Food Uniformity and Its Implications on National Food Security

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Indonesia

Non-Timber Forest Products
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Overview

THE (WILD) FOOD SCENARIO IN THE ASIAN REGION AN OVERVIEW TO THE WILD FOODS, BIODIVERSITY AND LIVELIHOODS COUNTRY PAPERS

by Madhu Ramnath (NTFP-EP India; Wild Foods, Biodiversity and Livelihoods Network Steering Committee member)

INTRODUCTION

Across the indigenous and rural communities of Asia there exists a deep knowledge about uncultivated foods. In addition to this, the cultivation systems include many lesser-known crops, be they millets, various legumes, yams, and other tubers. Quite often, within these farms and fields, various freshwater snails, crab, and fish, as well as some edible plants too are harvested. Such uncultivated foods have supplemented the diets of the rural and indigenous communities for many generations; apart from the obvious nutritional values that they provide, many of these foods have cultural and sociological links to these societies, as we shall see from some of the case studies.

For the purposes of this paper, wild foods encompass all edible material that is found in the wild (both land and water) and includes leaves, flowers, fruit, seeds and stems, tubers and rhizomes, resins and gums, honey, fungi, as well as eggs, fish, and game.

Mainstream agriculture has, by emphasizing quantity over diversity and quality, delinked food production from nutrition and culture. It is almost as if food production has only one goal: the filling of stomachs! Identity and tradition, exchange, and reciprocation with food and foodways, have been left out. More importantly, wild foods and other traditional crops provide communities that grow (or collect) and consume them with several essential micronutrients necessary for health; in addition, the diversity of crops in a farm supports their food security when a certain crop fails, or if the monsoon is not as good as expected. National and international policies around food and food subsidies, and an official oversight about wild uncultivated foods in most rural diets, have led to a decline in the knowledge about wild foods in the region. In addition, the sole promotion of a skewed agricultural policy in Asian countries, has led to the expansion of monocultures, further reducing spaces where wild foods thrive.

In this series of country papers, it was found important to include all the foodways prevalent in the region. This includes rotational farming systems that focus on several non-mainstream crops, as highlighted from case-studies from India; aquatic foods such as freshwater fish and crab from rice-fields; and forest foods, such as small game and insects, as from the various forest areas in the region. These case studies, and related fieldwork in Kalimantan and Sarawak, show the strength and the vibrancy of these food systems as they exist, and the various threats that they face while holding their own. The several forces that such food systems are up against—such as the loss of knowledge due to migration of the youth to urban centres, the intrusion of fast foods into remote indigenous areas, the expansion of palm oil and other monoculture plantations at the cost of forests, and other forces of modernity—are not easy to contend with. The modern diet is a massive trade-off: i.e., "the typical fast-food diet… now has only 40% of the wholeness of that of hunger-gatherers…"; … changing from the hunter-gatherer diet to that of the agriculturalist was associated with a trade-off of quality for quantity, and with enormous changes in the incidence of specific diseases." (Diamond, J., *The Third Chimpanzee*). One of the Non-Timber Forest Products – Exchange Programme (NTFP-EP)'s mandate is to revive the traditional and wild food systems among the communities it works with.

NTFP-EP's work requires continuous updating of new food species and their status, the gaps in knowledge noticeable after workshops, and designing appropriate interventions to close them. Importantly, the link between wild foods and their nutritional and cultural values need to be also kept in mind. Other concerns, such as tenure security, climate change and biodiversity, and access to forests that have been declared Protected Areas, are equally important and will be a crucial part of the discussions as we progress in this field.

In 2020, the NTFP-EP Asia received grant support from the Swedish International Agricultural Initiative (SIANI) through its expert group program, enabling it to explore further the topic of wild foods and its links to tenure, biodiversity, livelihoods, and food security. Learning exchange and discussions were carried out through a series of focused dialogues participated in by actors from across sectors based in Sweden, Asia and beyond.

The following are some of the country highlights which will help us understand some of the overall similarities in trends, making it possible to draft appropriate interventions to some of the problems faced by indigenous and rural communities in accessing wild and traditional foods.

Cambodia

Wild foods are collected from all landscapes in Cambodia and in the village documented for the case study (as well as in other forest villages), all the people harvest food from the wild. The knowledge about such foods is quite high, but there is a decline of available species due to deforestation (expansions of monocultures) as well as flooding and changes in river-flow due to hydropower dams. Rotational farming practices, though decreasing, are still being practiced, as in the case of the Kreung in Chuy Village. Many people who practice rotational farming often do so at the edge of their settlements where they gather insects, various greens (including flowers and flower-buds), mushrooms, fruit, and stems for consumption as well as for sale. In many parts of Cambodia, the indigenous people gather 'payab' leaves (Gnetum spp.), a local delicacy as well as an important item for sale into neighbouring Vietnam. Rattan is gathered and used as food as well as for handicraft, as it is in most parts of Southeast Asia.

Indonesia

The ironic fact about the Indonesian food situation is the emphasis on rice and, more recently, wheat. Both these food crops were and are imported into the country in large quantities, despite there being other staple foods of the people. Sago has been predominantly harvested from the wild in the past (as in Kalimantan), and cultivated (as in Papua); there has been an array of forest and marine aquatic foods that have been a part of the people's traditional diets for centuries. These have included ferns, fish, a vast array of small game, wild boar, and sago, the latter two being a staple among the deep forest nomadic Punan.

Indonesia is one of the countries facing a huge challenge in terms of malnutrition which has become worse during the pandemic. Media reports confirm that thousands of families suffered from hunger in Jakarta, Depok, Bogor, Bandung, Medan, Muara Enim, Batam, Pekanbaru, Maluku, Bengkalis, and Polewali Mandar; the Central Bureau of Statistics (BPS) data shows that food export is also increasing every year. The export of fruits in 2019 was the highest in recent years (USD 1.5 billion), double the amount in 2015. However, in 2018, Indonesia imported 9.23 million tons of wheat, 4.6 million tons of sugar, 2.5 million tons of salt, and 2,4 million tons of soy. Meanwhile for rice, dependence on imports is very high, shooting up to one million tons annually at present from a figure of 990 tons in the period 1980-99. It is the primary cause of making Indonesia vulnerable to food security.

The displacement of traditional foods by rice and wheat has led to these being cultivated through subsidies even in places where they are not suitable, leading to clearing of new forest areas and the extraction or pumping of groundwater, both detrimental to the larger ecology of the region. The country has also been made vulnerable as they depend largely on imports; this situation was accentuated during the pandemic period. An additional factor with the change in the food system is that the knowledge about traditional and wild foods is being lost; rice and noodles and various fast foods, all wrapped in layers of plastic, have invaded the indigenous territories.

India

In India, cultivation and food collection occur in all landscapes and rotational farming systems, practiced by various indigenous groups in the central and the northeast parts of the country, provide a diversity of food crops. However, most government policies concerning food, with the aim of providing food security to the population, focus on the quantity of cereals distributed. In fact, the subsidised food provided by the state covers 75% of the rural, and 50% of the urban households. What is missing is that the Food Security Act has no mention of wild and uncultivated foods that supplement the diets of most rural peoples.

Much of the present-day situation regarding food systems, both mainstream and traditional, can be traced to the several decades of Green Revolution driven policies. Over these decades many mainstream foods and food patterns—rice- and wheat-based—displaced and overwhelmed traditional diets. The subsidized food distribution system as well as the compulsory education drive, which kept children away from homes and in school hostels, have been deciding factors in changing the way Indians as a people view food. Overall, one may say that diets have become more uniform across the country, also thanks to the intrusion and acceptance of fast foods. Unfortunately, many traditional foods and food systems have fallen by the wayside.

