

# Food Sustainability in Local Wisdom Perspective of the Indigenous People Dayak Tomun Lamandau

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**Keywords:** Sustainable Development, Food Sustainability, Local Knowledge, Local Food Security, Indigenous People.

**Abstract:** One of the focuses of sustainable development goal is Zero Hunger program. This program requires food availability and sustainable agricultural managements. The Indonesian government has issued a law and its derivatives in order to meet the national food availability. Indonesia as an agricultural country should not have always been imported foods in order to meet the needs, especially in its fulfilment for domestic consumption. This is because the Indonesian farmers across generation who are in direct contact with food sources have local wisdom to manage and fulfil the needs in a sustainable manner, even though only for small scale or domestic scale. Based on the description above, the purpose of this study is to describe food sustainability in the perspective of local wisdom of the indigenous Dayak Tomun Lamandau community by using descriptive qualitative research methods. This research was conducted on the indigenous Dayak Tomun Lamandau community in Sungai Buluh Village, Lamandau Regency, Central Kalimantan. This study found that a local knowledge, that is a sustainable food processing, has been passed down across generation. This local knowledge has been proven to successfully maintain the availability of food in granaries that last for years. This adaptive behaviour prevents local people from food crisis.

## 1 INTRODUCTION

One of the goals of the Sustainable Development Goals (SDGs) is the program to end hunger (Zero Hunger), which also discusses food security, improved nutrition and proclaimed sustainable agriculture (Sutopo et al, 2014). Before the concept of SDGs appeared related to zero hunger, the Indonesian government had initiated various policies to meet the need for national food from the days of President Sukarno to President Jokowi. However, until now, the policies issued by the Government are still focused on rice consumption (Lassa, 2005; Saragih, 2016). For more details, see the table below:

Table 1: History of Indonesian food policy.

Government Regime	Food Policy
Sukarno	Food Self-Sufficiency
Suharto	Food Self-Sufficiency
B. J Habibi	Food Self-Sufficiency
Abdurrahman Wahid	Food Self-Sufficiency

Megawati	Food Self-Sufficiency
Susilo Bambang Y	Agricultural Revitalization
Joko Widodo	Food Self-Sufficiency

Source: processed data, 2021

Based on the history of food policy in Indonesia from the era of the Sukarno administration to the Jokowi administration, the Government has issued 18 policies on food institutions (Saragih, 2016). This policy change shows that the Government has put more attention to the availability of national food. However, the changes in food policy from the ruling regime made the Government not focus on taking care of food.

However, the policies that have been issued by the central government have not been able to actualize national food independence and security. This is because food security is only interpreted as the availability of food for its citizens, not about food sovereignty. The government does not focus on the origin of food as long as national food needs can be met so that the concept of food security only creates dependence on imports.

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Food import activities are not prohibited as long as domestic food production cannot meet the demand for food needs. This is also stated in Law Number 18 of 2012 concerning Food, where the government can carry out food import activities if food is fulfilled for the State up to individuals, which is reflected in the availability of sufficient food, both in quantity and quality, safe, diverse, nutritious, equitable and affordable and does not conflict with the beliefs and culture of the community so that people can live healthy, active and productive in a sustainable manner.

Food sustainability should be interpreted as food sovereignty. Food sovereignty can be actualized if it relies on resources owned by local communities. It is in contrast to food security which relies on companies to control and replace the role of farmers (Wahono, 2008). Wahono also emphasized that the continuous rice import policy is a policy that only focuses on food security, not food sovereignty.

Indonesia as an agricultural country should not always import all types of food to meet national and regional food needs, especially the compliance of food for domestic needs. Indonesian people who have lived as farmers across generation and have direct contact with food sources have local knowledge and wisdom in managing food for sustainable food compliance, even though only on a small scale or for domestic needs.

