang City, namely as follows: (1) First, public spaces that function as a movement space both intended for vehicles and pedestrians. (2) Both public spaces that are open and specially intended for pedestrians. (3) The three open public spaces which are basically part of a certain private space, usually this open public space serves as a service area for trade facilities such as parking, loading docks and other service functions. However, for Sinabang City, the open public space in front of a trade facility is expected to function more as the main part of a trade zone such as seating visitors to coffee shops, lesehan, places to put merchandise and others. The four semi-enclosed public spaces are in the form of a selar or arcade located in front of a building that functions commercially. Apart from being a space for movement, selar or arcade also has the same function as the third type of open public space above. The difference between a cellar or arcade and a third category of public space lies in the function of movement and its delivery so that it can be used even though the weather does not allow humans to do activities in open spaces.

The five public spaces that function as service, the rear of the building which is usually called Brangang basically serves as for loading goods and other service activities. However, because Brangang can also be used as a parking lot and also an escape route, the space behind the building is also included in the category of public space.

### **The Concept of Parcels and Building Arrangements**

The shape of parcels and buildings is also determined by the intensity of land use that applies to an area. For houses or row buildings conceptually have a high Building Base

Coefficient (KDB) and a medium Building Floor Coefficient (KLB). The Basic Building Coefficient (KDB) for parcels of houses or row buildings averages 80-100%. The Building Floor Coefficient (KLB) for the zone ranges from 4 to 5 so that the maximum number of floors also ranges from 4 and 5. Such criteria for the intensity of land use direct that row buildings remain multi-storey buildings that walk up (climb up). In addition to houses or row buildings also conceptually in Sinabang there are also separate buildings, separate buildings require a building concept and a more open environment and then in principle a separate building has four faces. Separate buildings have two side views that can be the same but can also be different depending on the creativity of the architect and the wishes of the building owner.

### **The Concept of a Physical Profile of the Region**

All the concepts that have been explained before by taking into account the potential of the land in Sinabang can be combined into several types of regional profiles, the combination is expected to be a technical direction for the realization of the Sinabang City Spatial Plan in real terms. The following is an explanation of some combinations of types of regional profile types:

The first combination consists of elements of waterfront concourses, roads, sidewalks, arcades of row buildings and weangangs. The second combination consists of elements of a row building that generally serves as a shophouse. The third combination consists of separate building elements consisting of buildings with public functions such as government offices and others, buildings that are not walk-ups with a certain setback and various tread elements that generally exist in a public space and commercial zone. The fourth combination is a separate building that functions publicly like a government office. The fifth combination is a

separate building that serves as a dwelling and not a shophouse.

### **The Concept of Building Typology and the Concept of Disaster Mitigation**

Based on the function in the building and the type of structure and building materials, there are several building layout concepts that can be proposed for Sinabang, namely: (1) First, a light building made of wood. (2) Both buildings that use their second floors as public areas such as small offices and others. (3) The third is a modern and multi-storey public building with a modern structure.

### **Results of the Reconstruction of Sinabang City Infrastructure Carried Out**

The local government expressed its gratitude to donor agencies, especially BRR, for the results of the infrastructure reconstruction carried out in Sinabang City because considering that the infrastructure of Sinabang City before the reconstruction still looked sober, but after the reconstruction was carried out, some of the existing infrastructure in Sinabang City underwent changes for the better, thus there was no repellent or criticism from the community towards reconstruction infrastructure in Sinabang City that has been implemented

BRR, which carried out reconstruction and rehabilitation after the 2004 tsunami disaster, carried out several efforts to reconstruct existing infrastructure in Sinabang City, including the restoration and quality of religious life, education, health education and women's roles, government infrastructure, institutional and human resource improvement, construction of village offices, worship facilities, road and dock infrastructure. The following is a list of Sinabang City infrastructure reconstructed by BRR after the 2005-2009 earthquake and tsunami disaster in the inventory list of assets and GPS coordinate points within the BRR area of Simeulue District:

**Tabel 1.** The following is a list of Sinabang City infrastructure reconstructed by BRR after the 2005-2009

| Reconstructed fields                                                           | Types of Reconstructed                                                                                                                                                                                                                                           | Location and Year                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Restoration and Improvement of the Quality of Religious Life                   | -Office of the Department of Religious Affairs (DEPAG) of Simeulue County.<br>-Office of Religious Affairs (KUA) of East Simeulue District.                                                                                                                      | Lugu Village, East Simeulue District, 2006.<br>Suka Karya Village, East Simeulue District, 2006.                                                                                                                                                                                                   |
| Restoration and Development of Social and Cultural Religions Primary Education | -Cultural Arts Building.<br>-MTS Sinabang.                                                                                                                                                                                                                       | Suka Karya Village, East Simeulue District, 2007.<br>Sinabang Village, East Simeulue District.<br>Sinabang Village, East Simeulue District.                                                                                                                                                        |
| Education, Health, and the Role of Women                                       | -MAS Sinabang.<br>-Revitalization of health pharmacy buildings.<br>-East Simeulue State Junior High School 1.                                                                                                                                                    | Suka Karya Village, East Simeulue District, 2007.<br>Suka Karya Village, East Simeulue District, 2007.                                                                                                                                                                                             |
| MATRA Land                                                                     | -East Simeulue Koramil Office.<br>-Kodim Simeulue Housing.<br>-Office of Kodim Simeulue.                                                                                                                                                                         | Amiria Bahagia Village, East Simeulue District, 2006.<br>Suka Karya Village, East Simeulue District, 2006.<br>Suka Karya Village, East Simeulue District, 2006.                                                                                                                                    |
| Police                                                                         | -Simeulue Police Station.<br>-East Simeulue Police Station.<br>-Possal Simeulue.                                                                                                                                                                                 | Suak Buluh Village, East Simeulue District, 2006.<br>Sinabang Village, East Simeulue District, 2006.<br>Suka Karya Village, East Simeulue District.                                                                                                                                                |
| Improvement of Government Infrastructure                                       | -East Simeulue sub-district service house.                                                                                                                                                                                                                       | Suka Karya Village, East Simeulue District, 2006.                                                                                                                                                                                                                                                  |
| BRR - Institutional and Human Resource Improvement                             | -Construction of the Sinabang District Attorney's Office.<br>-Revitalization of the Sinabang District Court Service House.<br>-Simeulue County DPRK Building.<br>-Bawasda Office Building.<br>-Social Service Office Building.<br>-Sharia Court Office Building. | Suak Buluh Village, East Simeulue District, 2007.<br>Sinabang Village, East Simeulue District.<br>Cold Water Village, East Simeulue District.<br>Amiria Bahagia Village, East Simeulue District.<br>Amiria Bahagia Village, East Simeulue District.<br>Suak Buluh Village, East Simeulue District. |