Many commercial crops, rice, sugarcane, wheat and, more recently, palm oil, have been encouraged. These ventures, many like palm oil supported by state subsidies, have drastically changed the landscape, even encroaching into the commons formerly utilized by marginalized or landless peoples to graze cattle, or to harvest various food plants. Simultaneously, Protected Areas (PAs) across the country have increased, denying indigenous peoples the access to harvest wild foods or non-timber forest produce that are used for their livelihoods. The latter move, of declaring PAs, has continued despite the assurance of tenure rights through the passing of the Forest Rights Act, 2006, a legislation meant to guarantee land rights to the indigenous and other forest dwellers in the country.

There is an overall decline in the knowledge and use of uncultivated foods in India. This is often due to the lack of access to spaces that were earlier accessible (now fenced off as protected areas, or privatized as plantations, etc.) or for various other reasons associated with modernity (migrating youth, fast foods, modern education that derides wild foods, etc.). These trends in changing diets are reflected in health. Female obesity in the country is 21% while male obesity is 19%; anemia among women and children is 50%, and 11.8% of the people suffer from diabetes.

Philippines

Though field work was undertaken among the Kankana-ey of Sagada, Mountain Province and of the Higaunon in Malitbog, Bukidnon, the work also analyzed policies that impact the state of wild foods found in indigenous communities.

From the data gathered from the field as well as relevant literature it was clear that, as in other countries indigenous peoples have an inherent and intricate relationship with nature. Wild foods are used beyond subsistence alone; they are also used for their medicinal purposes and for their cultural and spiritual values. Knowing the importance of the 'wild' in their day-to-day lives, indigenous communities have developed resource management systems, practices and customary laws that have kept the forests pristine and intact.

Another key finding is that indigenous women and youth are crucial actors in sustaining wild foods and the overall traditional resource management systems. As community nurturers, indigenous women hold key roles in food and health systems. Meanwhile, the youth are expected to carry on the cultural practices which includes the sustainable use and management of wild foods. While migration for education and work significantly affects intergenerational transmission of indigenous knowledge, indigenous communities are exploring means to reintegrate the youth back to the community. One such example of this is the Higaunon's panlaoy, a traditional forest walk that enables youth to learn from elders about the biodiversity in their ancestral domains, including the wild foods and herbal plants found inside their conserved forests.

The review of legal frameworks relevant to wild foods and indigenous communities revealed that the policies meant to provide IPs protection are in place (e.g., Indigenous Peoples Rights Act of 1997 (IPRA/ Republic Act 8371), Expanded National Integrated Protected Areas System Act (ENIPAS/Republic Act 11038) but do not materialize well on the ground. The FPIC process remains plagued by corruption, deforestation and plunder of natural resources remains unabated, and sustainable traditional resource rights remains curtailed and criminalized. In addition, many indigenous communities face land use conversion due to business expansion and the encroachment of government projects that violate their right to self-determination. Communities also grapple with challenges such as tourism and the bad farming practices of non-indigenous peoples. Even with this seemingly bleak backdrop, however, indigenous communities maintain a positive outlook as they continue to assert their rights and secure their lands to maintain life in their territories.

Vietnam

In Vietnam, 'wild foods' as a term has hardly found usage, even in official circles. The management of "wild foods" deals with the plants, animals, and fungi, and, at times, their relationship with their habitats and the ecosystem. However, all studies completely leave out the communities that use these foods and are closely connected to them. These communities are often the ethnic minorities or indigenous peoples who have been living in the forest areas for generations, and relying on these resources, especially for food. However, their community rights and benefits are not always included into the overall development and conservation plans of the state. Without an inclusive agenda that also cares for the indigenous people and local communities (IPLCs), their settlements will soon disappear or be replaced by the common modern forms of urban areas, causing the loss of their traditions and knowledge. This might prove to be a vital flaw in the process of sustainable development in the long term for the forest areas. NTFP Asia's work is therefore to find possible solutions by first trying to establish a comprehensive framework for inclusive wild food management that can not only cover all related aspects, but also care for all the involved parties, including the IPLCs.

Wild food has always been an important source of food for certain communities and populations, especially the vulnerable ones in forest, mountainous, or rural areas where agriculture is difficult or not allowed to develop. In times of economic difficulties, it can greatly contribute to the temporary alleviation of food scarcity. Products of wild food could also be a source of income for native and local people, mitigating the burden of poverty. Wild food plays an irreplaceable role in traditional spiritual or recreational occasions, events, or festivals of most native communities. This requires the local knowledge on how to find, gather, process, use, and preserve wild food, as well as how to organize these events. It is felt that only when wild foods are legally recognized that further actions to manage and develop it can be taken. Moreover, a legal framework on wild food, together with relevant policies, can practically help guide the implementation of effective wild food governance, especially with the inclusion of local communities and native people.

ABOUT THE PUBLICATION

This publication presents perspectives and cases from Indonesia. It is part of the series of country papers produced by dialogue partners of the SIANI Expert Group Wild Foods, Biodiversity and Livelihoods Network. Other countries in the series include Cambodia, India, Philippines, and Vietnam.

The present paper does not attempt to provide a comprehensive review of the state of wild foods in Indonesia. Rather, it presents a snapshot of the situation of wild foods in the country, illustrated through case studies and review of available literature, and offers ideas on addressing challenges and seizing possible opportunities.

Apart from this paper, the group also produced a policy brief and discussion paper on sustaining wild food practice which highlights the key messages and insights from the dialogues and interventions of the WFBL network from 2020-2021. It is recommended that you pair the reading of this country paper with the policy and practice briefs to learn more about the wild food scenario in the Asian region.

It is hoped that the publications in the series contribute to available literature on the role of IPLCs and forests in ensuring a planet that is healthy, safe, and secure for all.

ABOUT THE WILD FOODS, BIODIVERSITY AND LIVELIHOODS (WFBL) NETWORK, SIANI EXPERT GROUP AND NTFP-EP

WFBL Network SIANI Expert Group

The Wild Foods, Biodiversity and Livelihood (WFBL) Network is an Expert Group supported by the Swedish International Agricultural Network Initiative (SIANI). The group is composed of individuals and organizations from multiple sectors, tied together by a common interest to consolidate knowledge about wild foods in Asia and its links to food security, poverty reduction and sustainable forest management. The network is convened by the NTFP-EP.

The group aims to consolidate traditional ecological knowledge about wild foods in Asia and bridge it with the relevant policy arenas to ensure wise, inclusive, and impactful decision making in the areas of food security, poverty reduction and sustainable forest management.

With support from SIANI, the group has facilitated and convened dialogues and knowledge-sharing activities at the regional level, engaging national and regional representatives from the forest and indigenous communities, government, science, civil society, and development agencies, creating an enabling environment for forest communities and indigenous peoples in Asia, going beyond conservation and expanding the understanding of the value of forests, especially wild foods, and traditional ecological knowledge and systems. Implementation of the activities ran from 2020–2021.

Learn more about the expert group by visiting siani.se and wildfoodsasia.com.

NTFP-EP

NTFP-EP stands as a diverse and collaborative network of over 100 NGOs and CBOs who all work with forest-based communities to strengthen their capacity in the sustainable management of natural resources in Cambodia, India, Indonesia, Malaysia, the Philippines, and Vietnam.

Starting out in 1998 as an informal group of practitioners working in local initiatives in Indonesia, Malaysia, India, Vietnam and the Philippines, the group recognized the potential benefits of sharing experiences and pooling expertise. In September 2003, NTFP-EP was registered as a non-profit organization based in Manila, Philippines.