This paper contributes thoughts on the issue of food security, especially for domestic food security in the context of indigenous peoples. In this paper, it is emphasized that if the ability and local knowledge of indigenous peoples is properly maximized, then the community can meet their food needs in the context of domestic food sustainability so that it will have an impact on meeting food needs in the national context. In addition, to realize sustainable food, the government should focus on policies that emphasize the diversity of local food sources according to the geographical conditions of each region, not on uniformity of food (rice) because based on several literature studies, not all indigenous people in Indonesia consume rice as a source of carbohydrates.

Based on the description above, this paper will describe food sustainability in the perspective of local knowledge of indigenous Dayak Tomun Lamandau community.

## 2 METHODS (AND MATERIALS)

In retrieving data in the field, the writer uses qualitative methods with a descriptive approach. The

informants are determined using the Snowball Sampling technique. The writer first selected an informant who is considered to have mastered the material to be studied. Then from this one person the writer asked for recommendations from the next person to be interviewed. This activity was repeated until the author found a saturation point in obtaining data information.

The key informants selected were Damang (chairman of the customary council) and Manter Adat (leader of traditional ceremonies). This research was conducted in the Indigenous community of the Dayak Tomun Lamandau community in Sungai Buluh Village, Lamandau Regency, Central Kalimantan. The data collection methods used by the writer are observation, interview and documentation.

After all the data from the field has been collected, the next step is to analyze the field data by reducing data, presenting data and drawing conclusions and verification (Silalahi, 2010).

## 3 RESULTS AND DISCUSSION

### 3.1 The Dynamics of Food Security in the Jokowi Era

In the span of two times the administration of President Joko Widodo, Indonesia has experienced dynamics and several policy changes related to food security. During the first period of government, Jokowi-JK's food policy was contained in Nawacita I and in the second period of the Jokowi-Amin Administration, food policy was contained in the Nawacita II program or Nine priority programs, which became the basis for the government's work at that time.

Nawacita consists of 31 programs divided into nine main priority programs. Building food sovereignty is included in the seventh Nawacita program (Soleman & Noer, 2017). The following are nine priority work programs or Nawacita in the Jokowi era (Supriatna, 2021):

- 1) Protecting Nation and providing security to all citizens.
- 2) Establishing clean, effective, democratic and reliable governance.
- 3) Constructing Indonesia by strengthening regions and villages within the republic.
- 4) Forming a dignified, reliable, and corruption-free system and law enforcement.

- 5) Improving the quality of life of Indonesian people.
- 6) Increasing people's productivity and competitiveness in the international market.
- 7) Actualizing economic independence by moving strategic sectors of the domestic economy.
- 8) Revolutionizing the nation's character.
- 9) Strengthening Unity in Diversity and strengthening Indonesia's social restoration.

To actualize the food policy in the President Jokowi's administration which focuses on improving the welfare of farmers, the important foundations that must be underlined are first, sufficient food for the community; second, reducing poverty and; third, the welfare of farmers. These three elements are implied by the government in the breakthrough program of agricultural development policies through land optimization, increasing planting area, improving infrastructure, increasing human resources (HR) and assistance with farming facilities (Saptana et al., 2013).

Adding to above, Wuryandani said that Nawacita's priority agenda is aiming at sustainable agricultural development to actualize food sovereignty, so that the Government can regulate and fulfil people's food needs sovereignty. Food sovereignty can be translated in the form of the nation's ability in terms of: (1) meeting food needs from domestic production, (2) regulating food policies independently, and (3) protecting and prospering farmers as the main actors in the food agriculture business (Wuryandani, 2015).

In order for food sovereignty to be actualized, a policy is needed as a guide in mobilizing the various available resources so that the Nawacita program can run as expected. Prior to President Joko Widodo's term in office, Indonesia had Law No. 18 of 2012 concerning food. An important point that must be underlined in the food law is the even distribution of food production, distribution and consumption throughout Indonesia.

After the policy on food was issued in 2012, Indonesia has still been importing food to meet the national food needs. It was only in 2016 that Indonesia was recorded not import food.

