

## Article

# Stakeholder Analysis and Prioritization of Sustainable Organic Farming Management: A Case Study of Bogor, Indonesia

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**Abstract:** The world's population continues to increase, which causes food demand to increase. The increasing food demand is followed by increasing public awareness of healthy living. One way to overcome these problems is the application of organic farming. Developing organic farming must not be distinct from the role of stakeholders. The study aimed to describe and understand the stakeholders' role in organic farming management. The research was conducted using interviews, field observations, and literature studies. The analysis was carried out quantitatively and qualitatively. Stakeholder analysis is carried out to identify, classify, map, and analyze relationships between stakeholders. The result showed all stakeholders involved in the management of organic agriculture in Bogor, West Java, are classified into four groups, namely key player (Agriculture Department and the Indonesian Organic Alliance (AOI), subject (farmers and community groups), context setter (Organic Certification Institute, Agriculture and Technology Park (ATP)-IPB University, and Organic Entrepreneurs), and the crowd (Bappeda and Universities). All stakeholders should support the government in developing policies and strategies for developing organic farming. In addition, key players, especially the Indonesian Organic Alliance, should proactively negotiate with local governments and communities regarding the sustainability of organic farming development. The policy implication of this research is to determine the contribution of stakeholders in making a strategy for the development of organic farming.

**Keywords:** implication; management; organic farming; policy; stakeholder



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## 1. Introduction

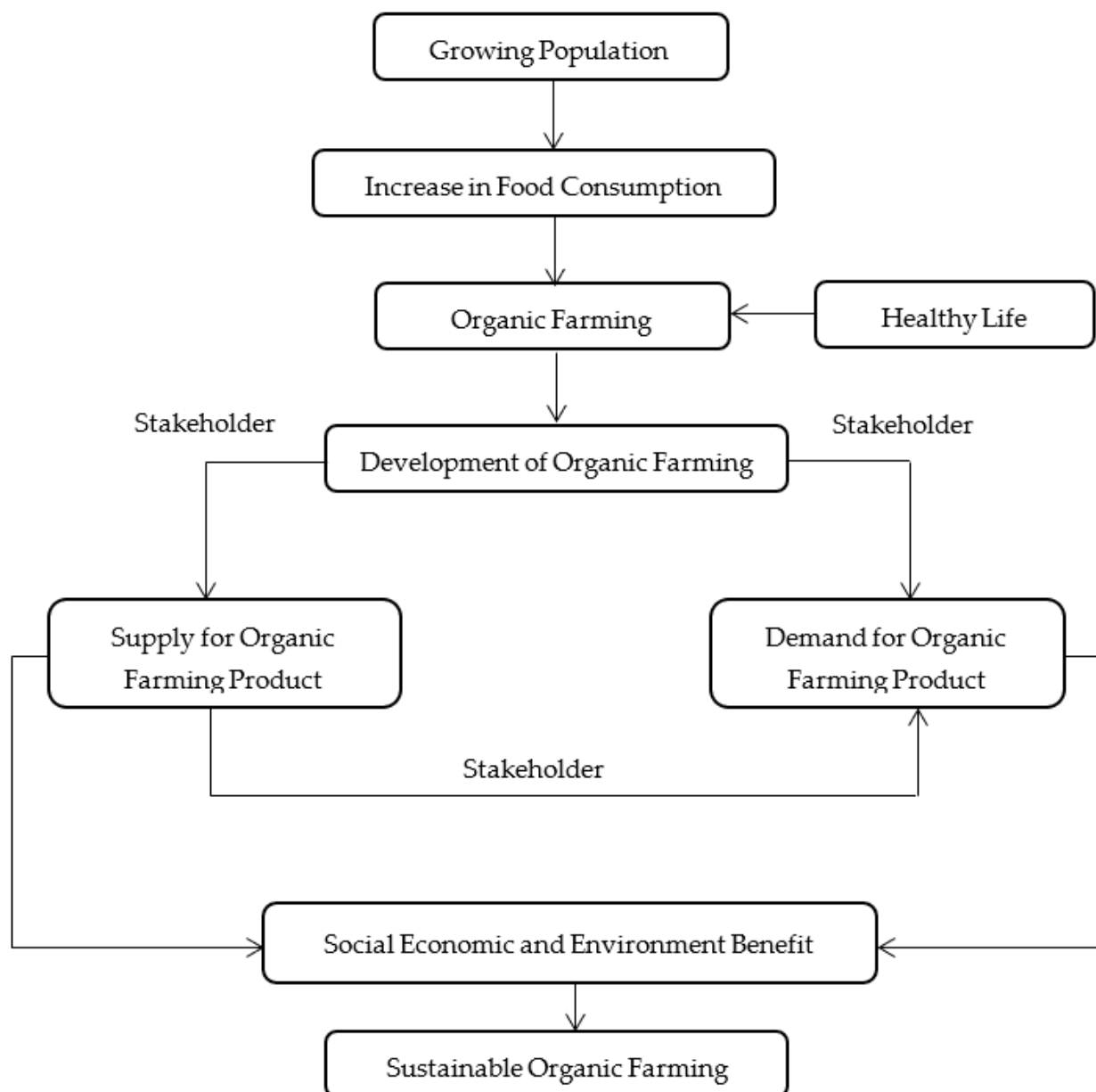
The world's population continues to increase, which causes food demand to increase [1]. One method used to increase agricultural production is the use of chemical fertilizers, irrigation systems, and genetic engineering [2]. However, using pesticides, chemical fertilizers, and heavy metals has caused severe environmental and health problems [3]. The public is increasingly aware of the dangers of using chemicals to increase agricultural production. Some of the adverse effects of using chemicals in agriculture include environmental pollution [4,5], temperature increases caused by greenhouse gas emissions [6], and harm to human health and other living organisms [7].