At present, NTFP-EP serves as a platform for information and knowledge exchange of appropriate resource management and forest-based livelihood techniques and experiences. It is present in six (6) countries, particularly Cambodia, India, Indonesia, Malaysia, the Philippines, and Vietnam.

The network provides technical support and training, assistance in strategy formulation, documentation of best practices and success stories, mobilization of resources, advocacy for local initiatives, and lobbying efforts for enabling policies.

NTFP-EP work is focused on the following thematic outcomes: community-based conservation, indigenous food and health, tenure rights and governance, and sustainable community livelihoods, culture, youth engagement and empowerment, and gender equal community agency and voice.

Executive Summary

Women gathering wild foods
Photo: Icaro Cooke Vieira/CIFOR

Micronutrient malnutrition is a significant problem in most developing countries including Indonesia. Malnutrition has become a recurring problem that has led to child mortality particularly in Papua in 2018. To provide better nutrition, there is a need for poor people to have better access to a wider variety and better quality of food.

Ironically, Indonesia has a rich variety of food sources. It can be seen in the variety of its culinary culture and local food. However, the production and consumption patterns of Indonesians have become more similar with the dominance of rice as the staple food. In terms of consumption, flour, which is basically made from imported wheat, has become the second top food source after rice, with increased demand for it.

Although the government has tried to increase the production of rice by opening new rice fields all over the country, the supply is not enough to fulfill the need. Indonesia increasingly depends on rice imports. The opening of rice fields also has ecological and cultural challenges.

This study aims to look at the relationship between the lack of crop diversity and food consumption with food security in Indonesia. Secondary data have shown the trend of uniformity production has increased vulnerability of food nationally and regionally. The current policy to increase the staple food such as rice, corn, and soy is not enough to fulfill the increased demand for food. There are also issues regarding the expansion of rice fields due to environmental and cultural challenges. Food vulnerability is also getting worse due to the COVID-19 pandemic that has delayed the importation of staple foods along increasing prices. In national level, there are disruptions in food supply distribution. All these conditions have highlighted the importance of having a variety of local food sources.

The case studies in Flores, East Nusa Tenggara and Sangihe, North Sulawesi have shown that solving the micronutrient malnutrition problem would be by increasing production and consumption of local food such as sorghum and sago. On the other hand, ignorance about locally sourced sago and tubers in Asmat Papua has led to the rising cases of malnutrition. Several studies have suggested Indonesia should focus in the provision of local foods based on ecological and cultural aspects. This means that the local production and consumption of food must consider its ecological and cultural aspects.

Introduction

BACKGROUND

Hunger and malnutrition are complex global problems. Although there is an increase in food security in the last decade, malnutrition is still high particularly in Africa and Asia. Lack of nutrition is responsible for decreased productivity, mental and physical health issues, and vulnerability to various diseases including premature death of children.

Indonesia is one of the countries facing the challenge of malnutrition and it has become worse during the pandemic, due to declining incomes that directly reduced access to food for marginal group in big cities. Based on media reports, from April to May 2020, thousands of families suffered from hunger in Jakarta, Depok, Bogor, Bandung, Medan, Muara Enim, Batam, Pekanbaru, Maluku, Bengkalis, & Polewali Mandar. According to the World Food Program (WFP), globally in 2020, more than 200 million people suffered from hunger and half was because of the pandemic. This pandemic has shown the high dependency on the global food market and consumption patterns of people nowadays tends to be more similar. As a result, when the pandemic happened and food producing countries limited their export capability, it caused Indonesia to have a critical food supply situation.

Central Bureau of Statistics (BPS) data show that the number of food exports are increasing every year. For example, the export of fruits in 2019 has reached its highest price with 1.5 billion USD double the amount from 2015. According to data from BPS, between January and November 2018 Indonesia has imported 9.2 million tons of wheat, 4.6 million tons of sugar, 2.5 million tons of salt, and 2.4 million tons of soy. Meanwhile for rice, dependence on imports is very high. As a comparison, if in the period 1980-1999 Indonesia's rice imports reached 18.8 million tons with an average of 990 thousand tons per year, in 2000-2019 period there were 19.8 million tons with an average of 1 million tons per year. High dependency on imports causes Indonesia's food security to be low and fragile.

In the 2019 Global Hunger Index, Indonesia was ranked 70 out of 117 countries with a score of 20.1. placing it in the category of countries with severe levelsof hunger. At the national level, food security in Indonesia is still vulnerable. Food security and vulnerability map data in 2018 showed that there were 81 vulnerable districts (19%) out of a total of 416 districts. Of that number, 26 districts (6%) have high food vulnerability, include Papua, West Papua, Maluku and West Nusa Tenggara provinces; 21 districts (5%) have moderate food vulnerability, and 34 districts (8%) have low level of food vulnerability.

In addition, Indonesia faces nutritional problems that have existed even before the COVID-19 pandemic. Multiple nutritional problems include undernutrition (wasting, stunting, underweight) and obesity. Based on the basic health census, the Ministry of Health (2018) showed that 3.9% of children in Indonesia under five suffer from malnutrition and 13.8% suffer from malnutrition and 30.8% suffer from stunting. On the other hand, 8% of children are overweight or have obesity. The Global Nutrition Report 2020 also shows that Indonesia is one of 28 countries with high levels of anemia and stunting. Stunting and anemia cases in Indonesia have reached 46.7% of the entire population of children. This shows a high prevalence rate of cases of children who experience stunting.

In terms of geographical location, those regions with severe food vulnerability are by tradition not rice-consuming areas. In fact, most of those regions have a high variety of local foods including Papua, Papua Barat, and Maluku. These regions are the main producers of sago and tubers in Indonesia. Meanwhile, in Nusa Tenggara Timur corn and seedlings of local food are usually cultivated.

Areas with food vulnerability and high nutritional problems that are not traditionally rice-consuming areas--such as Papua, Maluku, and East Nusa Tenggara--have increasing rice consumption levels. This, despite these areas having a diverse array of local and wild foods in their forests, including sago, tubers, seeds, and many others.

The situation described above should be used as a lesson and a reason to strengthen food security. Strengthening food security is a way to solve current nutritional problems among the population. Local food sources and local plant-based foods can be used to encourage changes in consumption patterns and food production. In this way existing nutritional problems can be overcome and therefore, sustainable development goals can be achieved.

Unfortunately, the use of various local and local plant-based foods have not yet become the core of national agricultural and food development policies and programs. Agriculture and food policies still focus on the production of rice, soybeans, and corn only. Therefore, it is necessary to strengthen policies related to local food sources. It is hoped that this paper can become a resource material for policy makers and other stakeholders. Thus, food security based on local food diversity will be increased and nutrition problems can be resolved.

Scope and Limitations

This study analyzes trends of food uniformity in Indonesia and its relation to food security in Indonesia, including the fulfillment of the need for high-quality foods to solve the problem of malnutrition. Data covers trend and pattern of production and consumption nationally. This study also outlines two case studies, from the regions of Kabupaten Flores Timur, Nusa Tenggara Timur and Kabupaten Asmat, Papua. Causes of malnutrition are diverse, including lack of education, poverty, unclean water, and an unhealthy environment. But in this study, we focus on relation between malnutrition with food scarcity which is caused by ignorance on availability of local food resources. Further study is needed to see the correlation with other factors to solve malnutrition and food scarcity issues in Indonesia.

Methodology

This study is conducted through a review of various articles, research reports and other literature with theories, data, and other relevant information. Data and information collected cover national and local food situations, consumption situation, and other topics relevant to food security. The paper then looked at the food policy at the national level in more detail with case studies in several regions. Data were grouped, analyzed, and written descriptively. This paper was written between June and July 2020.

