RADEN RIJANTA¹, DODI WIDIYANTO², TOEKIDJO TOEKIDJO³, SRI SULISTYANI⁴

ABSTRACT - Local food crops are believed to be important alternatives in facing the problems of continuously growing price of food stuff worldwide. There has been a strong bias in national agricultural development policy towards the production of rice as staple food in Indonesia. Local food crops have been neglected in the agricultural development policy in the last 50 years, leading to the dependency on imported commodities and creating a vulnerability in the national food security. This paper aims at assessing the factors constraining local food production in Indonesia based on empirical experiences drawn from a research in Kulon Progo Regency, Yogyakarta Province. The government of Kulon Progo Regency has declared its commitment in the development of local food commodities as a part of its agricultural development policy, as it is mentioned in the long-term and medium-term development planning documents. There is also a head regency decree mandating the use of local food commodities in any official events organized by the government organisations. The research shows that there are at least six policy-related problems and nine technical factors constraining local food crops production in the regency. Some of the policy-related and structural factors hampering the production of local food crops consist of (1) long-term policy biases towards rice, (2) strong biases on rice diet in the community, (3) difficulties in linking policy to practices, (4) lack of information on availability of local food crops across the regency and (5) external threat from the readily available instant food on local market and (6) past contra-productive policy to the production of local food crops. The technical factors constraining local food production comprises (1) inferiority of the food stuff versus the instantly prepared food, (2) difficulty in preparation and risk of contagion of some crops, lack of technology for processing, (3) continuity of supply (some crops are seasonally available), (4) low production and productivity level and (5) lack of knowledge on production and processing, (6) lack of skills and knowledge among the young people to grow the crops, (7) higher price as a result of commodity scarcity in the market, (8) attitudes towards local food commodities as secondary products, and (9) bias of information in marketing whereas local market is very small.

Keywords: local food crops, constraining factors, technical factors, policy-related factors, Kulon Progo Regency, Indonesia

INTRODUCTION

As a large tropical country in Southeast Asia, Indonesia is well endowed with abundant biodiversities spread dispersedly in its around 17.500 islands. These can be transformed into other

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local products such as herbal medicine, staple food, fibre, timber and renewable energy. The importance of fulfilling food as one of the most important basic needs is mentioned in the first goal of the Millennium Development Goals (MDGs): eradicate extreme poverty and hunger and in the seventh goal: ensure environmental sustainability (Sastrapradja and Widjaja, 2010). According to FAO (2006 in Siauw, 2008), based on its Food Insecurity Report stated that more than 850 million of the world's population is menaced by hunger and, ironically, about 800 million live in the less developed nations.

As a country with an abundant biodiversity, Indonesia has experienced a tremendous change in its sources of staple food, *i.e.* from a diverse local food to almost single staple food of rice across the nation in the last 50 years. Historically, the sources of staple food were greatly diverse across the country. People used to consume locally available food so that there was a strong variation of diet among ethnic groups in the country. To mention few examples, the Maduranese in East Java and the Gorontalonese used to consume corn as their staple food, West Papuan and Molluca people used to consume sagopalm powder and the Javanese people in Gunung Kidul Regency of Yogyakarta Special Province used to have cassava as their diet. All these ethnic groups are now consuming rice as their staple foods leading to a homogenous diet habit across Indonesia.

Government policy stated that rice is the main source of carbohydrate which indirectly put local food such as cassava, sagu, fish and corn into inferior, marginal or second choice of foods (Nauval *et al.*, 2010). Ironically, rice which is viewed as the staple food cannot always be accessed by all the citizen. As Sastrapradja & Widjaja (2010) explained, food security and poverty is interrelated. They further assert that poverty further causes inability of the communities to buy rice easily and leads to a new sort of vulnerability to our food systems. It is one of the reasons why there is a need to reconsider the importance of local food in strengthening the food security.

