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Market Pressure Based on International Food Standards in Export-Scale Urban Farming: Political Ecology Perspective

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Abstract

Urban farming has been transformed into urban agricultural activities oriented towards optimizing economic benefits through export market involvement. However, the expansion of the market has consequences for farmers. The involvement of urban farmers in export trade causes market pressures that affect agricultural production practices. This research used qualitative research methods. There were 27 informants in this study. Researchers collected data to determine market pressures faced by export-scale urban farmers in Bandung Metropolitan. Data collection techniques used in-depth interviews, observation, and documentation. The results showed that the market had put pressure on export-scale urban farmers in Bandung Metropolitan to meet international food standards. The mechanism was constructed to encourage farmers to adopt more environmentally friendly agricultural practices. However, international food standards are mandatory for export requirements. It meant that urban farmers still interpreted implementing international food standards as an administrative formality, not as a scheme of critical reasoning about environmental problems due to intensive agricultural practices. Therefore, market pressure by international food standards implementation is paradoxical and ineffective because farmers interpreted it as meeting export requirements rather than as awareness of farmers' environmental responsibilities to deliver healthy and environmentally friendly products.

Keywords

urban farming, market pressure, international food standards, political ecology

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Market Pressure Based on International Food Standards in Export-Scale Urban Farming: Political Ecology Perspective

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Urban farming has been transformed into urban agricultural activities oriented towards optimizing economic benefits through export market involvement. However, the expansion of the market has consequences for farmers. The involvement of urban farmers in export trade causes market pressures that affect agricultural production practices. This research used qualitative research methods. There were 27 informants in this study. Researchers collected data to determine market pressures faced by export-scale urban farmers in Bandung Metropolitan. Data collection techniques used in-depth interviews, observation, and documentation. The results showed that the market had put pressure on export-scale urban farmers in Bandung Metropolitan to meet international food standards. The mechanism was constructed to encourage farmers to adopt more environmentally friendly agricultural practices. However, international food standards are mandatory for export requirements. It meant that urban farmers still interpreted implementing international food standards as an administrative formality, not as a scheme of critical reasoning about environmental problems due to intensive agricultural practices. Therefore, market pressure by international food standards implementation is paradoxical and ineffective because farmers interpreted it as meeting export requirements rather than as awareness of farmers' environmental responsibilities to deliver healthy and environmentally friendly products.

Keywords: urban farming, market pressure, international food standards, political ecology

Introduction

Urban farming has become part of the solution for urban societies in various countries to increase fresh, healthy, and affordable food (Dimitri et al., 2016). The urban farming concept began with a United States government program during the second world war period (Ruiz, 2020). The war condition had disrupted the food supply in large cities in several US states (Ruiz, 2020); for this reason, the United States government implemented the Victory Garden

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Program to meet food needs through the gardens on the sidelines of the remaining urban land (Smit et al., 2001). The Victory Garden program was projected to increase 40% of the food needs of Americans (Bauw, 2015).

The Cuban government also successfully implemented urban agriculture when it experienced a trade embargo by the United States in 1992 (Altieri et al., 1999). The Cuban government has implemented a strategy to avoid a food crisis through urban agriculture (van Veenhuizen, 2006): they carried out an urban farming initiative program through integrated national policies in every individual and community as a permanent livelihood (Monzote, 2008). Urban agriculture communities carried out planting in the corners of the city and abandoned land with the central government's full support of material resources and services (Altieri et al., 1999). By 2005, urban farming in Cuba had produced 4.1 million tonnes of vegetables and employed 354,000 people (Monzote, 2008).

Referring to the success stories of the United States and Cuba, many countries have adopted the concept of urban farming to meet food needs while increasing the economic income of urban communities (Altieri et al., 1999; Drechsel & Dongus, 2010; Plegt, 2016). However, historically, urban farming has not only emerged as a strategy to meet food needs. In the 1970s, community urban garden was initiated as a community movement that carried an environmental and social ethos to produce food free of pesticides (Hallett et al., 2016). Various motivations behind the emergence of urban farming in various countries show various objectives for implementing urban agriculture.

Urban farming activity has become an innovation program that is facing a shift in goal orientation during its development. It is related to the social, economic, and environmental functions of urban agriculture. The social function refers to the self-sufficiency of meeting household food needs, the economic function of meeting market demand, and the environmental function of increasing green open space in urban environments (De Bon et al., 2010). From the environmental aspect, urban farming activities should benefit the environment from land use, recycling management, water management, and adaptation strategies to natural conditions (Opitz et al., 2016). Therefore, national and local authorities are starting to realize urban farmers can play in the scope of urban environmental management policies (such as urban greening, climate and biodiversity, waste recycling, and reduction of urban ecological footprint; van Veenhuizen & Danso, 2007). At the same time, the economic function of urban farming is a new opportunity for the community to increase their source of income. Agricultural activities have been rationalized and converted into economic enterprises that aim to achieve maximum results (high profits), while the next priority is to think about the needs of farmers related to subsistence, replacement, or ceremonial (Wolf, 1985).

This phenomenon triggered the emergence of urban agricultural activities transformed into export scale. Urban agriculture is agricultural production in the core of cities and suburbs (De Zeeuw, 2004). Therefore, export-scale urban farming activities in the peri-urban are also part of urban agriculture. This condition has already occurred in several major cities in Southeast Asia, where many people are involved in urban agricultural activities for high-value commodities and durable intensive production (van Veenhuizen & Danso, 2007).

However, food is traded on commodity and subject to market regulation in the global economic sector (Giraldo, 2019). Farmers as food producers are not sovereign in controlling seeds, agricultural facilities, land, and marketing (George, 2007). In addition, the market puts pressure on farmers besides limited land conditions to plant certain commodities that are currently in demand by consumers. Land availability is an important factor for sustainable production, so the intensification of sustainable food crop production and the cultivation of high-value crops are often recommended for urban agriculture development (Orsini et al., 2013). Therefore, urban farmers who have expanded to a commercial scale are vulnerable because they face pressure from their food products' involvement in the global market.