From Diversity to Unity

DIVERSITY OF FOOD SOURCES AND CULTURE IN INDONESIA

The abundance of biodiversity and local food plants, both wild and cultivated, were the foundation of food for the people of Indonesia for centuries. Indonesia is an archipelagic country that has a wide range of topographies, in which a very diverse variety of flora, fauna and microbes live. A study by Vavilov's (1926) in Suhendra et al (2014), stated that Indonesia is one of the major sources for rice, jali, winged bean, tubers, taro, tacca, pomelo, banana, breadfruit, mangosteen, star fruit, durian, rambutan, salak, langsat, mango, hazelnut, coconut, sugar cane, cloves, nutmeg, pepper, abaca, sago, sandalwood, and bamboo. Indonesia is also a center for other crops such as cassava, maize, sweet potato, coffee, and tea (Zeven & Zhukovsky 1975 in Suhendra et al, 2014).

Data from the Indonesian Institute of Sciences (LIPI) showed that Indonesia has around 5,529 types of food plant biological resources (Present Biodiversity, LIPI, 2014). Meanwhile, data from the Food Security Agency (2019) stated that Indonesia has around 100 types of carbohydrate source plants, 100 nuts, 250 vegetables, and 450 fruits. Examples of this diverse species are banana and sago plants. Of the 66 banana (*Musa*) species in the world, 12 can be found in Indonesia (Nasution & Yamada 2001 in Suhendra et al., 2014). There are at least 15 wild varieties of *Musa acuminata* spread from Aceh to Papua (Nasution 1991 in Suhendra et al, 2014). Another abundant source of fruit carbohydrates is breadfruit (*Artocarpus altilis*). Apart from being rich in natural resources, Indonesia also has a diversity of ethnic groups. With the wealth

Breadfruit (*Artocarpus altilis*)
Photo: Hans Hillewaert

of natural resources, when combined with the diversity of the ethnic groups that inhabit the entire Indonesian archipelago, it is not surprising that various systems of knowledge about nature and the environment, including food culture, have developed. This knowledge varies from one ethnic group to another which depend on the type of ecosystem in which they live, climate (especially rainfall), customs, procedures, behavior, and group life patterns —in short at the cultural level of these ethnic groups.

The consumption of wild and semi-wild edible plants has been "a way of life" for many indigenous peoples throughout Indonesia. Forests are a source of biodiversity and food. The community makes the forest a natural "self-service" to meet their food needs. In the forest are scattered wild food plants that can be used all the time. These food plants are often referred to as local food plants. In this regard, the Plant Resources of South East Asia (PROSEA) in its collaboration program (http://proseanet.org/prosea/) stated that Indonesia is rich in wild and cultivated food plants.

Pawera et al (2020) said that the Mandailing people in North Sumatra consume 106 species of food plants including wild and cultivated ones. Meanwhile in Batak Toba the community consumes more than 44 species; Bali 86 species; and Lombok 22 species. In Papua, the wealth of food crops can provide abundant food. The people of the Baliem valley consume 224 cultivars of sweet potato. Meanwhile, in Anggi there were 60 cultivars recorded (Schneider et al., 1993 in Suhendra et al., 2014). In West Aceh region, total of 44 species of edible fruit plants were recorded (Suwardi, 2019).

Not just as staple food, wild foods also provide many other benefits. Studies in Bali show that wild and semi-wild edible plants provide food and nutrition, such as essential amino acids, vitamins, and minerals, for local communities to stay healthy and boost immunity against disease and infection. In addition to food value, more than 16% of the plants were recorded as having medicinal uses which are an important part of Bali's indigenous culture, and some plants can provide useful genes for crop improvement that could have significant consequences for global food security (Sujarwo, 2016).

The high consumption of wild and semi-wild food among indigenous peoples in Indonesia cannot be separated from natural conditions that are rich in biodiversity. As the largest archipelago in the world, Indonesia has a wide variety of different food sources, and that has influenced the diets of local people over the centuries. One of Indonesia's native wild plants that has been a source of food support for centuries is sago palm (*Metroxylon* spp). This plant is an important support for the life of hunter-gatherers and semi-nomadic cultivators in Indonesia in the past. Until now, sago has become a staple food in several regions in Indonesia, such as in Papua Province Moluccas, northern Sulawesi, northern Kalimantan, and Mentawai Island, West Sumatra.

Papua has the largest sago plantations in Indonesia, even in the world. According to Djoefrie et al. (2014), in the Papua area, sago occupies 4.7 million hectares, and there are 510,000 hectares in West Papua. When these data are combined, the extent of the sago distribution worldwide reaches 6.5 million hectares. The sago palm distribution in Indonesia, consisting of 85% of the sago worldwide, is 5.5 million hectares. Of that, as much as 95%—5.2 million hectares—are in Papua and West Papua (Djoefrie et al. 2014) (Figs. 2.1 and 2.2), with 0.3 million hectares spread over several islands in Indonesia. According to the head of the Meranti Islands District, smallholding sago farmers in that district account for 42,130 hectares and sago plantations for 21,418 hectares. In Papua, sago is not only as a major component of diet, but also has a central position in myth and ritual, which has been brought into symbolic relationship with the twin concepts of germination of plants and generation of humans (Kenneth, 1978).

CHANGES IN FOOD PATTERNS IN INDONESIA

Even though it is rich in diversity of food sources and local culinary culture, the current trend of food consumption in Indonesia is dominated by rice and wheat. Rice is a type of staple food that is needed by the Indonesian people. The population's preference for rice is high. People who have a non-rice staple diet have switched to rice because it is considered the main source of calories. Besides that, socially, rice is also considered better than other foods.

The Study of Staple Material Consumption Data, 2017 by the Central Bureau of Statistics shows that the level of rice consumption fluctuated between 2011 and 2015 and began to decline in 2017. Rice consumption in 2011 was around 113.72 kg, or an average of around 0.3 kg per capita per day. Meanwhile in 2015, rice consumption increased to 114.61 kg per capita per year. Meanwhile, in 2017 it fell to 111.58 kg per capita per year and it is estimated that in 2019 it will slightly decrease to 111.54 kg per capita per year.

The large consumption of rice has eliminated other staple foods from the people's diets. In 1954, the community's staple food consisted of rice (53.5%), cassava (22.26%), corn (18.9%), and other tubers (4.99%). In 1981, the pattern of staple food consumption shifted drastically. Rice consumption was 81.1%, cassava 10.02%, and corn 7.82%. In 1999, the consumption of cassava was only 8.83% and corn 3.1%. Entering 2010 until now, the main food consumption has been primarily rice.

This situation is described also in the study of Rachman and Ariani (2008) which shows a change in the pattern of consumption of staple food which tends to lead to a single pattern of rice from the original rice-tuber and/or rice- corn-tuber pattern.

The large amount of rice consumption in Indonesia makes it one of the biggest rice consumers aside from China and India. In 2019, Indonesia's rice consumption will reach 29.6 million tons per year. This number decreased when compared to 2018 which reached 33.9 million tons. This decline is in line with the decline in rice consumption per capita of Indonesia's population. Thus, rice is a commodity that has a significant influence on food security, national economy, and political stability. Due to its strategic position, the government continues to strive for self-sufficiency in rice at a price that is affordable to the public. Various policies were also made to provide sufficient and cheap rice. One of them is the rice distribution program policy for underprivileged families, known as RASKIN or rice for the poor.


Legenda:


Legenda:

RICE AND WHEAT DOMINATION

This situation cannot be separated from the food policy in Indonesia which prioritizes rice production and marginalizes local foods, especially since the New Order in the early 1970s.