However, based on the literature there is out of sync information on food imports in 2016. The results of research conducted by Kusumah, said that in 2016, Indonesia had imported 1,283,178 tons of rice, this number was higher than in 2015 (861,601 tons), in 2017 (305,275 tons) and in 2018 (2 million tons). The increase in imports occurred in 2016 was because the

government had issued import permits twice (Kusumah, 2019).

It differs from the Ministry of Agriculture's report, where in 2016, Indonesia did not import medium rice. Based on the results of the report, it is stated that the rice imports in early 2016 were the result of the Bulog import contract in November 2015. The absence of import activities in 2016 was because Indonesia was self-sufficient in rice since all the rice consumption was met by domestic production. Besides, there are no recommendations and permits for rice imports (Aziz, 2018).

In addition to the data, the Food Security Agency reported that in 2016 it was estimated that Indonesia had a rice surplus of 10.5 million tons, while the Directorate General of Food Crops also reported that in the same year Indonesia had a surplus of 12.4 million tons of rice. Based on this, in 2016 Indonesia exported 2,506 tons of rice (Suryana et al., 2018; Aziz, 2018).

The dynamics of food security in the Jokowi era is the result of import policies that are influenced by interventions from the Ministry of Trade, Ministry of Agriculture, Bulog and DPR. There were pros and cons to differences in data, proving that each actor had an interest and wanted to turn it into a policy. This difference was used by the Ministry of Trade and the Ministry of Agriculture as a basis for legitimacy to achieve interests in rice import policies. The rice import polemic in the Jokowi era occurred because of corruption cases and the food mafia, such as in the case of rice imports before the Jokowi administration era (Kusumah, 2019).

Based on the above phenomenon, it shows that food problems in Indonesia occur because the food management system is handled by the Ministry, BUMN and the private sector, giving rise to interest in rice import policies. In order to achieve national food security, it is necessary to involve villages and indigenous peoples so that the program can be achieved and on target.

Based on the literature, the import policy to achieve national food security carried out by the Government has a negative impact on local farmers, especially smallholders and subsistence farmers (Putra, 2019). The same thing happened to the Dayak Indigenous Peoples in Central Kalimantan, especially the Dayak Tomun Lamandau. Where the food import policy makes the existence of cultivators disappear. This happens because the government only focuses on making policies to meet national food needs without paying attention to access to local food sources.

The results of a study conducted by Dey and Djumaty, show that there are various problems experienced by the Dayak Indigenous People because local wisdom such as farming by burning is prohibited and until now there has been no concrete solution provided by the Government so that the Jurung/granary, that becomes a symbol of food resilience, becomes empty (Dey and Djumaty, 2021). This can make the Dayak Indigenous People vulnerable to food crises.

### 3.2 Archipelago Food Diversity

Indonesia occupies the second position in the world that has mega biodiversity after Brazil. However, if all of Indonesia's biodiversity on land and at sea is combined into one, it will occupy the first position compared to Brazil (Hanum, 2020).

Reports from the Indonesian Institute of Sciences show that Indonesia's biodiversity is recorded as 1,500 species of algae, 80,000 species of spore plants, 595 species of lichen, 2,197 species of ferns, 30,000-40,000 species of flora, 8,157 species of vertebrate fauna, 1,900 species of butterflies. The endemic fauna species are 270 species of mammals, 386 species of birds, 328 species of reptiles, 204 species of amphibians, and 280 species of fish. The level of endemic Indonesian flora is recorded between 40-50% of the total flora species on each island except for the island of Sumatra whose the endemic estimated to be only 23%. The diversity of Indonesian ecosystems is known to be around 74 types of vegetation forming very complex formations (Widjaja et al., 2015).

The biodiversity has been beneficial in terms of health, renewable energy sources, ecosystem services and food sources (Samedi, 2015). Sources of food are divided into several types, namely carbohydrates, animal and plant-based protein and food reserves (Widjaja et al., 2014).