In practice, market pressure has been reflected in a variety of government policies. The Indonesian government agreed to ratify the Agriculture on Agreement (AoA) through Law No. 7 of 1994. The regulation is a response to global institutions' wishes to ensure that agricultural trade complies with global trade requirements. The Indonesian government responded to this demand by issuing a series of regulations aimed at enhancing the quality of Indonesian farmer products; the goal is to encourage farmers to adopt Good Agriculture Practices (GAP) in accordance with Minister of Agriculture Regulation No. 48/OT.140/10/2009. So many government-sponsored export promotion mechanisms have prompted farmers, including export-scale urban farmer actors, to commercialize their products. The operationalization of political economy in urban agriculture should be viewed through the lens of political ecology. Urban farming is a subset of urban agriculture, which is widely discussed in terms of feasibility and the need for political support (De Bon et al., 2010).

Studies regarding urban farming have been carried out extensively in many countries. Studies on urban farming generally aim to unravel problems of urban food needs (Benke & Tomkins, 2017; Edwards et al., 2014; Omondi et al., 2017; Prasetyo & Budimansyah, 2016; Siegner et al., 2018). Of all the studies concerning urban farming, only a few address a specific subtopic in political ecology (for instance, market pressures that push urban farmers to improve the quality of their crops to meet the international market demands). Market pressure in urban farming based on political ecology is an essential research topic as most of the existing discussion on urban farming only focused on local issues of urban farming with the concern of fulfilling the food security of urban communities. The fulfillment of food security for urban communities depends on the complexity of the problems faced by each city, the spatial characteristics of the city, and cultural and socio-economic factors of the urban community. The dynamics behind the implementation of urban farming, especially those that lead to the dynamics of global and local policies, have not been widely discussed. In fact, the phenomenon of market pressure is faced by farmers as policies related to food standardization have been legitimized internationally. This study aimed to generate new knowledge in exploring the impact of market pressures faced by actors in intensive agriculture in rural areas and by urban farmers who expand their urban farming system from a local scale towards an intensive scale (export-scale). This paper also aimed to answer the following research question: how is the market pressure phenomenon concerning international food standards in export-scale urban farming in the Bandung Metropolitan area based on a political ecology perspective?

Literature Review

The beginning of political ecology was developed in the 1970s. One of the approaches which emerged was driven by the Marxist criticism of Malthus's ideas (Benjaminsen & Svarstad, 2019). Human ecology's conceptual limitations in comprehending the power of the state and market have prompted the search for new conceptual tools geared toward political-economic analysis (Benjaminsen & Svarstad, 2019). Experts developed the perspective of human ecology into human socio-ecology to encourage a new scientific field known as political ecology (Dharmawan, 2007). Political ecology is encouraged to expand and more fully understand the operationalization of power that describes post-structural analysis and discourse (Watts, 2015).

The realm of political ecology begins with the relationship of producers to markets, the commodification of land and labor, forms of surplus extraction, and forms of social prismatic differentiation with farming communities, economic morals disruption, emerging structural forms and changes in production relations (Watts, 2015). Lawrence Grossman (1998) provides an example of applying a political ecology approach in the agricultural context. A political ecology approach is used to analyze changes in production relations due to the new

international division of labor or new internalization in the agricultural sector (Grossman, 1998). One of them is related to agrochemical input innovation as a support for agricultural modernization, which certainly has significant implications for the relationship between humans and the environment, which can potentially cause environmental degradation and also reduce agricultural labor (Grossman, 1998).

Political ecology frames the battles on the global and local level. At the global level, the battle is one of knowledge and ideas, which can be translated into tangible forms of power, such as policies or laws with the ability to alter the rules (Tarigan, 2016). Regulation at the local level is a struggle for material gain from resources (Tarigan, 2016). Export-scale urban farming in political ecology refers to a battle on the global level over the expansion of capital in the agricultural sector. Capital expansion is part of a global manoeuvring strategy that leads to conquering new markets and capitalizing on excess capital through hyper-urbanization and resolving rural to urban subordination. (Giraldo, 2019).

Actors who own capital must constantly expand geographically because their productive capacity increases much faster than demand (Giraldo, 2019). Therefore, market creation is a strategy undertaken by farmers to respond to new opportunities arising from external stimuli (Kanamaru, 2014; Klimek et al., 2018). However, the limited agricultural area in urban areas becomes an obstacle for urban farmers to get potential income (Dimitri et al., 2016). One possible way is to establish an agricultural base on the outskirts of the city. Another study shows that high-income and middle-income urban households engage in commercial urban agriculture through unique access to urban and peri-urban land (Tacoli, 1998).

The transition of urban farmers into intensive agricultural production activities indicates a necessity to expand the marketing network; therefore, some urban farmers join in the export-scale agricultural commodity trading activities. However, urban farmers have to deal with more complex market mechanisms when entering the international market. International trade develops in a single market mechanism, which causes the country not to have the authority to regulate trading activities at the global and domestic levels (Grossman, 1998). There were hierarchical institutions that drove the expansion of capital from the mid-twentieth century (Giraldo, 2019). This mechanism has been regulated in the 1994 World Trade Organization (WTO) agreement in the agricultural sector, aiming to create a fair and market-oriented agricultural trade system (Gonzalez, 2004). The WTO agreement attempted to expand market access, reduce export subsidies, and limit domestic subsidies.

The WTO agreement was an implication of the SAP (Structural Adjustment Program) required by the IMF and the World Bank after the 1980s monetary crisis to restructure existing debt and obtain new loans (Gonzalez, 2004). The infiltration of neoliberal economic reforms applied to developing countries in two different terms (Gonzalez, 2004). The first term was during the monetary crisis that occurred in the 1980s; many countries then adopted neoliberal economic reforms. The second phase began in the mid-1990s where the SAP, which included the involvement of the IMF and the World Bank, obliged developing countries to cut government spending and encourage exports in maximizing available income to serve foreign debt interests (Gonzalez, 2004).

Thus, the SAP Program compelled countries to devalue their currencies in order to privatize state-owned enterprises, significantly lower social costs, eliminate subsidies and price controls, including those on agricultural inputs, and liberalize trade by eliminating import quotas and lowering interest rates (Gonzalez, 2004). In the SAP (Structural Adjustment Program), there was a mechanism to boost the export of food crop commodities, but the reciprocal relationship in export-import between developed countries and developing countries sometimes went unbalanced.