Another factor that has decreased local food consumption is the destruction of the environment and forest ecology. In Indonesia, the rate of forest destruction continues to increase. Forest Watch Indonesia (2019) said that every year no less than 1.1 million hectares of forest are damaged. This damage is driving the loss of wild food crops.

Changes in socio-economic factors, markets, and lifestyles have contributed to lower local food availability and consumption. The 2018 People's Coalition for Food Sovereignty (KRKP) study in urban community groups shows that even though 66.1% of urban people agree that local food is healthier and more nutritious, 63.3% of respondents prefer to eat outside the home where the menu is ready to eat. The main reasons given are that it is more practical and fits their lifestyle.

The data clearly shows, the trend of food patterns in Indonesia is towards uniformity. This is of course contrary to the diversity of existing staple foods. This change occurred according to Rahardjo (1993) because the government was serious about increasing food. Although the policy is referred to as increased or self-sufficiency in food, the food in question is rice. Rice self-sufficiency was finally achieved in 1984, even though rice self-sufficiency was targeted to be achieved in 1974.

The government's focus on rice staple food cannot be separated from its strategic role, both economically, defense and security, social and politically (Hasan, 1998). Throughout the history, government has always made rice as the main target of food production, thus maintaining staple food diversity became difficult. Quoting the opinion of Rachman and Ariani (2008) the main problem of food diversification is the imbalance between production patterns and people's food consumption.

The government continues to prioritize rice as a staple food with extraordinary policy and budget support. It is not surprising that rice production continues to increase compared to other staple foods. Data from the Central Statistics Agency (BPS) shows that rice production increased more than tenfold from 1969 to 2017. If in 1969 the national rice production only reached 17.4 million tons, in 2017 it reached 81.3 million tons. Even in the first four years of Joko Widodo and Jusuf Kalla's administration (2014-2017), national rice production increased by 10 million tons from 70.8 to 81.3 tons.

The continuous increase in production cannot be separated from the budget support. This happened from the era of Soeharto (1960s - 1998) to Joko Widodo (2014-now). Since being elected in 2014, Joko Widodo has launched a program to increase rice, corn, and soybean production. The three commodities were targeted for self- sufficiency in 2017. The budget for this was given to the Ministry of Agriculture which has increased dramatically from 15.4 trillion IDR in 2013-2014 to 32.8 trillion IDR in the 2014-2015 period. Meanwhile, the budget for the following years reached an average of 25 trillion IDR per year. Of the budget, 16 trillion IDR is specifically allocated to increase the production of rice, corn, and soybeans, with the largest proportion for rice production.

Apart from rice, consumption of staple food in Indonesia is currently also dominated by imported wheat. Wheat came into domestic market in Indonesia initially as humanitarian aid from the United States under Public Law (PL) 480 in 1969. New Order at that time wanted to find alternative foods to replace rice that had rising prices in the global market. The government gave subsidies and easy access to the wheat industry to process it into flour. As a result, the production of flour has grown fast and has been promoted all over the country as alternative food.

Wheat entered the Indonesian dining menu via its most popular product, the instant noodle. The problem is wheat only grows in sub-tropical climates. As a result, wheat is mainly imported. Data of BPS showed that imported food in 2003 was worth 3.34 billion dollars, but in 2014 imported food was worth 14.90 billion dollars, an increase of four times. Seven food commodity that has import value more than 200,000 tons per year include rice, corn, wheat, soy, onion and bean and sugar. Their imports increased by 5.67 million tons between 2014 and 2018, from 21,95 million tons to 27.62 million tons. Wheat needs has made the consumption increase nationally to 500% in the last 30 years. The percentage of wheat as staple food in Indonesia increased from 21% in 2015 to 25.4% in 2017.

Government policy has clearly contributed on the increase trend of wheat consumption. The drastic import of wheat happened in 2011 after government launched the regulation of Ministry of Finance No 13/2011. With this, 57 types of food commodities, including wheat, rice and corn, has 0 % of tax entrance fee. Total imported of wheat in Indonesia kept increasing and in 2017 was 11.6 million tons.

Young sorghum (left) and mature sorghum (right)
Photo: Jusupta Tarigan

Newest data from the United States Department of Agriculture (USDA) showed that in 2017/2018 Indonesia has become the biggest importer of wheat in the world with volume 12.5 million ton. This import volume of wheat is bigger than rice imports.

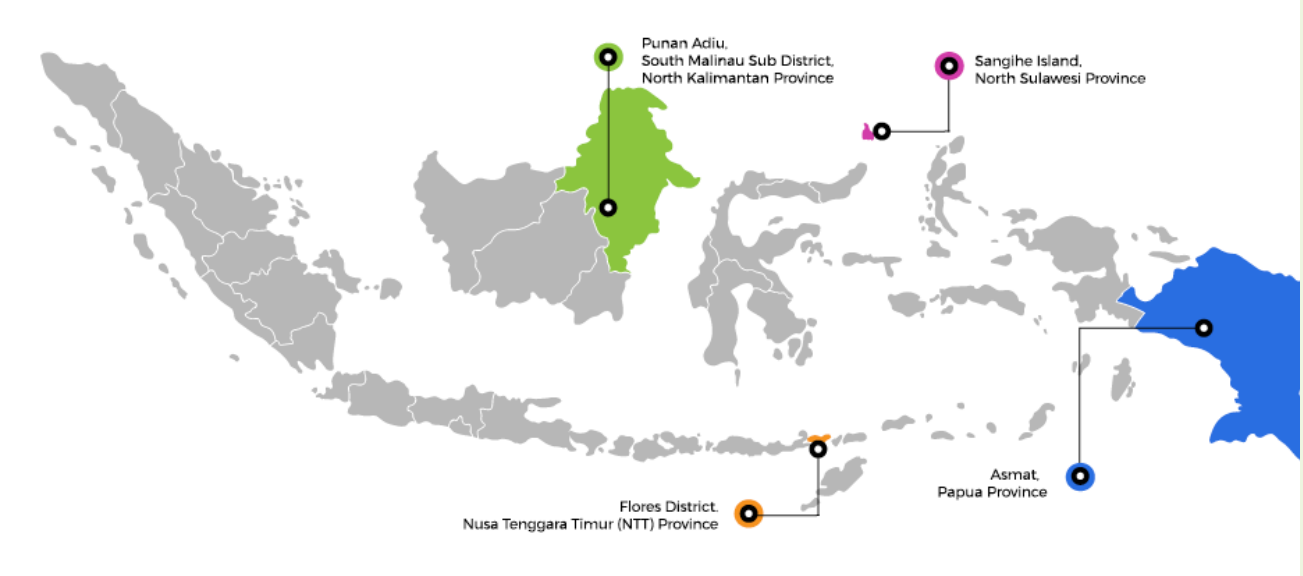
The amount of support for increasing rice production and subsidies on wheat imports has forgotten the potential for local plant-based foods as staple foods. One of the local foods that can be cultivated throughout Indonesia is sago and sorghum. Data from the Ministry of Agriculture (2019) shows that sago production from year to year actually increased and has the potential to continue to increase. In 2013, the national sago production reached 155 thousand tons, increased to 383.6 thousand tons in 2016, and increased to 465.6 thousand tons in 2019.

Meanwhile, data on sorghum production at the national level is difficult to obtain due to unavailability of data. Data was available only in 1994. Information from the Directorate General of Plantations from 1996 showed that sorghum production in NTT and NTB in 1993/1994 was 39 and 54 tons, respectively. Meanwhile, production in Central Java in the 1973-1988 period amounted to 17,350 tons; in East Java, the 1984-1988 period was 10,522 tons and the 1974-1980 period was 670 tons (Rachman and Ariani, 2008).