Present research in Kulon Progo Regency reveals that the area is well endowed with abundant local food sources. Geographically, this regency can be divided into two regions: the upper region and lower region. Upper areas are characterized by less fertile lands, limited irrigation, and seasonality of agricultural production. Local farmers have been able to adapt to the existing circumstances through the commodity choices. Meanwhile, lower land with its relatively better irrigation availability can produce various cash crops. Local foods are now well known only by the elderly people living in the district as a part of their diet in the past. However, nowadays, not all of the younger generation know, or at least have heard their names. Nevertheless, local foods are believed to be rich in nutrition as it is understood from previous research. In addition, they also have a potential as the future alternative solution to food security problems, even though, today, communities put them in marginal position or may neglect their widespread availability. Therefore, this ironic condition needs to be explored more deeply by covering the factors related to various policies and non-policies in agricultural production at the local level.

OBJECTIVES

This paper aims at assessing the factors constraining local food production in Indonesia based on empirical experiences drawn from a field research in Kulon Progo Regency, Yogyakarta Province (see Figure 1). This paper discusses the summary of our research findings.

RESEACH FRAMEWORKS

Among important debate in defining the concept of *local food* is the notion of *local* itself. There are at least three ways of defining what is local in the context of local food (Kremer & DeLiberty, 2011). They comprise (1) the use radius from a certain point, (2) the use of state or other administrative or political boundaries, (3) the use of foodshed boundaries. Kloppenburg *et al* (2006) suggest that 'the foodshed can provide a place for us to ground ourselves in the biological and social realities of living on the land and from the land in a place that we can call home, a place to which we are or can become native'. The use of foodshed concept is favourable as it integrates the production and consumption of the commodities in an identified region. The main problem in using the concept of foodshed lies on the difficulties in delineating its boundaries.

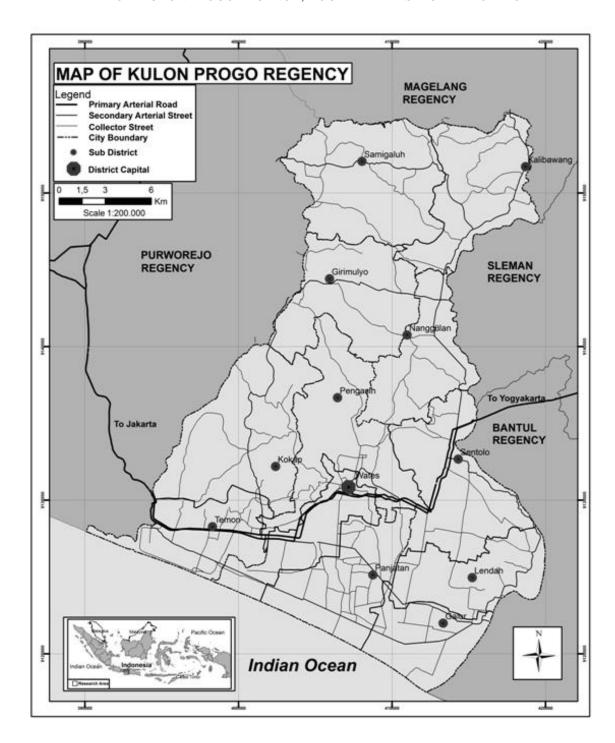


Figure 1. Administrative Map of Kulon Progo Regency

One of the most popular ways to define local in the context of local food is circumscribing a circle of arbitrary radius around a chosen central point of the production site. This way of defining boundaries of the local may not fit with the shape of the region studied, so that parts of the region may not be covered neatly following the circle. For the sake of convenience, this research utilizes political boundaries to define local food. Thus, local food is defined as food commodities produced within the Kulon Progo Regency. The production and consumption of local food commodities may help local governments in achieving its development goals. The purchase of local food by local consumers mean

that more money spent on food goes into the local economy. This gives financial benefits to local farmers and local traders and may also stimulate the growth of transportation service providers. Locally produced food gives greater freshness, ripeness, taste, and often, nutritional value.