Therefore, to find the beneficiaries of this single market mechanism, it was necessary to identify historically the state recipients of the Structural Adjustment Program (SAP). If

historically, the state was a recipient of the Structural Adjustment Program, the existence of exports other than to increase foreign exchange was to meet the IMF and World Bank requirements for restructuring state debt. Many countries in the global south are bound by international loans.

The dilemma triggers a developmentalism mindset of the global-south countries' governments, which must follow specific regulations. The specific regulations include the rural modernization process, which supports significant transnational capital investment-oriented production (Giraldo, 2019). One of the development strategies is to export primary commodities, including foodstuffs (Tacoli, 1998). It is tricky for global south countries to compete according to liberal capitalism rules because local farmers will experience defeat in competition with imported products that have lower prices than local products (Giraldo, 2019). A single market policy has benefited developed countries by opening free market access to dominate market share in developing countries. The single market policy has encouraged protectionism from developed countries to save local food products in their countries to prevent the onslaught of food products from developing countries (Arfani et al., 2012; Wisadha & Jaya, 2015). Protectionism is an attempt by the state to plan economic policies and to secure the domestic economy from the domination of foreign products (Wisadha & Jaya, 2015).

The type of protectionism used is environmental protectionism, to ensure that circulating products meet environmentally friendly standards (Arfani et al., 2012). The United States has implemented environmental protectionism policies to sort the products of other countries entering their countries to meet environmentally friendly standards by unilaterally applying trade restrictions. There are four forms of protectionism undertaken by the United States: subsidy policies, especially for agricultural products, labeling policies, anti-dumping policies, and tariff barriers (Arfani et al., 2012).

In Indonesia, it has also regulated a policy on food to be exported through the Law of the Republic of Indonesia, Number 18 of 2012, Article 35, paragraph 1, which states, "Everyone who exports food is responsible for the safety, quality, and nutrition of food required by the destination country." The regulation reflected that the government agreed to food standardization in order to penetrate the export market.

Agricultural product export regulations, standards, and certifications have different criteria determined by product, exporting, and importing countries. So each country has its own regulations and standards to ensure the quality of foreign products that enter the country (Liu, 2007). Thus, to be accepted by the international market, producers and exporters must comply with technical regulations by government institutions of the exporting country, government institutions of destination countries, and international food standards. These regulations and standards cannot be separated from environmental issues, which become the parameters of whether a product is feasible to enter many countries' markets (Arfani et al., 2012). The following are some technical regulations and general international food standards published by the Division of Trade and Markets, FAO, which must be complied with by parties intending to export food products (Liu, 2007).

- **Commercial Quality:** Regulations that focus on grade, size, and weight. Commercial qualities include variety, colour, expiration date, external damage, and shape.
- **Labeling:** The information needed for labelling regarding country of origin, product name, variety, and quantity.
- **Food Safety Regulations:** Producers must ensure the quality and safety of their products and avoid potential hazards (water pollution from microbes or chemical contamination). There are two regulations, which are the Maximum Pesticide Residue Limit and Product Traceability. The maximum limit of

pesticide residues is related to the maximum limit of pesticide residues (herbicides, insecticides, fungicides). Producers can only use registered chemicals for certain types of plants and must comply with usage and storage instructions. Product traceability is the ability to track food shipments, including food production, processing, and distribution.

- Phytosanitary Regulations: Regulations to prevent the introduction and spread of plant and insect diseases into new areas with a phytosanitary certificate.
- Customs services: Require exporters to have primary forms (commercial, shipping) and pay fees (import duties and taxes).

From applying food standards, export-scale urban farmers are also affected by market pressures. Urban farmers have been engaged in intensive agricultural production modes, which create asymmetrical relationships between actors. Exporters and partner farmers are bound by regulatory burdens from countries of origin, export destination countries, and regulations on global food standards, while farmers must implement strategies to survive in international market pressures. Farmers involved in a contract with an export company that controls the market must also fulfill the product in the amount written in the contract and pay attention to the quality of the requested products. If they cannot comply, sanctions such as termination of cooperation contracts can threaten farmers. While there is a condition where post-harvest products do not meet the provisions required by exporters, farmers must look for products from other farmers. The existence of market emphasis on farmers is a form of unequal distribution of power in the food trade relationship. The fading of the power of farmers in the global food trade regime is the alienation of farmers from sovereignty as food producers. However, market pressures can significantly impact urban farmers as food producers live in urban areas. Because metropolitan areas have their complexities of problems that can further position urban farmers in a vulnerable condition due to land-use competition, agricultural waste problems, urban climate incompatibility for agriculture, and others. Therefore, research on market pressures faced by urban farmers is an urgent study to be discussed as material to identify market fluctuations that disrupt the sustainability of urban food production.

Method

Research Design

A qualitative method was employed in the present study, with a narrative approach to describe market pressures experienced by export-scale urban farmers. The qualitative method referred to Strauss (1987), emphasizing both situational and structural context. Czarniawska (2004) in Creswell and Creswell (2017) stated that a narrative type is commonly used in qualitative design since it is easily understood as a spoken or written text to explain events, actions, events series, or activities connected chronologically. Furthermore, Creswell & Creswell described this research procedure by focusing on studying one or two individuals, collecting data through their collection of stories, reporting on individual experiences, and chronologically ordering the meaning of those experiences. We appraised that a qualitative method with a narrative approach was suitable for the present study because food safety standards should be made in a situational context. There will be conditions where farmers' experiences should deal with market pressures that require them to adjust to that.