The low utilization of local and local plant-based foods as staples is due to the absence of adequate political will, policy, and budget support. Efforts to diversify staple food have not been taken seriously. The budget allocation for food diversification is very small compared to rice. Data from the Food Security Agency (BKP) in 2019 showed specifically in the field of Development of Diversity Consumption and Food Security in the 2014-2019 period the budget was 956.4 billion IDR. This amount is of course very small, only 6% of the budget to increase rice, corn, and soybean production.

Case Studies

The food culture of Indonesia is shaped by several factors such as nature, history, and culture. With its enormous geographic and cultural diversity across the archipelago, it is evident that Indonesian food culture is rich in variety. This case study tells of several communities in Indonesia that are affected by the national policy on food uniformity.



FOREST DESTRUCTION, MEANS THE LOSS OF FOOD SOURCES IN PUNAN ADIU

Punan Long Adiu is part of South Malinau Sub District. The village consists of forests, plantations (jakau), tegalan, settlements, home gardens, and rice fields. In the past, the livelihood of Punan Adiu was primarily hunting and gathering of forest products. The forest provides them with food such as sago palm, beets, cassava, vegetables, and other foods which are rich sources of vitamins and minerals. Likewise, wild boar, deer, and fish provide them with adequate protein. Forest foods are bountiful, healthy, and locally sourced.

From the early years, the Punan relied on the forest's bounty for food. They never lacked food because anything they needed would be provided by the forest. Because the forest is a main source of food for the Punan Adiu, they regard it with respect and a sense of responsibility. The Punan people only take enough food from the forest and consume it in moderation. They just take enough to live by to sustain a well-functioning forest ecosystem. This relationship forms a balance between the Punan Audiu and the environment.

Over the generations this lifestyle dependent on nature has formed a distinctive food culture. As mentioned in an NTFP-EP study (2013), the Punan Adiu are familiar with various cooking techniques using a variety of healthy local food sources. Most of the foods they consume are usually boiled with a little bit of seasoning and salt. The tools used to cook are unique; for example, using a bamboo cane, or a thin piece of wood in a shape of a pan.

In 2001, a logging concession company started operating near the village of Punan Adiu. The forest was disturbed due to the use of heavy machinery. This changed a delicate balance that used to exist between the Punan and their forest. Whereas before wild boar were readily available close to the village, allowing an easy hunt, nowadays, the Punan extend much more effort to hunt these animals. This forest destruction has destroyed the food chain. Bees have also disappeared due to noise pollution from the wood processing machines and the dust from the industrial vehicles. This food chain is now broken, so the wild boar no longer have fruits to eat, thus forcing them to flee to other areas in search of food.

The loss of food sources in the forest has forced a change in lifestyle for the Punan Audiu. Now, mainly they are farmers, government workers, and traditional rattan and bamboo weavers. As farmers, they plant rice, maize, cassava, and nuts. From a nutrition perspective, the traditional Punan food is healthier than food from the city. The early Punan did not know

rice, cooking oil, nor processed seasoning. Today, most Punan Adiu eat rice and consumes vegetables by way of frying. They also started to consume instant noodles and canned food, that started after the entry of the wood processing company in 2001. Hence, the function of forests as a source of food for the Punan has declined. It is also caused by the lack of food that the Punan can find in the forest. The increasingly poor diets and associated illnesses are warnings, alerting us to the ecological and socio-cultural maladaptation that these societies are undergoing.

ASMAT: THE FOOD CRISIS IN THE SAGO FIELD

The Asmat people live in the southern part of Papua, where most of the territory are swamps. Their region is very rich in sago, their main source of carbohydrates. Sago plants that grow in this forest that is also inhabited by wild animals, especially wild boar, cassowary, and various other animals which are sources of protein. In addition, other abundant sources of protein are fish and crab from the swamps and rivers.

However, sago has become more marginalized and being replaced by rice, a food that the local Papuan community cannot cultivate. Cultural changes began happening in the 1950s with the arrival of Christian missionaries, and in recent years diets have dramatically changed with increasing number of migrants from other Indonesian islands coming here. Papeda made from sago as native food in Papua is hard to get nowadays, particularly in Agats, the capital of Asmat. There are many food stalls selling rice products. Not only in big cities, the neglect of sago as a staple food is also happening in many rural villages in Asmat.

This change has contributed to food vulnerability. In 2018, a measles and malnutrition crisis happened in Asmat. This district, with a population of 92,909 people, first announced a health outbreak (Extraordinary Events) on January 8, 2018. When the status of the outbreak ended on February 5, 2018, 72 children died, 646 children contracted measles, and 218 children suffered from malnutrition. Of the number of children suffering from malnutrition, 30.3% were underweight and 25.9% experienced stunting.

This tragedy in Asmat could be just the tip of the iceberg. The same thing is very likely to happen in other districts in Papua or other areas with limited access. In Papua, the phenomenon of hunger experienced by rural communities has also occurred continuously and is still a latent danger. The data archive in *Kompas*, for example, noted that in August 1982 thousands of people starved and 18 of them died in the villages of Kuyawagai I and Kuyawagai II, Tiom District, Jayawijaya Regency. Then, a famine also occurred in Paniai in 1984. Two years later, famine killed 169 people in Kurima District, Jayawijaya. In 1997, when the long drought caused by El Niño hit, another famine occurred which caused 421 people to die in Jayawijaya. Then followed Merauke with 24 people, Puncak Jaya (formerly Paniai) with 23 people and Nabire with 21. December 2005, a famine also hit Yahukimo District, Papua. A report of 55 deaths and 112 critically due to starvation happened in seven districts of Yahukimo.

BACK TO LOCAL FOOD IN SANGIHE ISLAND

Unlike in Asmat, efforts to return to local food have occurred in Sangihe Island, North Sulawesi. People in Sangihe have long been more familiar with sago instead of rice. They have a local type of sago called sago baruk that grows on the dry land of Sangihe District Island. Sago palm can grow in land from 1m up to 600m above sea level. The stem may reach a diameter of 14-25 cm and between 6-16 m in height (at mature stage). Barriand Allorerung (2001) proposed that this plant belonged to the *Palmae* family and the genus of *Metroxylon* since it contained starch and was able to form clusters. However, because the flower structure is similar to *Arenga palmga pinnata* Merr, sago baruk palm is classified into the genus of *Arenga* (Indonesian Center for Estate Crops Research and Development, Bogor, 2005).

Regulation of self-sufficient of rice has shifted the consumption pattern of Sangihe being forced to consume rice as their staple food and therefore, neglecting local food. as a result, Sangihe, with limited rice field depend on rice from Java. Moreover, the program of subsidy rice has sidelined local foods. Until 1980, sago baruk palm is the source of staple food for 88.33% population in Sangihe Island (Department of Agriculture, Plantation, Animal Husbandry and Forestry, Regency of Kepulauan Sangihe, 1980). However, it is decreasing over time along with the dominance of rice which has become the national food policy.

The awareness on the local foods was raised in 2015, when sago was listed as local variety champion from Sangihe. It is followed by district of agricultural actions in developing sago massively in its regulations. In 2017, the local government launched a program called "two days no rice" in order to reduce the rice buying from other regions and convinced people to consume local food. The money for rice can be circulated for consumption of local foods.

In terms of culture, people in Sangihe consume sago, tuber roots, and bananas. Every month, funding allocation for rice is about 5 billion IDR (339.18 USD). With this policy, the funding can be allocated by local farmers for buying local food. With the regulation, there are programs in every village to consume local foods. In 2018, the district government launched a regulation to develop organic farming. The next step is to make agreements with stakeholders to strengthen food security with local foods. One of the programs is to establish a market for farmers and fishermen, to bring together producers and consumers using cashless transaction methods. Traders consist of farmers and fishermen. Government employees are required to buy farmers' commodity twice a week as part of the district program.