Indonesia has the potential of 5,529 types of food crops, but only 100 carbohydrates sources, 100 types of nuts, 250 vegetables and 400 types of fruits are utilized (Arif, 2020). In contrast to the results of Arif's research, based on a report from the Food Security Agency of the Ministry of Agriculture, there are 77 types of carbohydrate sources, 26 types of nuts, 389 types of fruits, 228 types of vegetables, and 110 types of spices and seasonings spread throughout Indonesia. Widjaja et al, 2015). In addition, Pradipta also added that food diversification in Indonesia recorded about 400 varieties of fruit, 370 varieties of vegetables, 70 varieties of tubers and 55 varieties of spices (Pradipta, 2019).

Although the data regarding the types of food plants in Indonesia is vary, but it can be concluded that Indonesia has a diversity of food sources and the habit of indigenous peoples in consuming various foods that have been inherited since the time of their ancestors. The diversity of food sources should be able to meet national food needs. This potential should be managed strategically to actualize national food security based on food sovereignty and independence.

Indonesia's local food diversity is reflected in the food consumption habits of indigenous peoples. The pattern of food consumption differs from one region to another. This is influenced by various factors, including land biotic conditions, food availability, socio-culture, knowledge of nutrition, economy and the environment (Banita, 2013; Suryana et al., 2014, Warsilah, 2013).

In the context of the Tomun Lamandau Dayak Indigenous Community, where the community's food consumption pattern varies from planted crops, forest products to food obtained from rivers. With so many variants of food sources, the domestic food security of Indigenous Peoples becomes stronger. If managed properly and supported by policies that are right on target, local knowledge about local food diversity should be able to contribute to national food security so that the concept of SDGs related to zero hunger can be actualized.

Local knowledge of the Tomun Lamandau Dayak Indigenous community about food processing in the context of food sustainability will be discussed in the points below.

### 3.3 Local Knowledge of the Indigenous Dayak Tomun Lamandau about Food Sustainability

Food security is a condition in which all people have access to sufficient, safe and nutritious food to meet their nutritional needs and food preferences for an active and healthy life (Jagau et al, 2016). Based on this, food security can be seen from several aspects, namely food availability, food accessibility, usage and stability, and also food quality.

The concept of food security is also contained in the second point of the Sustainable Development Goal (SDG) policy, namely ending hunger, achieving food security, improving nutrition, and encouraging sustainable agriculture. In the context of food security and sustainability, it has actually been practiced by indigenous peoples in the territory of Indonesia, where people recognize the concept of food diversity in their daily lives.

Knowledge about food diversity is also well known by the Dayak Tomun Lamandau community. The existence of forests and rivers is very important to support local food sustainability. Society has a very intimate relationship with nature. Indigenous Dayak people have local knowledge about biodiversity that was passed down orally by their ancestors.

In addition to consuming local rice, the community also recognizes the diversity of other food sources such as food sources containing carbohydrates other than rice, namely corn, taro, sweet potatoes and cassava. Food sources of animal protein such as fish, pork, chicken, beef, deer, turtles, birds, snakes, monitor lizards and other forest animals. Plant-based protein in the form of nuts, vegetable nails (ferns), bamboo shoots (young bamboo), coconut *umbut* and several other local vegetables. In addition, the community also knows the fruit crops and forest fruit.

In terms of food sustainability, the indigenous Dayak Tomun Lamandau community also has local knowledge passed down from their ancestors on how to store and manage foodstuffs, so that indigenous people can avoid the food crisis.

