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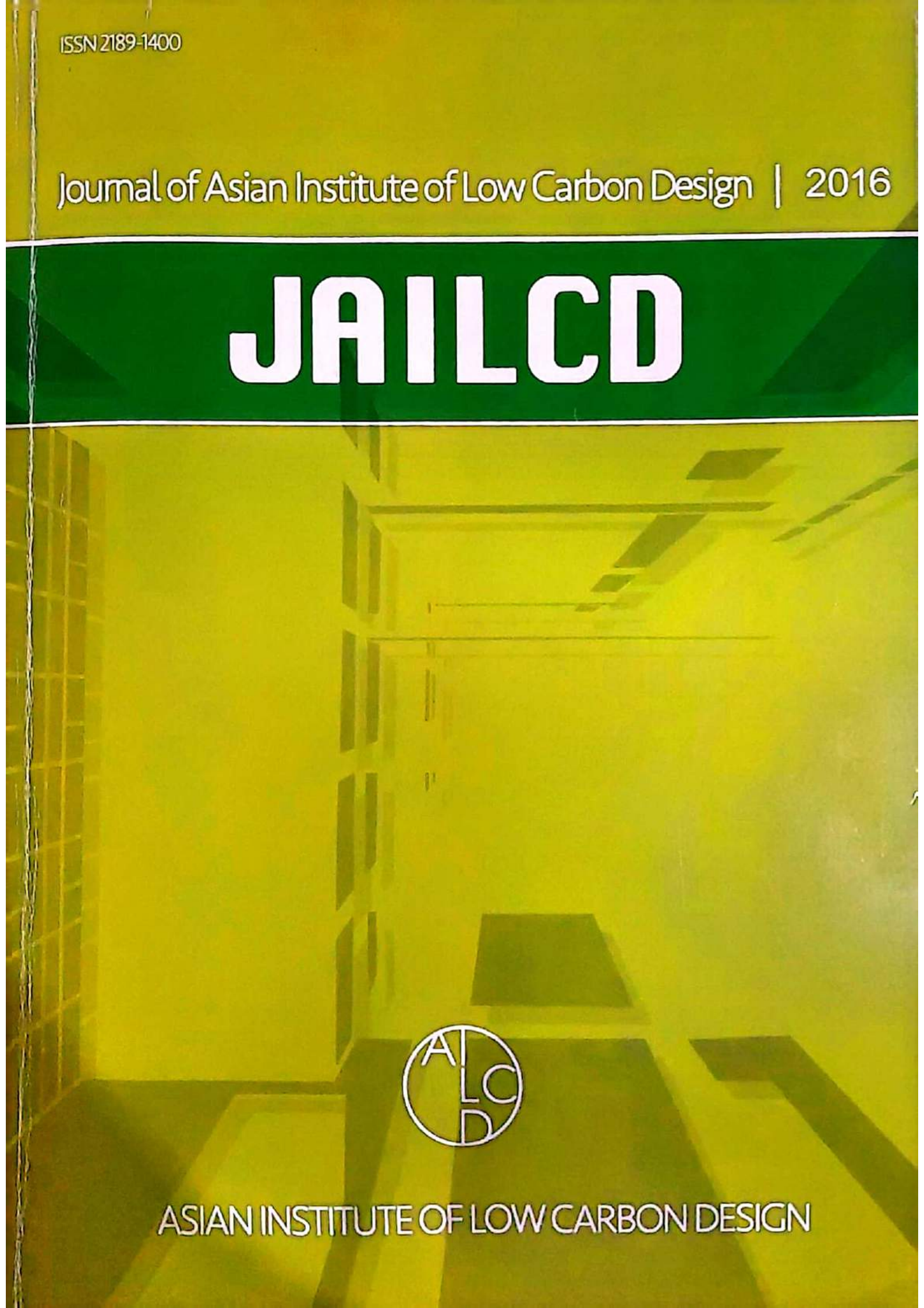
JAILCD



ASIAN INSTITUTE OF LOW CARBON DESIGN

Journal of Asian Institute of Low Carbon Design

An International Journal of Research Applied to Low Carbon Design in Asia

Scope

Journal of Asian Institute of Low Carbon Design is an international journal for publication of original results of research activities conducted by the building science community, concerned with various aspects of low carbon design, which includes environmental improvement in building field, urban and regional planning, and architectural design. Its scope covers all topics that can introduce low carbon design in the built environment, such as:

- Planning approaches for sustainable development.
- City planning, development and management.
- Landscape planning and design.
- Urban design and urban infrastructure.
- Accessibility in cityscape and development issues.
- Energy consumption.
- Energy and the environment.
- Water environmental improvement.
- Planning and design for risk and natural hazards.
- Sustainable public transport systems.
- Cultural development and awareness.
- Balancing heritage conservation and development.
- Planning for public health.
- Climate change and ecological planning.
- Building physics and technology.
- Architecture and urban design education.
- Sustainable design and configuration of sustainable cities.
- Forms and aesthetics in architectural designs.
- Sustainability and architecture.
- Other topics related to low carbon design.