Carter-Whitney (2009) reported systemic barriers as main stumbling block to local food production and consumption, such as those arising out of laws, regulations or international agreements. At the same time, institutional factor is considered to be a stumbling block for the production and consumption of local food. The long chain from farmers to groceries is hampering the consumption of local food commodities by the urban population. Also in line with these barriers, Martinez et al. (2011) assert that 'barriers to local food-market entry and expansion include: capacity constraints for small farms and lack of distribution systems for moving local food into mainstream markets; limited research, education, and training for marketing local food; and uncertainties related to regulations that may affect local food production, such as food safety requirements'.

According to Duram (2010), there are five main obstacles faced by farmers using alternative production practices of local food, namely (1) financial obstacles, (2) lack of technical information and assistance, (3) a lack of research to improve farming methods that do not rely on expensive inputs, (4) marketing difficulties, and (5) policies that focus on commodity production instead of quality food production, whereas Grossman (1993) identified two factors constraining local food production in the USA. First, marked volatility in prices in the market can be a disincentive to production. Second, consumer demand for local food crops is limited.

Within the context of banana production in the Caribia, Belisle (1984) reported the importance of physical conditions for the production of local food crops. Much of the land in his research areas is mountainous with variable precipitation and uneven soil quality. He also recognized that the attitudes toward agricultural work, change, and the quality of local food are often negative, hampering the production of local food. Moreover, unequal land distribution, technological limitations, and marketing deficiencies are further obstacles to increasing local food production. Food processing is limited by the lack of low-priced regular food supplies, the high cost of imported canning equipment and materials, and the lack of technical expertise. As a result, the contribution of food production to the gross domestic product is small, and large amounts of food are imported to feed residents as well as tourists.

RESEARCH METHODS

This paper is based on a set of data collected within the context of a research on the inventory and development of a database on local food crops for agricultural development in Kulon Progo Regency, Yogyakarta Special Province. In line with an inventory of local food crops at village level, a focussed group discussion (FGD) was conducted with various stakeholders at regency level. No less than 25 representatives of the local government organisations and non government organisations (NGO) attended the FGD meeting. The FGD meeting was designed to explore the experiences of various agencies in dealing with agricultural development and more especially in identifying the strengths, weakness, opportunities and threats for the development of local food crops as a part of agricultural development. From the grass root level, some in depth interviews were made to explore the knowledge, attitude and practices of production and consumption of local food crops as a cross-check to information gathered during the FGD session at regency level. At the same time, field observation and field documentation were made to obtain information on the cultivation practices including the use of technology for local food crop management.

The constraints of local food crop development were identified from the FGD records, in depth interview records, field notes and field documentations (especially photographs). All the records were transcribed for a convenience in identifying issues and linking one issue to another in order to find specific patterns showing the constraints of local food crop promotion. This qualitative information was organized according the research frameworks developed on the basis of various research reports and publications from many parts of the world. In discussing the output of this study, a comparison to other researchers' experiences as published in many journals and reports were made in order to establish generalizations when possible.

CONSTRAINTS TO THE PRODUCTION OF LOCAL FOOD CROPS

Local food commodity is deemed to be an important alternative to deal with the escalation of food price worldwide. There seemed to be a strong bias in rice production as the main food commodity in rural development in Indonesia. Local commodity development has been neglected in more than last 50 years in agriculture policies which, as a consequence, resulted in a high dependence on import food commodity and created new vulnerability in national food security system.

Our research in Kulon Progo Regency reveals that at least 49 types of local food crops are known in the regency (see Annex I). Many of these crops are known only by the elderly. Among the young generation in the rural areas of the regency there is a very limited knowledge on these crops. Given the existing knowledge on the local food crops in the regency, there is a doubt whether the farmers are willing to return to local food crop production. The strong political will of the local government to initiate the new programme in local food development will not be successful without the farmers' knowledge-based decision.

This section will elaborate constraint factors in local food production in Kulon Progo based on empirical research using a combination of FGD and field observation methods. The government of Kulon Progo has committed to develop the production of local food commodity as part of agriculture sector development policy as stated in the long and medium-term strategic development plan. One commitment is the regulation which obligates the use of local food products in every meeting and event held by local government organisations.