1) Local knowledge about food preservation

The local knowledge system regarding the preservation and processing foodstuffs by the Dayak Tomun Lamandau community, namely:

a. Oye'

Oye is a way of preserving cassava. This preservation can last up to a year. The Dayak Ngaju people know Oye' as Kupue. To produce Oye', cassava that has been peeled is soaked for a week until it becomes mushy and smells sour. After that, it is drained, dried in the sun, and ground until it becomes flour. This flour can be used as porridge, a mixture with rice and as a dough to make other foods. In 1918, the Dayak people had experienced crop failure and prolonged drought but people did not experience hunger because they had supplies of Oye '(Kupue) (Riwut, 2003)

b. Tempuya'

It is the process of preserving durian meat by fermentation method. It uses typically ripe durian meat and is given enough salt then put it in a jar or other place, and tightly closed. Besides salt, some people also add a little sugar and cayenne pepper. Tempuya' usually lasts up to one year. The method of processing tempuya' is quite easy. It can be eaten directly, mixed with vegetables and can also be processed for side dishes.

c. Pekasap'm

It is a way of preserving meat or fish. The durability of pekasap'm can reach a year. To make pekasap'm, the meat is cut into small pieces and given salt. After sitting for an hour, add the rice or tempuya', then keep it in a tightly closed place.

d. Gorih

The community knows Gorih as salted fish. Dayak Tomun people in Lamandau are not only use fish but also meat. Gorih is made by giving fish or meat some salt and then drying it in the hot sun until dry. This preservation process can last  $\pm$  1 year.

e. Salai

Salai has the same meaning as smoked meat/ fish. The way to make it is quite easy. The meat/ fish is placed above stove where the firewood is usually placed. In the smoking process, the meat/ fish are not exposed to hot coals. Salai can last for six months.

f. Pangag'ng

Pangag'ng has the same meaning as grilled. Dayak Tomun people usually grill pork, beef, chicken and fish. Pangag'ng usually last for maximum in two days.

g. Kompuh

It is a preservation system. Fish or meat that has been seasoned is put into bamboo. Then, it is heated continuously over hot coals. Kompuh can last for six months.

h. Joru'

Joru' is the preservation of chilies using tuak water. The method of making is quite simple. The cleaned chilies are put in a bottle and then poured with tuak. Joru' will last for a year.

i. Wadi

Wadi is a way of preserving fish that can last for a year. Wadi is made by cutting fish giving salt. Then it is mixed with rice that has been roasted and finely ground. After the dough is evenly distributed, it is put into a tightly closed bamboo or jar.

j. Rampang

It is a system of preserving cassava. Cassava is cleaned and cut into small pieces. Next, it will be dried under the sun. Once dry, it is ground until smooth into flour. It can last up to a year depending on storage.

The knowledge system of the Dayak Tomun Lamandau community to preserve food is carried out continuously. People will not lack of foodstuffs because they already have sustainable food ingredients.

## 2) Knowledge of storing foodstuffs

Along with people in Eno Neontes Village, Timor Tengah Selatan District-NTT and in Bumi Pajo Village, Bima-NTB District (Krisdyatmiko, 2012), the Dayak community, especially the Dayak Tomun Lamandau community, also recognize the rice granary system based on local community knowledge. The rice barn has a different name depending on where the barn is located. Rice granaries for indigenous peoples are used as a symbol of food security and social status. The names of rice barns in the local knowledge of the Dayak Tomun Lamandau community are:

- a. Adauwan is a rice storage area in the middle of a field. Usually, the newly harvested rice will be placed in Adauwan first.
- b. Rumhugkan/ Kerangkig'ng is a rice storage area located near a house in a field. After the community has finished harvesting, the rice that has been collected in Adauwan is transported to Rumhugkan/ Kerangkig'ng.
- c. Jurug'ng is the term for rice storage in the village.

Even though it has a different name, the rice barn has the function for storing food supplies such as paddy, rice, corn and other foodstuffs.

### 3.4 Local Food Crisis in Food Uniformity Era

The dependence of the Indonesian people on rice consumption is the impact of government policies and intervention both in rice production and distribution, thus making rice the only staple food that has a superior image and is a political commodity. If the need for rice cannot be fulfilled, there is a concern that it will disrupt national stability (Thenu, 2008).