Types of Contributions

Original research papers - Reviews of specialized topics - Technical notes (max. 4 pages) - Research communications -Reviews of books and reports - Notices of meetings and conferences.

Orders, Claims, and Product Enquiries

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Editorial Board of This Issue

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JAILCD 2016

Journal of Asian Institute of Low Carbon Design

Contents

Section 2: Energy and Environment

Section 3: Urban Planning and Sustainable Development

Original Design Article

International Conference on Low Carbon City Design

2016 Feb.15th – 19th, The University of Kitakyushu

International Workshop and Conference "Re-Ruralize the Orio – Hibikino Urban Fringe", Kitakyushu (Japan)

Hosted by

Asian Institute of Low Carbon Design (AILCD)

Co-hosted by

The University of Kitakyushu

Sustainable City Asia Institute, Saga University

Asia Institute of Urban Environment

Supported by

West Japan Industry and Trade Convention Association, The City of Kitakyushu

Preface

Asian Institute of Low Carbon Design is actively mainstreaming the low carbon principles through international design competitions, conferences, workshops, and various student exchange programs where students, practitioners, and researchers from different countries exchanged their ideas and recent researches. As for this year, we have taken the main theme of Re-ruralize the Orio-Hibikino Urban Fringe which was basically derived from the phenomenon of urban shrinkage. Urbanization has probably encountered its turning point. In low carbon city, a compact urban area where people can live closer to their workplaces is expected to reduce travel distances and alleviate transportation demand. Reduced travel distances, in turn, will promote a shift from passenger cars to bicycles or walking.

The shift to a compact urban structure should be tackled uniformly across sectors to allow cities to shift to low-carbon, high-efficient energy systems. A highly dense and complex land use in integrated centers can enhance energy efficiency. It is also important to pay attention to greenery as a key element in defining urban structures in order to switch to a low-carbon city. Greenery is not only a source of CO_2 sink, but also mitigation of urban micro climates.

These discussions were captured and elaborated in the Journal of Asian Institute of Low Carbon Design (JAILCD) of which contains quality research and design papers from all over the world such as Afghanistan, China, Indonesia, Japan, Taiwan, Thailand, Vietnam, and many others. These papers were categorized in several sections such as: Architectural Design; Energy and Environment; and Urban Planning and Sustainable Development. Therefore within this opportunity I would like to show my countless gratitude to the supports of all friends and colleagues from different countries who have been contributing and who will collaborate and work together with us for a better common future of the earth.

黒木荘一郎

Soichiro KUROKI
President
Asian Institution of Low Carbon Design (AILCD)

PART I

Original Research Articles

Section 1

Architecture and Design

Local Wisdom Ethnic Sunda in Restructure Sustainable Patterns of Kampung Naga Settlement

Nur Intan Mangunsong

Lecturer, Department of Landscape Architecture, University of Trisakti

Abstract

Sustainable development is development that is useful in life today and in the future and provide benefits for human life. The concept of sustainable development is not only oriented to environmental aspects, but also oriented towards aspects such economic, technological, social, cultural identity or its identity. In the perspective of establishing, local wisdom is a human identity and the identity of the community. Sundanese traditional settlements adapted to the habits, customs, shared values and beliefs. Philosophically, they have an understanding intended to respect the natural surroundings and according to the belief system of hereditary believe that the ideal life is to be in harmony with nature. This study aimed to examine the philosophical significance of local wisdom Sundanese Kampung Naga and the important role of the values of local wisdom in the process of sustainable spatial planning. The problem is what are the values of local wisdom Kampung Naga which must be protected and preserved as a reference in the sustainable spatial planning process? A literature review was undertaken to understand the existence of Kampung Naga and their tradition, culture, norm, nature relationships, their landscape and architecture expressions. At Kampung Naga society there are many restrictions as a customary rule in respect of forest. Abstinence is a myth which is adhered to by the entire society Kampung Naga. With this myth, the forest can be conserved because of the people are afraid to break the taboo. Impact of the Spatial Pattern Sundanese Kampung Naga embraced the values of Traditional Architectural Culture: (1) Safety and security of life is achieved through the belief in the supernatural forces beyond human ability itself (2) The principle of simplicity is used to achieve safety and security. Shapes, materials, ceremonial, decorative, based on the function and purpose. (3) The principle of community togetherness in achieving a goal. This similarity is seen in doing traditional buildings, there are no differences were striking in terms of form, as well as the building. (4) Type of religious buildings get a good place in society, showing that the values and attitudes of religious life is deeply rooted in society Sunda. This paper shows that the values of local wisdom are making human relationships in harmony with the natural environment.