This research reveals six policy-related and structural factors and nine technical factors restraining local food production in this region. The structural and policy-related factors comprise the following: (1) long-term policy bias in rice commodity farming, (2) habit bias on rice as the main consumption, (3) difficulties to link policy and practice, (4) scarcity of information about local food production in the whole region, (5) threat from competitors, such as fast food producers, in the market, and (6) past contra-productive policy.

The six structural factors constraining local food production are given in details as follows:

1. Long-term policy bias in rice commodity farming

In the long term, after the termination of *Old Order* government in the mid1960s, agricultural development in Indonesia has overweighed food plant sectors, mainly rice. Rice has been concerned as strategic commodity needed by the Indonesian people as the staple intake. Understanding the importance of rice as the staple food in Indonesia, the government highly committed in attempts to produce rice in a sufficient amount for food sovereignty. Even so, the endeavours to overweight rice have been contra-productive from the perspective of local food development. The strong bias on rice consumption impacts on the people's low aspiration for local foods commodities which have been their food sources for centuries.

2. Habit bias on rice as the main consumption

The habit of consuming rice as the main diet undergoes also in the villages in Kulon Progo Regency. People living in the past, who used to have various carbohydrate sources of intake, nowadays tend to be monotonous in using carbohydrate source, which is rice. The dependence on rice as the only source of carbohydrate has brought about new vulnerability in food security. National rice stock has been combined with import rice these days. The national rice stock shortage could be compensated by local foods abundant in regions. However, agriculture development practices focused on rice commodity has neglected the local food commodities.

3. Difficulties to link policy and practices

Strong political will from the government to cultivate and consume local food products has never guaranteed any successful implementation. Strong encouragement to serve local food products in every official meeting has dealt with technical and administrative constraints. Administratively, spending of consumption has to be accountably referred to given standards if the enterprises own

trade-marks, even *NPWP* (number of tax obligated-citizen). Most of the enterprises specialized in local food processing are households which conduct the industry informally, thus they cannot comply with the administrative requirements imposed by the government. Besides, the small number of workers in local food processing is a constraint to imminent events or meetings. Most of the industries face difficulties in dealing with huge and immediate orders because they work at small scale.

4. Scarcity of information about local food production in the whole region

Information on the availability of local food products in every region in Kulon Progo seemed to be unstructured, thus unable to bridge the gap between suppliers, on the one hand, and buyers and consumers, on the other hand. Prosperousness-oriented local food development needs a bridging instrument to assist the transaction between farmers and traders transparently.

5. Threat from competitors, such as fast food producers, in the market

The invasion of fast food products in the last decades has undergone dramatically, even in rural areas in Kulon Progo. This situation has resulted in diminishing local food products because most of the fast food products are advertised throughout the country. Their marketing target is mainly children, thus, in the long term, this situation will take away local food products from the young generation. One of the important actions is the systematic spreading of information to young generation to consume local food products.

6. Former contra-productive policy

In the 1980s, the government forbade the plantation of certain plants causing health disturbance. One of the forbidden plants was *garut* (*marantha arundinacea*) as *garut* scrub was considered as a mosquito breeding place. Regions in Kulon Progo that used to have abundant amount of *garut* reduced the production significantly, even if it was no more recognized in several rural areas. By contrast, nowadays, *garut* flour is considered to be healthy flour for snacks. As a result, demands for this flour cannot be overcome by farmers.

Besides the policy-related factors, nine technical factors constraining the production of local food are identified. These include (1) inferiority of local food products compared to fast foods, (2) difficulties on preparation, risk of contagion for several types of foods, and scarcity of processing technology, (3) seasonal availability of local food commodity input, (4) low production and productivity of local food commodity, (5) dearth of knowledge, technology, and practice in production and processing, (6) dearth of young generation's knowledge and practice to sustain local food commodity, (7) higher price as a result of goods scarcity in the market, (8) attitudes towards local food commodities as secondary products, and (9) bias information in marketing whereas local market is very small. Technical constraints in local food production are elaborated in detail as below:

1. Inferiority of local food products compared to fast foods

Local food commodity, which has been neglected, has only been recognized as additional consumption and not as staple food. People consuming local foods are segmented by ages. It is only the seniors who know and consume local food products. Younger generation tends to be unfamiliar with the products or recognize them as inferior products, preferring fast foods better. Modernization has led to an instant life style and to a transformation of the younger generation's aspiration and taste. From the young generation's perspective, local food products are considered as inferior foods which are prideless and prestigeless in consumption.