Site Selection

Cities and regencies in the Bandung Metropolitan area in West Java, Indonesia were selected as locations of this study. Several considerations for selecting the location were based on interview results with some urban farmers. Firstly, many entities have successfully developed urban farming activities in the Bandung Metropolitan area into industrial scale, heading for export to some Southeast Asian countries such as Brunei Darussalam, Singapore, and Malaysia. Secondly, urban farming in the Bandung Metropolitan area has been initiated by young farmer groups since the 2000s through the cultivation of organic vegetables. Thirdly, the Food and Agriculture Office of the United Nations (FAO) has been involved in encouraging urban farming in the area, especially in the Bandung city, by fostering community groups in each village to reduce dependence on food from outside the Bandung city. This study was conducted in such peri-urban areas because urban agriculture could not be viewed only within administrative boundaries. The definition of urban farming used in this present study was the basic definition of urban agriculture (De Zeeuw, 2004), where all forms of urban agriculture are related to the urban ecological system and can play an essential role in the urban environmental management system.

Determination of Informants

In this qualitative research, the determination of informants was based on purposive sampling. In picking informants purposively, we had defined some specific criteria for the persons who will become the informants. One of the criteria was that the urban farmers should live in the Bandung Metropolitan area and have achieved the export scales' marketing level. Farmers selected as informants were those who directly marketed their products to international buyers and those who became partners of agricultural commodity exporters in the Bandung Metropolitan area. We also picked informants from companies or associations that market urban farmers' products in the Bandung Metropolitan area to obtain information related to the implementation of international food standards. As known, information about the international food standards needs to be informed by exporters to partner city farmers. We also interviewed local governments who are in charge of inspecting and verifying international trade requirements. We also used the snowball method to extract data from one informant to another on a rolling basis. The number of informants was determined based on the point of redundancy, that is, the condition when the addition of informants does not affect new information (Lincoln & Guba, 1988). The number of participants was not set in advance, but the actual total number of interviewees in the present study was 27. All the informants in this study were actors in the global and local food regimes that are involved in export-scale urban farming activities.

Qualitative Data Collection Techniques

Data were collected from September to December of 2020. During this period, Indonesia was facing the COVID-19 pandemic that restricted social activities. However, this research required direct observation and interviews in order to collect comprehensive data on the phenomenon of market pressures faced by urban export farmers. Therefore, direct data collection was performed with the implementation of the COVID-19 spreading preventive health protocol. Before the field research was carried out, some formal permissions were firstly requested from institutions within the National and Political Unity Agency in West Java Province and the National and Political Unity Agency in regencies or cities within the Bandung Metropolitan area. The permit from each institution was required for conducting in-depth interviews and arranging permits for exporters and farmer groups that became the subject of

this research. The COVID-19 non-reactive anti-gene rapid test was required to ensure the safety of both the informants and researchers during the data collection process. When collecting data, we wore masks and used hand sanitizers, handwashes, face shields, and vitamins. Additional masks were also provided for the informants who did not bring one. Data were collected through various data collection methods, that is, literature study, observation, in-depth interviews, and documentation. The following describes each data collection method used in the present study:

Literature study

The literature study was executed to assess the theoretical perspective of political ecology and its application in analyzing a case, as well as to obtain information related to food and agricultural regulatory policies. Books, journals, and various scientific articles relevant to this research topic were used for the literature study. Both printed and digital versions of the books were used.

Observation

Observations were performed to review a detailed description of urban farming activities in industrial-scale agriculture for food export. The observations were carried out at multiple locations, that is, production land, farmer's commodity storage warehouses, packing houses, and a quarantine center for pre-export agricultural commodities. Direct observation methods were implemented to assess whether each location complied with technical regulations and food standards required for export. Observations in the production land were carried out before in-depth interviews with informants. Some informants who were farmers typically started to go to their farm at around 6-7 AM (West Indonesian Time) to begin their activities, such as fertilizing and spraying pesticides (pest control). We observed farmers' activities in the production area during this time. Subsequently, we went to packing houses and commodity storage warehouses to observe labeling and phytosanitary standard. Observations at the quarantine center were also performed to acquire complete data regarding export requirements of agricultural commodities.

In-depth interview

In-depth interviews were employed to explore data that focused on urban farming practice from the perspective of political ecology on market pressure in export-scale urban farming. Some preparatory processes were carried out before in-depth interviews. Information related to production practices such as the application of pesticides and fertilizers was somewhat considered a sensitive issue, hence sometimes such information could not be obtained from just one interview. Therefore, meetings with informants could not be held only once. Information related to production practices was also confidential as there might be a risk of imitation of such practices by the other farmers or competitors, which subsequently could bring down their urban agricultural activities if the practices did not comply with regulations. Therefore, we built trust and personal closeness with our farmer informants. We committed with the informants by keeping secret the identity of the farmers and the farmer organizations. In the first meeting, we only explained the motives and objectives of our research. In the second meeting, we followed the activities of farmers on their farm, made observations, conducted interviews with light topics, and sometimes helped their work on the farm. In the subsequent meeting, in-depth interviews were performed with more serious topics related to the input application to their farm, their relationship with groups or associations, and compliance with

food safety technical standards regulations. Before in-depth interviews were carried out, we first tried to lighten the atmosphere to make the informants accept our presence, such as offering drinks (coffee or tea) and snacks. Unstructured interviews and open-ended questions were used in this study as such question types are effective in acquiring the views and opinions from the informants (Creswell & Creswell, 2017). Interview guidelines were used to outline the problem so we could develop research questions that were still relevant to strengthen the informant's answers to the outline of the problem.

Documentation

Documentation was done by compiling photo files, video and voice recordings, and other documents. Interviews were voice-recorded as transcripts of the interviews in order to explore data in more detail. Data tracing from documents was also carried out to gather information on food policies, policies related to international trade, regulations, and export standards applied to producers and exporters. Before documentation was performed, we asked permission and approval from all the informants to take pictures and voice recordings.

Qualitative Data Analysis

Qualitative data analysis in the current study was performed in several steps. The qualitative data analysis steps were referred to Miles et al. (2018). After all the data from in-depth interviews, observation, literature study, and documentation were collected, the recorded interviews were then transcribed, and observation notes, literature studies, and documentation results were studied. Subsequently, we tried to retype, explore, and summarize the important points in the observation notes. A literature study was conducted to add arguments in the discussion part. Analysis of the photo documentation was also carried out to describe and strengthen the findings from field notes. Then, we performed a condensation process to sort information to sharpen data analysis. Condensation means sorting the data in the transcript by encoding the data. We coded capture and summarized the statements, behaviors, feelings, actions, essence, and messages of the informants in each data segment. In the process, we created three columns: complete raw data (Column 1), preliminary codes (Column 2), and final code (Column 3). After that, the coded data were classified into some categories. In qualitative data analysis, this process is called open code, which aims to generate concepts that might fit the data (Strauss, 1987).