Keywords: local wisdom; sustainable; traditional

1. Introduction

Kampung Naga is a traditional village, located between two hills at the banks of the river Ciwulan with an area of approximately 4 hectares, surrounded by hills, there are springs, forests, fertile soil and good air flow. A unique community life, has not been contaminated by the cultural change. They can blend in with modern society, Moslems, but still maintains strong traditions of their ancestors.

In maintaining the continuity of settlement, Naga society tries to use natural resources without destroying it. By combining simple technology and concern for natural resources, community process natural optimally to meet the various needs of their lives (2).

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Tel: +62 21 5663232 ext 8768 Fax:+62 21 5602575
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1.1 Goals

This study aimed to examine the philosophical significance of local wisdom Sundanese Kampung Naga, low carbon community lifestyles and important role of the values of local wisdom and in the process of sustainable spatial planning.

2. Methods

This research was conducted by descriptive method, analyzes the pattern and spatial zoning of Kampung Naga. By exploring belief systems and cosmology that is reflected from the laying and the nature of space. The concept of spatial planning is closely related to human activities and culture. The discussion extended to various aspects are closely related to local knowledge generated as legacy technology community construction, use of materials, recycling of resources that are all environmentally friendly. The collection of secondary data including the socio-culture, traditions, norms and the physical environment of the villages related to local wisdom done by literature study (maps and images from various sources such as books, documents and the articles in the media that are highly relevant to the object of study.

2.1. Against Belief Systems Spatial Form

The relationship between humans and the environment is shown through spiritual, physical and cultural processes where the process includes perceptions, sensations, beliefs, ideas, doctrines and values that are characteristic of human knowledge. Awareness to preserve the balance of nature has existed throughout the history of human life according to the way of thinking and traditions of his time. Various kinds of taboo customs, ceremonies, folklore, full of symbolic meanings that express cultural messages to preserve and protect nature (1).

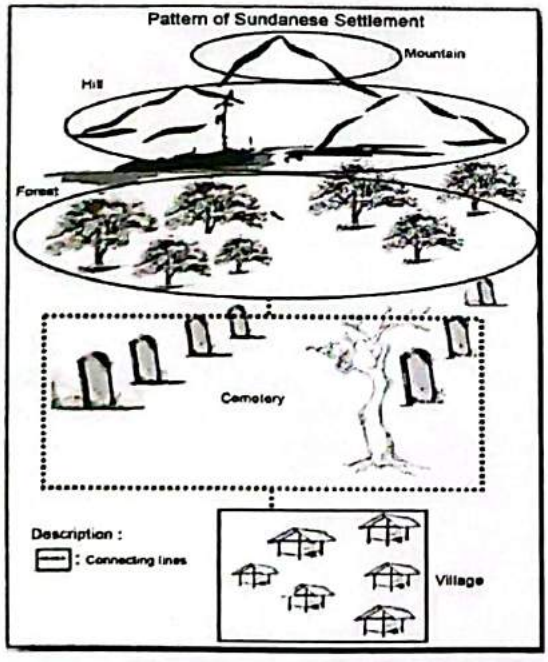

Fig.1. Sunda old settlements in the three categories of unity, in conjunction with the spirit world. (3)

Its application to the spatial division is a sacred space take an area of higher topography, lower topography is a place that is considered dirty / impure.