2. Difficulties on preparation, risk of contagion and scarcity of processing technology

Local food products are generally complicated and, to some extent, difficult to prepare. Besides, some local food products need special processing to avoid contagion. Local food products in Kulon Progo, such as *benguk* (*mucuna pruriens*) and *gadhung* (*dioscorea hispida*), highly preferred by the people, need special processing to avoid contagion. Even though the contagion is not fatal, it leads

to more complicated preparation and processing and thus specific knowledge is required. In addition, local food processing technology is relatively undeveloped; hence people tend to process them traditionally. Local food technology development is required as an integral part of local food development and is urgent to be concerned in order to maintain food security in the future. Without the technology easing the local food processing, it would be difficult to put local foods back in the modernized and instant-oriented society.

3. Seasonal availability of local food commodity input

Most of local food commodities are available in the dry season market. By the end of rainy season, plants and herbs wither and are at dormant condition. In dormant period, local foods such as tubers are harvested. During rainy season, most of local food plantations flourish. The seasonal availability is a constraint in the development because a continual marketing needs a constant input for industries and direct consumers. Cultivation technology engineering leading to the availability of local foods during the year is needed to ensure the input continuity in the markets.

4. Low production and productivity of local food commodity

Cultivated as secondary plantations by the farmers, local food plantations have low extents of production and productivity. Most of the obtainable local food plantations are uncultivated local plants that flourish in the rainy season and decease in the dry season. Tubers grow and flourish during the rainy season and undergo an increase in the production by the next dry season. Intensive production efforts through intensive cultivation are no more found in the fields, thus the productivity of local food plants is low nowadays.

5. Dearth of knowledge, technology, and practice in production and processing

The neglect of local food commodities has systematically embraced a negative impact on development in knowledge, technology, and practice in cultivation and processing. Part of the society no more recognizes some of the variety of local food products in their surroundings. This dearth of knowledge is the cause of the low aspirations and unwillingness to consume local food commodities. Cultivation technologies have not been developed and most of the young farmers have no idea on the existence of local food plantations and their cultivation methods. Local food product processing has not developed technologically and, rationally, people tend to neglect production.

6. Dearth of young generation's knowledge and practice to sustain local food commodity

Most of young generation, especially young farmers, do no longer comprehend the technical aspect of local food plant cultivation because they put more priority on plants with distinct price on markets. Local food commodity production tends to be neglected because of the young farmers' scarcity of knowledge in production. Even though, in several cases, there are new efforts to support local food production, the effect has not been enough to push the cultivation of local foods in massive scale for diversification and to increase food security in the future.

7. Higher price as a result of goods scarcity in the market

Discontinuity of local food availability in the markets leads to unstable level of price, with a decrease in the harvest time and an increase in the production time. This situation is not compatible with a market that demands continuously. Industrial demands on local food production also require continuity of inputs during the year. This scarcity of input leads to the decrease in interest of industries to use local food commodity as the production input. The next impact in policies encouraging the use of these commodities as a component of local economic development will deal with the same constraints; discontinuity or seasonal products input. In the regulation on using local foods commodity in events and official meetings of the regional government, the seasonal availability may lead to an increase in price to serve local foods consumption.

8. Attitudes towards local food commodities as secondary products

Local food products are either treated as secondary commodity, or no attempt has been even made to cultivate them. The pressure on farmer's daily needs fulfilment has placed local food products unprofitably. Farmers do only harvest from the nature without any intensification in order to increase the production. The only cultivation that undergoes nowadays is replanting part of the tubers as new seeds, ready to be harvested by the next dry season. The attempts on farming like fertilizing, watering, and any other activities are not found.