The data were classified in the following categories: commercial quality, labeling, food safety regulations, phytosanitary regulations, and customs services. To organize the classification process, we created a table containing the identity of the informants with serial number codes (1-27), questions in the interview guide, and answers from each informant regarding the answers in the interview guide. Then, we classified the informants' answers based on the categories. Afterward, we performed the data presentation. We narratively presented the data and used a table to accommodate the data in an organized manner in a form that was easy to understand. The results of the analysis were subjected to answer the research problem in the present study. A verification process was also done by looking for patterns and relationships between our results and the existing data. We used data validity checking techniques, specifically with data source triangulation techniques. The data source triangulation was conducted by cross-checking the answers acquired from the in-depth interviews. A data source was selected, then it was compared with the interview answers from the export partner farmers, farmer groups, and exporters.

Results

Market Pressure Based on Commercial Quality

The commercial quality of the commodity demanded by the market reflected market pressure on the production aspect. Export-scale urban farmers in Bandung Metropolitan must conform to export standards, which include regulations on commodity types, sizes, colors, textures, and shapes. The specifications listed below were requested by buyers in destination countries based on data specifications for agricultural commodities at one of the district's packing houses.

Table 1

Commodity Specifications Demanded by Modern and Export Markets (SOP at Packing House in West Bandung Regency, 2020)

Type of Commodity	Size	Color	Texture	Shape
Green Bean	Length 13,5 cm	Full Green	Smooth	Straight and Clean
Sweet Potato	Length 20 cm	Light Brown	Smooth (no holes or no traces of worm pests)	Straight and Clean
Zucchini	Length 25 cm, Diameter 10 cm, and Weight 175 grams	Full Dark Green	Smooth	Straight and Clean
Curry Lettuce	Length 20 cm, and Diameter of Stem 27,5 cm	Light Green	Smooth	Clean and Fresh
Purple Eggplant	Weight 170 grams, Length 21 cm, and Diameter 13 cm	Full Purple without Scratches	Smooth without holes	Clean and Fresh
Cauliflower	Weight 350 grams, and Diameter 37 cm	White	Smooth	Clean
White Cabbage	Weight 500 grams	White	Smooth	Clean
Cayenne Pepper	Length 6 cm	Orange	Smooth	Clean and Fresh
Chinese Cabbage	Weight 500 grams, Length 25 cm, and	White	Smooth	Clean

	Diagram 32 cm			
Tomato	Weight 130 grams and Diagram 19 cm.	Green to Slightly Red	Smooth	Clean and Fresh
Green Paprica	Weight 160 grams, and Diagram 26 cm	Full Green	Smooth	Clean
Kabocha Orange	Weight 800 grams, and Diagram 43.5 cm	Full Orange	Smooth	Clean
Red Cabbage	Weight 350 grams	Full Purple	Smooth	Clean
Potatoes	Weight 16 grams and Diagram 10 cm	Light Brown without a Greenish Color	Smooth	Clean
Beetroot	Weight 250 grams or 125 grams per item and Diagram 24 cm	Full Dark Purple	Smooth	Clean

Farmers who have received orders from international buyers must adhere to these commodity specifications. According to informant 11 from an export-scale urban farming farmer, he was required to maintain the product's quality, specifications, and cleanliness, which were all mandatory (See Figure 1). Therefore, his products were absorbed by the market.

The product's quality must be satisfactory, clean, and consistent with the specifications. Green beans should not be broken, infected with disease, or muscled.

The provision was a manifestation of restricting the space for farmers to carry out production. Commercial quality was a requirement that was prioritized over more environmentally friendly urban agriculture practices. Although many countries have adopted neo-liberalization of nature by accommodating environmental concerns, export-scale urban farmers do not prefer more environmentally friendly agricultural management mechanisms. The market is more tolerant of environmentally unfriendly products than of those that do not conform to visual standards such as weight, color, shape, and texture. According to informant 15 from an urban farming community who grows green beans (*Phaseolus vulgaris L*) on the following export scale:

Nobody went there [organically]; organic was difficult. We focused on quality, without defects, without caterpillars, and 12 cm, according to regulations we were aware of, but perhaps they [farmers] sorted their products as well.

According to an informants 11 and 15 from urban farmers in Bandung and West Bandung Regencies, urban farmers were forced to rely on seeds, fertilizers, and pesticides produced by large companies, which had a negative impact on the agricultural ecosystem's sustainability. Meanwhile, environmental agriculture conditions have a limit of utilization where intensive-scale agricultural production can affect environmental quality. The condition was derived from the statements of farmer informants who served as the managers of farmer groups in the Cimenyan District. They stated that their product was still far from organic, but as long as the Quarantine Agency determined it was safe for shipment, delivery activities would continue.

Figure 1

Land Production of Green Beans for Market Export (Primer Documentation, 2020)



Therefore, the visual product selection mechanism was firmer than the emphasis on environmentally friendly product selection. It can be seen in classifying commodities into three grades (A, B, and C) to separate products that were unsuitable for export. Several informants from urban farmers on the export scale were already familiar with the specifications for grade A exports. When harvest time came, they sorted the produce independently before distributing it to farmer groups. The phenomenon of product sorting is in accordance with the statement of informant 8 below:

Exports were classified as [grade] A, while supermarkets were classified as [grade] B. Straight, the length was suitable for the provisions if supermarkets require [products] to be free of defects and rot. Besides, the farmers' quality products became visible as the production cycle progressed; we had to verify that the market desired [products] that were free of caterpillars and did not bend.

After farmers transferred their products to farmer groups, the farmer groups maintained responsibility for sorting (the mechanism for ensuring the high quality of products sent to exporters). Although exporters conducted quality control procedures once the products were deposited in their packing house, they occasionally conducted quality control in the field to observe the production process on a micro level. In addition, there was the statement from informant 21 regarding quality control below:

We also had QC [Quality Control] from us, as we were the ones who encountered the issue. Despite the fact that they mentioned [grade] A, we shall see. We were preparing to go to the field.