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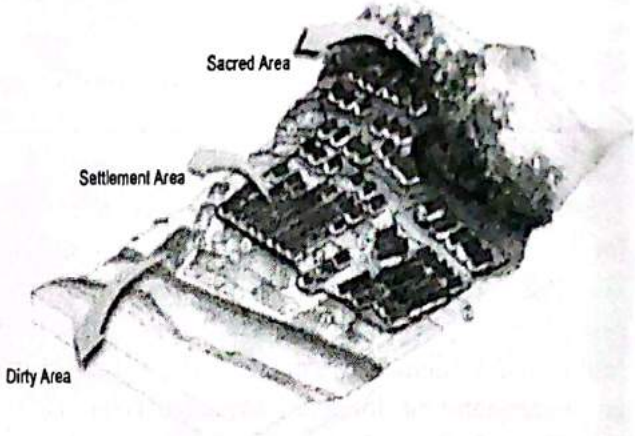

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2.3. The concept of residential placement for the sustainable environment (2)

- **Orientation toward the West-East**

The orientation of the roof of a residential building to the east. This results in a simple manner settlements remain cool due to prevent the building from direct sunlight .

- **Cluster and follows the contours**

Some single buildings form a cluster or set into a residential community that is located slope of the mountain with the characteristics of the location and contour. The development of this contour in accordance with the principle of harmony with nature, do not cut and fill to minimize the possibility of landslides and erosion.

- **Communal Pattern**

Strong family systems to form a pattern arrangement communal house groups. The house is occupied for generations did not move as well as the ban on building homes that exceed the amount of current (111

homes). Land capacity is relatively fixed, not increased.

- **Laying ponds and paddy fields**

Ecologically, the placement of the house surrounded by fish ponds and rice fields produce a microclimate is cool, psychologically gives a sense of security and technical composition of the tread adjacent to the river structures to facilitate activities related to water demand.

- **Harmony with nature**

The characteristics of the architecture naturally follow the selection process carried out by the forces of nature has been tested well in adapting to the natural behavior. We see here the people of Kampung Naga tried to maintain harmony between man and the natural environment resulting in the sustainability of life.

- **Protection of forests**

At Kampung Naga society there are many restrictions as a customary rule in respect of forest. The ancestral graves tomb Sembah Dalem Singapurana highly respected and cherished them, so the whole forest area where the tomb was located and the surrounding environment is very guarded and sacred and into the forest ban. To preserve the sanctity of the forest, enforced abstinence into the woods except for the sake of pilgrimage. With this myth, there is forest conservation because of public fear of breaking taboos. In addition to protection, use and management of forest areas is regulated by residents of Kampung Naga. Forests as a border village is maintained. Wide and the border region of Kampung Naga virtually unchanged since time immemorial.It is as limiting the development of space formations in Kampung Naga. Communities take plants directly from the garden.

2.4. Local Wisdom Kampung Naga Ancestra Heritage

One of the holistic approaches to cut carbon emission that contributes by mankind's activity is through the concept of low carbon society (4).

a. Simplicity

Reflected in the area of building homes that range between 30-60 m2 made from natural materials such as wood, bamboo, palm fiber and leaves Tepus which has proven its strength. Necessity in the uniformity of materials, shape, color and direction of the house is a heritage so that people avoid social inequalities and living in harmony with one another.

b. Construction and building materials

Using natural materials, especially wood and bamboo, must not use concrete. Roofs must be of a palm leaf, palm fiber, Tepus leaves, reeds, home floor should be made of bamboo or wooden planks. The wall is made of a cubicle or woven bamboo with woven sasag. This natural material strength and resilience has been tested by nature. The house should not be painted, except limed or 'meni'. Not using fabrication materials, the characteristics of the tectonic structure of the house has a stretch adapted to the natural materials.

1. Preparation of palm fiber roof

Characteristics in laying the roof fibers, typically steep slope so that rainwater can flow more quickly, and every curve of the roof is always slightly curved to prevent water from seeping. Community rejects the entry of electricity network because this material is flammable.

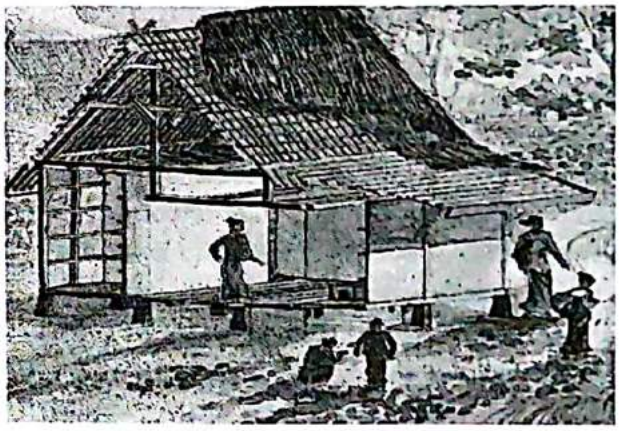

Fig.3. Using natural materials elastic structures can survive in the earthquake (2)

2. Use of pedestals

Construction at the foot of the building using stone pedestals are composed of natural surroundings. This structure is the result of technology from their local knowledge to keep the earth / not exploit nature.