SORGHUM TO FIGHT MALNUTRITION IN FLORES

Sorgum (*Sorghum bicolor*) is one of the food resources with a long history in Indonesia, found in several writings and archeological evidences. This plant has an important position in the local culture of Nusa Tenggara Timur, particularly in Flores island. A number of rituals use sorgum as part of ceremonies. However, this plant has been neglected with the dominance of rice.

After many years being neglected sorgum is being cultivated again in Flores and its surrounded islands. Sorgum is also consumed and has replaced the dominance of rice.

The movement to return on sorgum in Flores and its surrounding was initiated by Maria Loretha and her husband Jeremias D Letor 10 years ago in Adonara, Flores Timur. They got support from the Yaspensel diocese of Larantuka, the Yayasan Keanekaragaman Hayati (KEHATI), and research department of Ministry of Agriculture. Now, besides in Adonara, sorgum has been cultivated in about 200 hectares of land in Flores, Solor, and Lembata.

This Sorgum of NTT has involved several farmer group with mostly young people who have high awareness about local foods. Every area has their own reason to develop sorgum, due to its compatibility with the agroclimate, adaptability with climate change impacts, part of the solution of economic problems with the investments for rice cultivation, cultural bonds, and tourism potential. Sorgum has brought significant impact for these groups.

One of the real changes was experienced by the community in the village of Likotuden, village Kawalelo, Flores Timur, Nusa Tenggara Timur, which had been cultivating sorgum since 2014. Previously depend on rice subsidies, they are now self-sufficient with sorgum and plan to refuse rice aid from the government.

Previously 63 out of 158 families in this village were categorized as poor and got rice subsidies, receiving 10kg of rice per family per month. Now, the area of cultivated with sorgum in each village total 70 hectares and is increasing every year. Sorgum can live in very dry conditions, is pest resistant, and can be harvested 2-3 times a year. In average, one hectare can produce 5-6 tons of dried sorgum during harvesting. Excess sorgum can be sold for extra income. Previously communities earned income from picking seeds of sour plants that were able to grow on the dry land of Likotuden.

Nusa Tenggara Timur is well known for its dry climate. Sorgum is the only plant that needs sunlight 9-12 hours per day which makes it very suitable to grow in the region. This plant has high efficiency of photosynthesis that can be optimal growing in unfertilized land. If sorgum is planted in Java or Sulawesi, it will require more fertilizer compared to being planted in Nusa Tenggara Timur.

Not just because of its productivity and its adaptation to dry climate, sorgum has an important contribution to nutrition and public health. Based on data from the United States Department of Agriculture (USDA) in 2011, sorgum has 74.63 g of carbohydrates per 100 g, higher than wheat (71.97 g). Its carbohydrate content is number 3 after rice (79.15 gr) and corn (76.85 gr). For protein, every 100 g of sorgum contains 11 g protein, higher than rice (9 g). Sorgum is also rich on fiber and has antioxidants. Meanwhile its glycemic index is lower than rice, make it suitable for diabetics.

Since 2016, the Puskesmas Kecamatan Demon Pagong has a program of giving sorgum along with other local foods to malnourished and stunted child under 5 years old. As a result, there is positive impact on children. In 2018, the head of district launched program to fight stunting with sorgum and moringa in order to solve problem of malnutrition and stunting. Latest data showed that the prevalence of stunting in Flores Timur is 29.9%, while at least 30% of 20,000 babies in Flores Timur were categorized as malnourished. This number is above the national average of 29.34%.

According to data from the National Renewable Energy Laboratory (NREL), the total dry and marginal land in Indonesia is 37,123 square kilometers or about 2% of total area of the country. However, dry land is being neglected due to more focus on rice cultivation. Farmers in the village of Kawalelo however have shown that sorgum has made them self-sufficient.

Discussion

CAUSES OF FOOD UNIFORMITY

Staple food uniformity in Indonesia can be traced back to 1965, when Indonesia experienced economic and political crises that caused high inflation and increased food prices, with rice price as the standard. Price of rice and high inflation is highly correlated, as a result economic experts advised to control inflation by controlling the price of rice.

Due to inflation of food prices, government employees got rice as part of their benefits. In the eastern Indonesian regions of Papua and Maluku, however, government employees got sago instead of rice. However, officials in eastern Indonesia protested that policy, because in their opinion it was such a discriminatory policy. As a result, the central government changed the policy and distributed rice instead.

It was followed with the policy to increase rice production, from training farmers to increase rice production to providing seeds and fertilizer. Indonesia reached self-reliance on rice in 1986. The Food and Agriculture Organization (FAO) recognized Indonesia for that achievement (Emil Salim, 2019).

Uniformity of production is not only for commercial crops and the prohibition of local food varieties; it also affects community consumption pattern. Rice has become an indicator for food security as well as for political commodity by making it as one component of government employees' and military personnel's salary benefits. Government employees and military personnel have become social agents spreading rice all over Indonesia, slowly replacing the consumption of local foods.

Food variety has become a priority of the government based on a number of policies. However, the government is not consistent in implementing the policies. The first policy related to food variety was the launch of Instruction of President Republik Indonesia No. 14 in 1974 about improving communities' food menus. This instruction only mandated the importance of food diversification but not clearly state the importance of local food variety.

In fact, wheat, which is 100% imported, is used as a sample for food diversification. As a result, food diversification focused more on the increase of wheat imports as raw material for instant noodles, bread, and others foods. Moreover, the government gives subsidies for flour to reduce pressure on rice demand. Meanwhile, Presidential Regulation No. 22 year 2009 on the acceleration of local food diversification mandated efforts on diversification of food consumption based on local food or specific type of food in that region. This mandate can be found in Ministry of Agriculture No. 43 year 2009, about the movement to speed up the diversification of local foods. It is also in Food Regulation No. 18 year 2012, which is a revision of Food Regulation No. 7 year 1996. Regulation No. 18 year 2012 clearly stated that the diversification of food is an effort to increase variety local foods' availability in order to fulfill local nutritional needs, as well as to develop small food enterprises and to increase community income. Both central and local governments are responsible for providing local food production. Neglect of local food varieties is a violation of the rule. Regulation on food also mandates self-reliance on production of local foods to provide community needs. It can be done by using local resources, culture, and local wisdom.

After the release of Food Regulation 2012, the variety of local foods automatically become the responsibility of central and regional governments. Relationship between food and nutrition has been stated in President Regulation No. 17 year 2015 about food and nutrition. This regulation mandated that food variety to increase provision of food must be based on local resources. This was to fulfill the nutritional needs and to increase community development. The establishment of food variety as regulated above should consider balanced nutrition, based on local resources, and environmentally friendly and safe.

Presidential Regulation No. 83 year 2017 about food strategy was launched to guide central and regional governments and stakeholders to increase food security. This was to support human development and to focus on provision of local foods, food distribution, and to increase food access for marginal communities.

Some regions have established regulations in relation to this, such as government of Sumbawa's Regent's Regulation No. 2 year 2014 on the acceleration of diversification of food consumption from local resources. The Banyuwangi district also launched a similar Regent's Regulation No. 35 year 2015.

In 2017, the head of Sangihe district released a policy of two days without rice and replaced rice with local foods. This is not just to mobilize the community to consume local carbohydrate resources, but also to shift funding to buy local foods such as tuber roots, sago and others. All of these efforts are in order to mobilize the local economy and to increase farmers' incomes. This policy was followed by a regent's regulation on organic farming.