Thus, the commodity selection process occurs in every institution because improving commercial quality requires complex production intervention.

Market Pressure Based on Labelling Process

The labelling applied to export-scale urban farming products had a different standard variation. It was determined by the terms of the buyer's existing cooperation contract. Based on information from an exporter informant for sweet potatoes (*Ipomoea batatas*), buyers in Hong Kong wanted a product neatly packaged 500 grams in plastic with a barcode, description of the product Indonesia, and the address of the official distributor in Hong Kong. The exporters in Indonesia provided packaging for sweet potatoes (*Ipomoea batatas*). So, the products arrived in the destination country ready for distribution. Farmers could get orders from buyers for up to 5 tons of sweet potato (*Ipomoea batatas*).

However, other products, such as green beans (*Phaseolus vulgaris L*), did not have the special packaging required by buyers in the destination country. Farmers only carried out packaging using ordinary plastic, which was then covered with cardboard for export. According to informant 12, as farmer and exporter said:

We did not label the products because buyers in the destination country would still sort our products upon receipt to ensure that [our] products were superior to the order. The amount to be determined was based on each order invoice received from the buyers.

Meanwhile, farmer groups that were exporters' partners deposited their products in quantities ranging from 0.5 to 8 kg for exporters. We discovered that some farmer groups imposed a minimum deposit requirement on their farmer partners. In one of the cases, the farmer group had a minimum deposit requirement for export commodities of green beans (*Phaseolus vulgaris L*) when weekly export volumes exceeded 8 kilograms. The rules were strictly enforceable.

Market Pressure Based on Food Safety Regulations (Maximum Pesticide Residue Limits and Pesticide Tracing)

At a global level, FAO and WHO have collaborated to issue Codex Alimentarius on Fresh Fruits and Vegetables to protect consumer health and ensure fair practices in the food trade. Each commodity has its own specifications from the regulations. The formulation of the policy is a manifestation of the battle at the global level, which will later bind actors, especially those engaged in the production process, to apply the principles of pesticide use.

At the national level, the Government of Indonesia has also set a Maximum Pesticide Residue Limit for each commodity through a regulation issued by the National Standardization Agency for Indonesia. According to the National Standardization Agency for Indonesia in 2007 (2007), the Maximum Pesticide Residue Limit is the maximum concentration of pesticide residue legally permitted or known as an acceptable concentration of agricultural produce in milligrams of pesticide residue per kilogram of agricultural produce. The type of pesticide used also determines the maximum pesticide residue limit (BMR). For example, in commodity green beans (*Phaseolus vulgaris L*), for using the pesticide Ethiofencarb on green beans (*Phaseolus vulgaris L*), the BMR was set at 0.2 mg/kg. Meanwhile, the type of pesticide Flucitrinat has a BMR of 0.05 mg/kg. On each pesticide package, the company that produced the pesticide usually states the dosage. However, many farmers were still unaware of the critical nature of pesticide dosage. As statement by informant 9 the export farmer below:

There were [pesticides rules] from the company, but [we] used instinct; maybe if [the use of pesticides] was too much, sometimes [we] reduced it, but sometimes [we] made it too much during pest season.

Export-scale urban farmers also purchased more pesticides than produced organic pesticides themselves because farmers wanted energy and time efficiency. The perception among export farmers was that it was almost impossible to produce organic pesticides because the area of land they had was around 1-3 hectares; it would require many production costs because production could not be done alone without workers' assistance. Besides, collecting and fermentation of raw materials to make organic pesticides on a large scale took a long time. Meanwhile, the use of pesticides must be given regularly by farmers, so plant pests did not damage their products.

Furthermore, other obstacles came from external factors. In some conditions, farmer groups applied synthetic pesticides with particular brands to farmers to get maximum productivity. It was done to keep the products from being defective and continuously fulfilled the group's production amount. To maintain this mechanism, farmer groups always held regular meetings to discuss the needs of farmers; one topic discussion was the rules of using pesticides. As following statement by the informant 6 below:

There were [pesticides rules] imposed by the company, but [we] followed our instincts; perhaps if [pesticide use] was excessive, we occasionally reduced it, but occasionally increased it during pest season.

However, as described in reality, many farmers disregard these rules in favor of commercial quality. A rapid test kit has been provided by packing houses to determine pesticide levels. However, not all products were inspected for each item; rather, random samples were taken by packing house staff. According to a statement from informant 27, who works for a government-owned packing house:

We only [had] a rapid tool to check pesticides. When farmers sent their products, [we] checked randomly, but they already had printed out [test results].

Prior to export, exporters conducted a laboratory test to determine pesticide residue. The exporters conducted this inspection independently to ensure the accuracy of export supporting documents. Additionally, they used the test solely for supporting documents when the local government conducted surveillance.

Market Pressure Based on Phytosanitary Regulations

A phytosanitary certificate is a mandatory certificate owned by exporters and farmers who directly export to get a permit to ship products. The certificate is to ensure that the products are free from plant pests. In Indonesia, checking the phytosanitary of agricultural products is the authority of the Agricultural Quarantine Agency. Some documents that exporters must prepare to get Phytosanitary Certificate (KT 10): Identity Card, Bill of Lading, and Invoice. Users could use the application through the online PPK (all complete files are uploaded with the PPK Online application), Request for Export of Products, Packing List, Import Permit, and COO (Certificate of Origin).

The mechanism to get a phytosanitary certificate has two routes: attending directly to the quarantine service office or uploading the application file through the PPK Online website (ppkonline.pertaniankarantina.go.id). The quarantine official checked the documents when

they were complete and would be inputted into IQFAST. They returned the documents to the owner because the documents were not complete. Quarantine officials carried out physical and health checks on plant products. The inspection included product conformity with invoices and product health based on statement informant 26 from Agricultural Quarantine Agency below:

Quarantine inspected only the packing house. Why was the packing house inspected? Because it had been designated as a plant quarantine installation site. If the packing house was not designated as a plant quarantine installation location, the inspection must be conducted at the airport. We examined the items, their condition, and the presence of soil elements on the vegetables.