3. Order houses and walls

Order houses made of wood with a height of 40-60 cm above the ground so as to form under in an attempt to enter the air flow into the house from the bottom of the house and serves as a chicken coop. Less pollution is generated, light load building materials that must be sustained.

4. Earthquake resistant structure

Building construction elements such as the roof, pillars, frame walls are connected by means of nailing,

tied with a string of bamboo. Another way is to make a hole or pen (bulge at the end of the beam size as the size of the hole). Floor beams simply superimposed on a stone foundation. Systems such as these elastic structures and can survive in the quake.

5. Sengkedan (Landslide Protection) System

- Because it is located between the hills, partly land settlement Kampung Naga fairly steep sloped so prone to landslides. Technology from ancestor to overcome this problem is to draw up a stone as a barrier to the swale system. The stones were taken from the river Ciwulan organized into sengked (landslides protection) with a height varying between 40 centimeters to 6 meters.
- Use Sengkedan System makes residential land becomes more stable so that the building can be erected. Moss growing between the rocks stones swale attach to each other so as to strengthen the construction sengked (landslides protection).

6. Recycling Water

Naga society tries to use natural resources with simple technology. Water resources optimally processed and recycled as a form of concern for the harmony of nature that occurs between human life and its environment.

Local wisdom of water resources can be seen from the multi-purposes uses. Balong function as pond fish farming as well as natural precipitate cesspool of human waste. Activities of washing, bathing, defecating and urinating take place in the Jamban (latrines/toilets). Dirty water from the the latrines flowed directly to balong (pond).

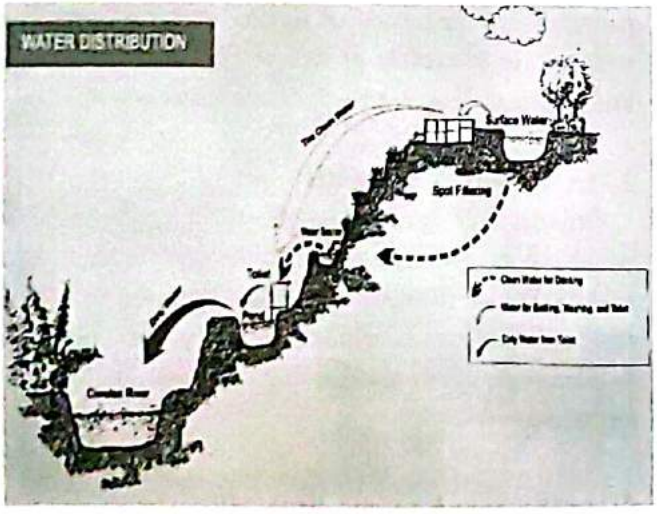

Fig.4. Recycling water process (2).

7. Recycling Food

Jamban (as a resident's lavatory) and Saung Lisung (a pound rice that produce waste collisions rice) were placed on the edge of the pond with a purpose, human waste from latrines and bran residual impact of rice from Saung Lisung are source of food for fish in balong (pond). Furthermore, the fish consumed by humans and repeated again to form the recycling of food.

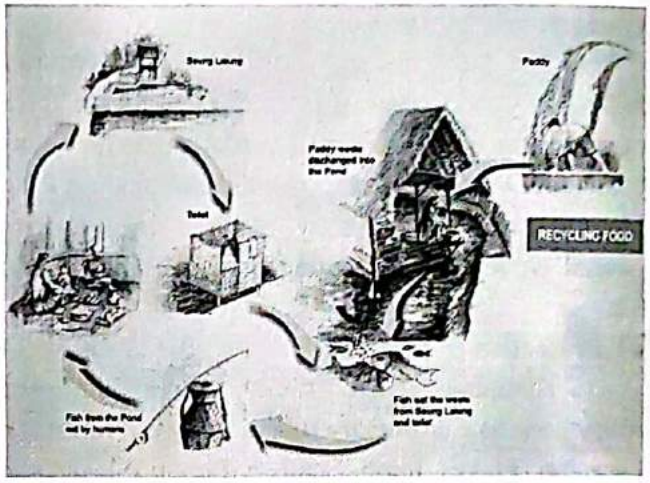

Fig.5. Recycling food process (2).