9. Bias of information in marketing whilst local market is very small

Because of the low productivity, local food commodity trade seemed to be undeveloped as well. Marketing chain is usually too short from farmers to traders in local market to be purchased by local consumers. Export chain seemed to be unclear with indistinct marketing chain because of the low local production, whereas marketing and trading chains are to be formed with sufficient volume of production. Thus, the rising export opportunities of local food commodities cannot be met by the local farmers of the regency. Many of the local food crops in the area have a strong potential for exports, such as shorgum, *suweg*, *porang*, *iles-iles* and many kinds of spices.

CONCLUSION

The research concludes that there are at least two groups of factors constraining the production of local food crops in the research area, and most probably in other regencies in Indonesia with similar agro-ecological condition. The first group of factors are the policy-related and structural factors that lead to unfavourable environment for the production, consumption, trading and transportation of local food commodities. The creation of a favourable environment in the promotion of local food would have to address the existing policy barriers related to rice production and consumption, linkage between policy and development practices, establishment of a local food information system, regulation and control over fast food business and removal of contra-productive policy. These policy-related and structural factors cannot be addressed by the local authority only because many aspects of these factors are beyond the reach of local government control.

The second group of constraints, namely technical factors, comprises more controllable factors that the local authority can address. Campaigning the local food production and consumption can be one of the important programmes accompanying the existing decree of the head of regency concerning the obligation of government organisations to use local food during official events. Also in line with this campaign, production and consumption of the local food crops should be stimulated through various incentives in order to create awareness of all people on the importance of local food commodities and the need for food diversification. From the research it is also evident that the existing patterns of local food consumption produce a very short food mileage in comparison to various imported food commodities. Mileage of local food commodities is another important research agenda in the future.

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APPENDIX I

Table 1. Types of Local Food Crop in Kulon Progo Regency

No.	Local Food's Names	Latin Name
1	Uwi	Dioscorea esculenta
2	Gembili	Dioscorea bulbifera
2	Suweg	Amorphopalus campanulatus
4	Iles-iles	Amorpopalus variabilis
5	Ganyong	Canna edulis
6	Gadhung	Dioscorea hispida
7	Kimpul/bothe	Colocasia esculenta
8	Garut	Marantha arundinacea
9	Ubi kayu	Manihot utilissima
10	Ubi jalar/munthul	Ipomoea batatas
11	Pisang	Musa paradisiaca
12	Bestru/gambas	Lufta angularis
13	Sorgum/canthel	Sorghum vulgare
14	Jagung	Zea mays
15	Waluh besar	Cucurbita moschata
16	Waluh jipang	Schium edule
17	Labu	Benincasa hispida
18	Terong	Solanum melongina
19	Tomat	Sulanum esculentum
20	Cabe merah	Capsicum annum
21	Sawi putih	Brassica sinensis.
22	Kubis	Brassica oleracea

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No.	Local Food's Names	Latin Name
23	Sawi hijau	Brassica juncea
24	Bayam	Amaranthus spp.
25	Pare	Momordica carantea
26	Kangkung	Ipomoea reptans
27	Kacang panjang	Vigna sinensis
28	Mentimun	Cucumis sativus
29	Bawang merah	Allium cepa
30	Wortel	Daucus carota
31	Lobak	Raphanus sativus
32	Kacang tanah	Arachis hypogaea
33	Kedelai	Glycine max
34	Koro	Canavalia ensiformis
35	Kecipir	Psophocarpus tetragonolobus
36	Gude	Cajanus cajan
37	Kapri	Pisum sativum
38	Kacang hijau	Phaseolus vulgaris
39	Kacang tolo	Vigna unguiculata
40	Buncis	Dolichos lablab
41	Benguk	Mucuna pruriens
42	Nangka	Artocarpus integra
43	Sukun	Artocarpus communis
44	Kluwih	Artocarpus sp.
45	Pepaya	Carica papaya
46	Pisang	Musa paradisiaca
47	Kenikir	Tagetes erectus
48	Kelapa	Cocos nucifera
49	Aren	Arenga cathecu