|                                                                                 |                                                                                                                                                                                                 |                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                 | -Office of the Department of Education.<br>-Office of the Community Empowerment Agency.<br>- Regional Revenue Service Office.                                                                   |                                                                                                                                                                                                                |
| Construction of Village Offices                                                 | -Amaiteng Mulia village office.<br><br>-The village office is innocent.<br><br>-Crowbar Village Office.                                                                                         | Amaiteng Mulia Village, East Simeulue District, 2007.<br>Lugu Village, East Simeulue District, 2007.<br>Linggi Village, East Simeulue District, 2007.<br>Amiria Bahagia Village, East Simeulue District, 2007. |
| Rehabilitation and Reconstruction of Worship Facilities of Simeulue District    | -Amiria Happy village office.<br>-Construction of Riyatul Jan-nah Mosque.<br>-Construction of Nurul Huda Mosque.<br>- Construction of isiqamah mosque.<br>-<br>-Construction of Al Huda Mosque. | Kolok Village, East Simeulue District, 2007.<br>Sinabang Village, East Simeulue District, 2007.<br>Suka Maju Village, East Simeulue District, 2007.<br>Suka Karya Village, East Simeulue District, 2007.       |
| Road Rehabilitation and Reconstruction                                          | -Jalan Pasar Inpres Air Dingin (RRJK).<br><br>-Rehab - Translucent Road Recon.                                                                                                                  | Suka Karya Village, East Simeulue District, 2005.<br>Amiria Bahagia Village, East Simeulue District, 2007.                                                                                                     |
| Maintenance, Rehabilitation, Elevation, and Construction of Land Transportation | -Sinabang Crossing Port.                                                                                                                                                                        | Kolok Village, East Simeulue District.                                                                                                                                                                         |

(Inventory List of Assets and GPS Coordinate Points Within the BRR Region of Simeulue District)

### Community's Conformity and Expectations for the Results of the Reconstruction That Has Been Carried Out

In the recovery period after the 2004 earthquake and tsunami disaster, the results of the reconstruction carried out were in accordance with the expectations of the community at that time, but if reviewed at the current conditions, there was a discrepancy with the expectations of the people of Sinabang City from the results that had been reconstructed. Regarding residential housing, in this case, there are people who have

a problem because for residential housing itself, it is not only reconstructed by the BRR institution but many other donor agencies such as *Non-Governmental Organizations* (NGOs), *United Nations Children's Fund* (Unicef) and others, so that the form and type of community housing in Sinabang City is reconstructed after the 2005-2009 earthquake and tsunami disaster. vary.

### CONCLUSION

The state of Sinabang City's infrastructure before the 2004 tsunami was still in the development stage because Sinabang City had just undergone a change in status, namely from a *kewedanan* to a regency. So various

infrastructures are still very simple and not yet fully available. The 2004 earthquake and tsunami disaster which resulted in mild damage to several infrastructures in Sinabang City, this was due to several factors including the type of infrastructure buildings in Sinabang City still made of wood, furthermore, the impact of the tsunami only occurred inundation of sea water that rose to the emergency and did not damage the existing infrastructure.

The Rehabilitation and Reconstruction Agency (BRR) after the 2004 Aceh-Nias earthquake and tsunami disaster compiled several concepts to reconstruct the existing infrastructure in Sinabang City, the concept refers to the concept of a city spatial plan designed for Sinabang City, namely the concept of spatial structure, the concept of land use intensity, the concept of movement networks, the concept of utility networks, the concept of developing waterfront areas, the concept of public space, the concept of parcels and building arrangements, the concept of regional profiles as well as the concept of typology of building arrangements and the concept of disaster mitigation.

The process of implementing the reconstruction of the infrastructure of Sinabang City after the 2005-2009 tsunami was carried out following the concept of Sinabang city spatial planning. The result of the process of implementing the reconstruction of the infrastructure of Sinabang City after the 2005-2009 tsunami is to make the infrastructure buildings of Sinabang City more adequate than before reconstruction. With regard to public satisfaction with the reconstruction carried out at that time there was no criticism or repellent but over time it gave rise to various different points of view on the results of the reconstruction that had been carried out. Some suggestions that can be given are:

To the local government to unite to maintain and continue and so on to the infrastructure that has been reconstructed. To the next researcher to make the thesis as one of the reference sources for the next research. To the community to be grateful and grateful for the results of the reconstruction that has been carried out.

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