The stigma that has been built has affected the high consumption pattern of Indonesian people towards rice, so that they have begun to abandon the habit of consuming local foods such as sweet potatoes, corn, taro etc. In fact, not a few have the thought that if they consume local food, they are considered tacky, outdated and considered poor. This stigma makes people embarrassed to maintain diverse local consumption patterns.

Data shows that in the 1980s the level of local food consumption was higher than rice, but in the 1990s the level of consumption of rice was higher

than local food (Moniharapon et al., 2013). This phenomenon is influenced by government policies that are still biased towards rice in implementing food sector policies which also exacerbate this condition. The government is still focusing on lowland rice cultivation patterns, even in areas that have difficulty accessing water.

There are three parts of the food policy that are considered quite biased: 1) the government considers rice as the only source of food; 2) the rice that is consumed must be from lowland rice field, even though rice from unirrigated rice field also has great potential; 3) lowland rice cultivation must be carried out intensively (Akbar, 2018).

Indonesia is experiencing a very serious problem related to food security for the survival of the community. The factors that cause food problems in Indonesia are quite high, namely: a) high land conversion; b) uncontrolled population growth rate; c) changing in people's consumption patterns (Moniharapon et al., 2013). Adding to this thought, there are also government policies that are still biased so that the diversification program has failed to be implemented until now.

The government's good intentions regarding food diversification have been carried out since 1979. This can be seen from the issuance of a policy on food diversification as stipulated in Presidential Instruction Number 20 of 1979. This was confirmed in Law Number 7 of 1996 about food. In accordance with the guidelines of the 1999-2004 GBHN, food security is manifested in the diversity of resources, institutions and local cultures. The targets of this Food Diversification Program are (a) to increase the supply of food to meet the needs of carbohydrates, proteins, fats, vitamins and minerals; (b) to actualize food pattern diversity that focuses on nutritional values, cultural values and people's purchasing power, (c) to coordinate food security, food safety, and food supply (Thenu, 2008).

The only solution in solving this food security problem is to switch from rice consumption to local food consumption (Louhenapessy et al., 2010). In addition, based on phenomena in the field, there are several things that prevent Indonesia from actualizing food security:

- a. Habit to throw away food (at feasts and holidays)
- b. High level of land use change
- c. Substandard agricultural technology
- d. Poor food management
- e. Biased policies about rice.

In his research, Warsilah also added that there are several external coercive factors that made

Indonesia's food security has not been actualized, namely: (1). policy factors (rice self-sufficiency); (2). economic factors (purchasing power and food distribution); (3). environmental factors (environmental changes); (4). harvesting and post-harvesting technology factors that cause insufficient food availability that affects shifts and changes in people's habits related to staple food consumption. Such conditions will have implications for the food security of the population (Warsilah, 2013).

Based on the results of research and findings in the field, the authors realize that talking about food security is a multidimensional and very complex problem because it includes social, political, economic, cultural and environmental aspects.

## 4 CONCLUSIONS

The threat of food security in Indonesia is influenced by many things, especially government policies that are still biased towards rice and the government still neglects local farmers. Placing local community knowledge as the basis for food security is a strategy that can be used to minimize the food crisis. This has been proven by the indigenous Dayak Tomun Lamandau, as they are survived from the food crisis because of their strong knowledge of food processing. The local knowledge of the Dayak Tomun Lamandau indigenous people has been able to meet food needs on domestic scale and contribute to food supply for food security at the village level.

This knowledge is an asset in the process of actualizing national food security. To achieve national food security, the process of transferring knowledge regarding local wisdom about food security must be done. Besides, policies issued must be more supportive for farmers and local wisdom in a community. In addition, food policy must also have an archipelago perspective and be based on agroecological diversity because topographically, ecologically and culturally, not all areas of Indonesia are suitable for planting lowland rice.

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