Plant products certified as healthy were free of plant pest organisms. They may return products that are deemed inappropriate or unhealthy. Products classified correctly and healthily would receive a KT12 quarantine certificate. Furthermore, informant 26 added the following statement:

We conducted product conformity checks and vegetable health checks. Specifically, how many products were there? Were the product's conditions identical to those specified in the instructions? This inspection was conducted to ensure that there were no issues with the products once they arrived in the destination country.

The inspection by the Agricultural Quarantine Agency was carried out only visually; they could not test the product content every time delivery activities. Therefore, in Indonesia, the phytosanitary mechanism was not too hard to fulfill by farmers and exporters because the product was only checked in terms of product suitability and the amount according to the buyer's order.

Market Pressure Based on Customs Services

Many farmers performed customs services directly due to their direct connections to buyers in the destination country. However, many farmers in Bandung Metropolitan collaborated with exporters because they did not sell their agricultural products directly to foreign buyers. Therefore, exporters played a critical role in interacting with customs services. The process of complying with customs obligations was quite complex as stated by informant 20, who was an exporter, below:

There were many documents, yes, [shipping management] was actually quite a hassle. The officers in customs carried out inspections according to supporting documents and inspected products using the sampling method. If the shipping had not had complete facilities, such as cold storage, and the settings of cold storage should be matched. If the settings were not matched, the products had the potential to be damaged.

The licensing process that had a long process caused small-urban farmers quite challenging to apply for export permits. Moreover, they should prepare conditions such as the availability of facilities to deliver fresh vegetable products to be safe and stay fresh to the destination country. Therefore, cooperation was an important mechanism that small farmers had to do. They could not work individually for export; they should have economic capital and social capital in a network of vegetable exporter groups to succeed in their market expansion.

Discussion

The present study aimed to investigate the market pressure phenomenon amongst urban farmers in the Bandung Metropolitan area in East Java, Indonesia. This study examined market pressures in the case of export-scale urban farming activities based on the fulfillment of international food standards imposed on export-scale urban farming farmers. We referred to Liu (2007) in discussing the classification of urban farming compliance with international food standards, including commercial quality, labeling process, food safety regulation, phytosanitary regulation, and customs services.

We found that market pressures in the case of export-scale urban farming activities had brought urban farmers into a paradoxical situation. International food standards push farmers to become more environmentally friendly in agricultural production. In reality, such a mechanism made farmers less friendly to the environment.

The paradoxical situation can be associated with the dynamics of the global political economy. Historically, Indonesia has implemented a structural adjustment program (SAP) that was initiated by the International Monetary Fund (IMF) and the World Bank as a result of receiving loans from donor institutions (Kuspradono, 2003). One notable impact of the SAP implementation is the neo-liberalization of nature in environmental management, which then causes the marketization of environmental management mechanisms (Bakker, 2015). The situation refers to the adoption of a series of neoliberal policies aimed at alleviating global poverty, one of which is an overly organized market and an export-oriented economy (Peet, 2007). The optimism reinforced is a belief in combining the goals of economic growth, efficiency, and nature conservation (Bakker, 2011).

One mechanism for environmental management in urban areas can be identified through the urban farming project (Dorr et al., 2021). Urban farming can be classified as a community-based conservation project that embodies a global discourse on environmentally friendly agricultural practices. Urban agriculture can encourage capital accumulation (McClintock, 2014), investment (Cabannes, 2006), and reduce food transportation distances, which reduces air pollution and greenhouse gas emissions (Mok et al., 2014). On the other side, many of the current urban farming in local community scale shifted towards large-scale production to make profits (van Veenhuizen, 2006). This phenomenon reflects that the market system has penetrated the local community, and all relations have become the interest of the individual who sells goods (Wolf, 1985).

We discovered that the urban farmers, as the local community, started to expand the market of their products into the international market to maximize their profit. However, urban farmers have to deal with the implementation of international food standards. The implementation of international food standards provided evidence of the emphasis on the aspect of production output for local farmers. In general, standards have a defined minimum or lowest acceptable standard and require manufacturers to show compliance (Otto & Mutersbaugh, 2015). International food standards have the potential to deprive farmers of their ability to allocate resources. Allocative power refers to taking over elements of the biophysical nature, such as land and food, and control over other people (Tilzey, 2017). However, this allocative power is centered on a single economic powerhouse within international institutions. Power is accumulated at a global level where world institutions control people's economies and livelihoods through policy tools (Peet, 2007).

Government agencies need to establish and coordinate food standards into national and international environmental policies (Otto & Mutersbaugh, 2015). Thus, market regulations could be derived from the institutions at the macro-level (the central government) to the micro institutions that deal directly with export-scale farmers, including in the case of export-scale urban farmers in the Bandung Metropolitan area.

We noticed that the application of commercial quality standards to export-scale urban farming caused urban farmers to be deterritorialized. Its relevance to the case of urban agriculture in the Bandung Metropolitan area is that the urban farmers are pushed to produce commercial quality products in the certain quantity desired by the market based on physical characteristics such as shape, size, texture, and color, which could strongly influence consumers to purchase their products. Consumers may become trapped due to retailers' marketing of misleading product information (Eden, 2011). In this case, consumers may receive a doctrine that a healthy product must be visually defect-free. The more homogeneous the quality of the product desired by the market, the more it will limit the space for farmers to perform experiments during their production activities in the farms. For instance, the farmers will become more selective in determining the inputs used and reducing the opportunities to develop local crop varieties. Such a phenomenon has confirmed that the deterritorialization process occurred amongst the farmers. The deterritorialization process generally aims to destroy farmers' territories by removing their control over their production areas and replacing them with economic rationality to integrate them into the system (Giraldo, 2019).

Deterritorialization appeared to be a concept that had manifested in reality. The control of farmers' production methods could eventually alienate export-scale urban farmers in the Bandung Metropolitan area from maintaining ecosystems and fulfilling organic products. Thus, urban farmers could be deprived of their productive behaviors and the biophysical space in which they live. This biophysical space grab was associated with the quality of commercial fulfillment, which influenced manufacturing practices.