3. Conclusions

The results of the study showed that Kampung Naga had done low-carbon community lifestyles. Based on the use of environmentally friendly technologies and recycling natural resources to maintain the viability of the ancestors. Local wisdom values, beliefs and lifestyle of Kampung Naga applied proved relevant in realizing the concept of sustainable development. Low- carbon sustainability most lucrative approach is an environmentally friendly behavioral change in the grow attention of pro-environmental protection and energy conservation that funded by communities where public look for involving in practice that will lower their consumption and waste.

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by Kitakyushu Nim

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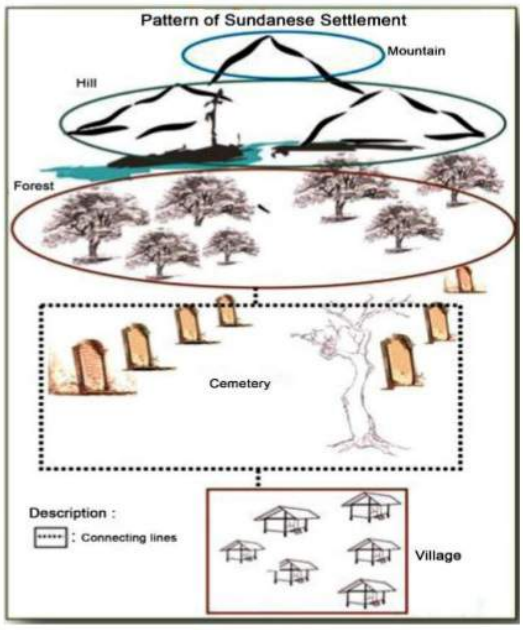

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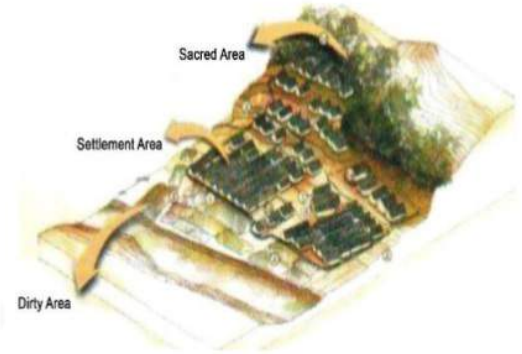

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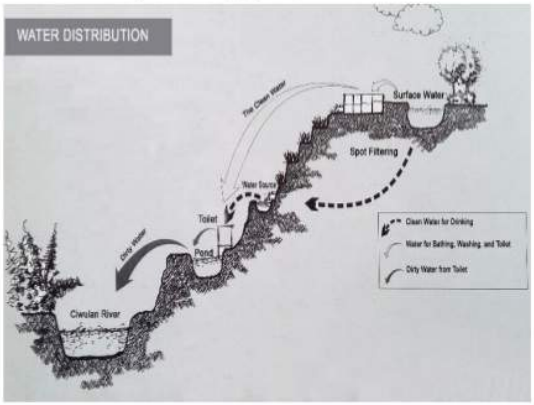

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7. Recycling Food

Jamban (as a resident's lavatory) and Saung Lisung (a pound rice that produce waste collisions rice) were placed on the edge of the pond with a purpose, human waste from latrines and bran residual impact of rice from Saung Lisung are source of food for fish in balong (pond). Furthermore, the fish consumed by humans and repeated again to form the recycling of food.

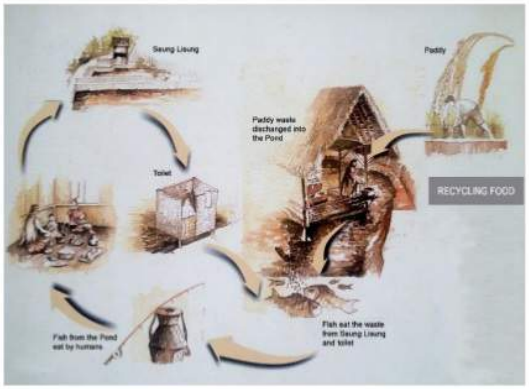

Fig.5. Recycling food process (2).

3. Conclusions

The results of the study showed that Kampung Naga had done low-carbon community lifestyles. Based on the use of environmentally friendly technologies and recycling natural resources to maintain the viability of the ancestors. Local wisdom values, beliefs and lifestyle of Kampung Naga applied proved relevant in realizing the concept of sustainable development. Low- carbon sustainability most lucrative approach is an environmentally friendly behavioral change in the grow attention of pro-environmental protection and energy conservation that funded by communities where public look for involving in practice that will lower their consumption and waste.

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