The head of East Flores launched Regent's Regulation No 21 year 2017 about local foods. In Sumba Timur, Nusa Tenggara Timur Regent's Regulation No. 130 year 2009 about food diversification was released. It was followed by a letter of regent No. 521/627/1X/2012 on one day without rice. Unfortunately, there is not much support from the national government.

President Joko Widodo put food sovereignty as one of his priority programs in Nawa Cita. The strategic plan of the Ministry of Agriculture 2015 – 2019 was based on the agenda of Nawa Cita, specifically on Nawa Cita food sovereignty. One of its targets is to increase diversification of foods. Moreover, food diversification was supposed to increase farmers' incomes, but in reality the policy was focused on rice.

Distribution of subsidy rice for poor people has been ongoing since 2003. Rice is being distributed in Papua even if it is not a staple food there. The policy is more into rice, corn, and soy. This policy was a repeat of the self-reliance on rice, corn, and soy (Gema Palagung) implemented in 2001. All regions were forced to cultivate rice, corn, and soy with intensification packages, despite not all of areas are suitable for rice cultivation.

IMPLICATIONS OF FOOD UNIFORMITY

Dependency on a few staple foods is very critical because it can weaken food security. Production and consumption that depend on only one type of staple food will weaken resiliency of food systems if there are any problems in distribution, or during disasters. Any problem in food security will impact on human health; as a result, the country's development will slow down. In the case of Indonesia, it would become a double burden due to its dependency on rice and imported wheat.

Rice as staple food of community is often facing production challenges. The most problem is caused by pests, droughts and floods such as case in 2010-2011 and 2016-2017. National rice production must face those challenges and risks communities more into food vulnerability. To overcome this problem, the government imports rice from Vietnam, Thailand, and other countries.

With the rising number of rice consumers while rice fields in Java and Bali keep shrinking, it would be harder to provide rice in the future. Provision of food in the future will be challenged with significant increase of population. It took thousand years for Indonesia to achieve a population of 100 million; 35 years to become 200 million in 1998; and in 2033 the population is projected to be 300 million. High dependency on rice will increase food vulnerability and import dependency. Yayu Sofiana (2018) said that not all import policies can bring benefits to Indonesians. It will make farmers more vulnerable by decreasing their incomes. Impact of import on farmers include production, consumption, incomes, and land use change. In relation with this, the FAO and World Bank (2011) suggested to diversify food sources as a solution to bring out farmers from poverty.

If people rely on rice as a staple food, limited production will bring many challenges. Yayu Sofiana (2018) identified those factors as:

1. Limitation of land resources due to land use change from rice field into factories, roads, offices and housing;
2. Legal ownership of land make farmers unable to optimize its production;
3. Poor agro ecosystem quality and poor input;
4. Centralized production of rice in Java island; and
5. Impacts of climate change such as floods, droughts, and pest attacks.

With more variety of foods being produced and consumed, it will make our food system stronger. Warr (2014) mentioned that food variety has influenced food security in two ways which are by increasing food provision directly and indirectly by increasing income.

IMPLICATIONS OF FOOD UNIFORMITY

Measles and malnutrition cases in Asmat show food vulnerability in eastern Indonesia. Indonesian Food Security and Vulnerability Atlas (FSVA) in 2018 put Papua and Papua Barat as the two regions most vulnerable. So, even though Papua is very rich in wild and semi-wild foods, this is no longer the backbone of their food system. Changes in their diets, with the trend of relying on external food sources especially rice, have made them abandon local food sources that were the foundation of their previous food culture.

The food crisis in Papua showed that changes in the food system by leaving local food diversity, including local plant-based food, have made people vulnerable. Their dependence on rice, which they cannot produce themselves, makes them dependent on foods that has to be bought from outside. When they don't have enough resources to buy this food, hunger can hit again. The opposite happened in Sangihe and Flores. By returning to local foods, including local plant-based foods, they can increase their food security. Local government policies make an important contribution to restore this food security.

Uniformity of production and consumption of food along with neglect of local foods in Indonesia have made supply issues harder. Because not all land in Indonesia is suitable for rice cultivation,, it needs strong water infrastructure along with specific agricultural technology.

According to a study by the FAO with the Ministry of Agricultural and the State Department of Meteorology, Climatology and Geophysics released in January 2018, rice is very vulnerable to climate change. In the next 20 to 50 years, rice production will decline to 1.5 tons per hectare in 8 rice-producing provinces.

With the growing number of rice consumers while the rice lands in Java and Bali keep shrinking, there will be challenges to provide rice in future. In fact, the provision of food in future will be affected by population growth.

The country also faces the challenge of increased wheat consumption which rose by 500% in the last 30 years. The Food Security Council in 2016 said that wheat has shifted the consumption away from rice. Both are challenging for national food security with preference for wheat is more critical because it will make us more dependent on import products.

Wheat derivative products have dominated Indonesia's dining tables with its most popular product instant noodle. The problem is that wheat only grows in sub-tropical climates, and it will make the country dependent on imports. Addiction to wheat will make it hard to provide food. Being dependent on imported foods will put Indonesia in a dangerous situation by putting at risk vulnerable populations.

Conclusion and Recommendation

CONCLUSION

The policy of Indonesian food production has shifted into rice production. It is indicated by policies, programs, and allocations to increase production of rice nationwide. Meanwhile, the support for local foods is very minimal. The changes in food production has endorsed a uniformity in food consumption. In the past Indonesians had a variety of staple foods such as sago, sorghum, and tuber roots, but now has shifted into rice and wheat.

The change of food production and consumption from diversity to uniformity has challenged food security in Indonesia. The provision of similar staple foods requires sustainable supply of rice amid climate change, land use changes, and degradation of agro-ecosystems. This has led to increased rice imports from time to time. The increase of rice imports has put Indonesia in a critical situation which will put farmers as the main victim.

The low variety of foods has caused related problems such as malnutrition and high rates of stunting. This is an indication of food vulnerability in Indonesia. Production and consumption are very important to keep food security directly and indirectly. Support on policies at the community, regional, and national levels is very important to push food security based on variation of local foods.

RECOMMENDATION

The growing food consumption demand in Indonesia has provided serious challenges for food policy which will have an impact in the years to come. Existing policies to increase the production of staple foods such as rice and importing wheat may not be adequate to meet increasing food demand.

Based on studies gathered, it is important to change food policies in Indonesia particularly for staple foods. Identifying interventions to improve diet and nutrition in Indonesia is one of the key issues to improve food security. Mainstream research and development, however, have been overlooking the potential of agrobiodiversity and wild food plants, even though they could contribute to diversifying diets and provide functional foods, particularly to marginalized and vulnerable communities.

This paper called out the potential for a shift to occur from current food systems, characterized by industrial modes of agriculture, to systems based around diversified agroecological farming and wild food plant. To make this happen, there are several steps that can be taken. First, we must bring back the concept of Nusantara food based on variety of local food and culture. Government should change vision of national food to accommodate a variety of local foods which are natural sources of foods for local people.

Therefore, provisions of national foods should include local food availability and not just rice, corn, and soy, considering the different climates and cultures.

Second, food policy should be integrated with health, climate change, and be in line with Sustainable Development Goals (SDGs). Food production in the future should develop sustainable pathways such as agroecological approachs based on four pillars which are economic, adaptive technology, safe environment, and sociocultural acceptance by the community.

Third, according to Food Regulation Article 33, the government should develop community reserve food (CPM) programs that communities will implement. Government should facilitate CPM according to local wisdom. According to Article 26 the government can establish partnerships with food enterprises, universities and communities to develop CPM. They can work together to find innovations on local wisdom to put CPM into practice.

Fourth, the whole food policy, particularly the effort to bring back variety of local foods, should be part of the National Action Plan, National Priority Program and National Financial Plan.

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