In this study, we have also identified the deterritorialization of the urban farmers from the imposition of minimum standards for product deposit and the absence of product labeling that shows the producer's identity. The phenomenon of the minimum product deposit rule reflects the vertical power relationship between the management of farmers' groups and their partners' farmers. The farmer engagement project is a component of a post-development policy aimed at integrating indigenous actors into the global trading system (Giraldo, 2019). In the local level, social relations are unequal as a result of the farmer's engagement project. By integrating farmers into the system, it will become easier to control them via structured vertical relationships, ensuring that farmers obey local superiors who carry the global food regime's agenda. Global regulations could infiltrate the work of local organizations and bring an effect on how farmers treat their agricultural products. In the end, farmers lose sovereignty over the food they produce. So, deterritorialization based on the concept of political ecology occurs from the alienation of farmers from their products.

In the case of urban farmers in the Bandung Metropolitan area, the farmers did not include the label, that is, the identity of products origin for certain commodities in packages that are ready for sale to consumers. For instance, the identity of green beans (*Phaseolus vulgaris L*), one of the farmer's products, could not be determined due to the lack of a specific label. Such labeling is not yet becoming a concern for urban farmers engaged in export, particularly those involved in the export of green beans (*Phaseolus vulgaris L*). Farmers' primary objective is simply to ensure that their products are proper for consumption and profitable. Such reality shows the alienation of farmers from their products, where farmers are not given space for the products they produce. Consequently, the commodities exported to the destination country are without the farmers' label in the packaging. This can be associated with the concept of alienation and Marx's critique of the capitalist system, whereas workers lose one form of right to their products. Farmers' omission of food production sovereignty resulted in their alienation.

Market pressures encountered by export-scale urban farmers in the Bandung Metropolitan area are also related to phytosanitary compliance. As a partner of large-scale exporters, the informants mentioned that they must utilize genetically engineered crop seeds.

This situation reflects the neo-liberalization policy in the agricultural sector, meaning that the farmers who are involved in the international trading system have made many changes in the utilization of production input and output. For instance, the existence of agricultural inputs such as crop seeds, fertilizers, and pesticides produced by global companies indicate that global inputs have indoctrinated farmers to depend on these inputs. It is true that the inputs provided by companies are produced from modern agricultural biotechnological innovations that could bring added value to the products. For example, nowadays, superior seed products produced through genetic engineering are broadly used by farmers worldwide, although there are some adverse issues that the products may be unsafe for the ecosystem and bring risks to human health. Dialectically, the innovation of using modern biotechnology filled with a network of relationships full of power creates opportunities, reworks, and rearranges the relationship between humans (farmers) and nature. The effect of this innovation will affect plant diversity, which subsequently causes phytosanitary problems (Robbins, 2011).

Global discussions about phytosanitary certificates from a political ecology perspective have not been widely found. However, the causes of the expansion of plant pests have been broadly studied using political ecology. In general, the phytosanitary problems arose from the addition of agricultural inputs that ignored the ecosystem's tolerance limits, resulting in the excessive growth of plant-disturbing organisms. At the global level, the solution offered by policymakers is to issue a regulation for testing the phytosanitary aspects of each agricultural input product: they could internalize the regulations for each country exporting agricultural products.

The urban farmers perceived phytosanitary only as an obligation to fulfill the administrative requirements to pass export. The phytosanitary requirements are not yet interpreted as an awareness to provide safe products for consumption and practice environmentally friendly production. This situation shows a lack of regulatory enforcement. Thus, the policy of green neoliberalism or free-market environmentalism, which is intended to strike a balance between economic growth and environmental management, is not accompanied by comprehensive legal instruments. Ineffective checks were also associated with farmers' lack of commitment to adhering to the maximum allowable pesticide residues throughout the product's life cycle.

The aforementioned phenomenon reveals the existence of job blackmail, that is, a situation when humans experience work hostage because they face the hard choice between maintaining the environment or the job (Magdoff & Foster (2018)). In this case, the farmers are actually noticing and aware that the application of chemical pesticides has the potential to disrupt the environment and change biodiversity, but they have no other option, so they keep continuing to do that. They may also actually have adequate knowledge about that, but sustainable farming is not a priority. Consequently, they disregard environmental protection measures, and the agricultural labor system has imprisoned them. This case reflects that the neo-liberalization concept adopted as an environmental governance mechanism causes the role of markets and business entities to be too dominant, resulting in negative consequences for the environment. This phenomenon is in alignment with the finding of Otto and Mutersbaugh (2015), which observed that expansive environmental conservation practices through certified environmental quality standards do not always mean a rise in ecological protection. Our study also complements a political ecology approach in demonstrating the market's inconsistency in terms of balancing the economy and environment through contradictory mechanisms.

Contradictions can be defined as apparent inconsistencies between objects or outcomes of the same process, historical period, or condition (Robbins, 2011). In political ecology studies that emphasize modernity criticism, the absence of nature (the environment) from development calculations is a symptom of the modern dichotomy symbol, which contains the separation between subject and object; nature and society; individual and community; and mind, body,

and emotions (Giraldo, 2019). Even though the rules are intended to promote environmentally friendly agricultural practices, the environment remains distinct from human life because global and local actors have not shifted from an anthropocentric to a biocentric paradigm. Many political ecologists have criticized the neglect of the environmental aspect in integrating economic growth with the environment (Forsyth, 2003; Giraldo, 2019; Robbins, 2011).

It can be said that environmental policy incentives cannot stem environmental discredit in economic activity. The present study can be used as an evaluation for all relevant stakeholders in sustainable development, so they can provide regulatory interventions and formulate policies that prioritize community-based development in the scope of agricultural management that is more equitable and environmentally friendly. This study revealed that market pressure from technical regulations and international food standards affect the demeanor of urban farmers. Unfortunately, still, we have not accommodated the impacts of market pressures on the other relevant actors (related to their power and interests), so it is suggested that the future study can investigate it further. In the forthcoming, this study can also be developed by investigating the impact of environmental degradation caused by market pressures to deepen the study of the imbalance between economic growth and ecological conservation in development studies.

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