One way to overcome these problems is the application of organic farming. Organic farming is defined as an agricultural production system that promotes the health of humans, plants, animals, and soil, sustains ecological systems and biodiversity, ensures environmental equity and livelihood opportunities, and safeguards the health of future generations and the environment [8]. Organic farming is a potential solution to reduce environmental pollution associated with agricultural cultivation. Organic farming systems encourage

the use of biofertilizers, natural pathogens, and pest control [9]. Therefore, organic farming is expected to encourage optimum agricultural production and maintain the natural sustainability of the agricultural and environmental ecosystems [10,11].

One of the efforts to develop organic farming is to form a network among stakeholders [12,13]. Governments at various levels play an essential role in supporting the sustainability of organic farming by facilitating multi-stakeholder processes at various stages of development [14,15]. In general, the development of organic farming in urban areas is faced with several problems that must be solved immediately, namely market constraints, consumer interest and understanding of organic products, the certification process, which is considered difficult by small farmers, farmer organizations, and partnerships between farmers and entrepreneurs [16]. The central and local governments must be able to interact with stakeholders in developing organic farming and sustainable food systems [17]. In addition, institutional conditions directly related to the development of organic farming need to be reviewed both from the aspect of stakeholders, legal products (rules of the game), and the organizational structure of organic farming management institutions. The institutional aspect is essential in supporting a resource's sustainability. If a resource is damaged, it is reasonable to suspect that the institutional aspect is experiencing problems [18]. Institutions and policies will work if the process involves various stakeholders related to the organic farming development program.

There must be a clear strategy for developing organic farming in Bogor, Indonesia. In addition, each stakeholder's role, influence, and interest have yet to be identified and mapped. This will result a problem and obstacle to the development of organic farming in Bogor, Indonesia. This stakeholder mapping is critical in carrying out the strategy because stakeholders can help the organization achieve its goals. Stakeholder analysis is one of the tools in stakeholder mapping. Thus, analyzing the stakeholders involved in developing organic farming in Bogor, Indonesia, is essential. The conceptual illustration of research ideas is presented in Figure 1. Through stakeholder analysis, the interests of each stakeholder will be illustrated, whether it has a positive or negative consequence on the sustainability of organic farming management. In addition, it will also illustrate the level of influence of stakeholders in decision making and the role of stakeholders in overcoming and preventing further damage to agricultural land resources in the future. Stakeholder analysis can also assist in mobilizing local resources [19,20] and understanding the conflicts in the use of land resources [21,22]. This analysis helps determine which actors are influential or influenced when making decisions [23–25]. Therefore, stakeholder analysis becomes a vital instrument for determining the future direction and strategy for appropriately developing organic farming policies. The study aimed to describe and understand the stakeholders' role in developing organic farming.



**Figure 1.** The conceptual illustration of the research idea.

## 2. Methodology

### 2.1. Study Site

The research was conducted in Bogor, West Java Province, Indonesia. Bogor town and district are buffer zones for Jakarta's capital, where at least 6.5 million people live. The population of Bogor Town is recorded at 1,052,359, while the population of Bogor District is 5,489,536, 86% of whom live in urban areas [26]. Bogor town and district are also known as areas in which the development of the hotel, restaurant, and cafe sectors has been overgrown. To produce food, hotels, restaurants, and cafes require raw materials, including raw materials from agricultural products. This sector's development positively impacts Bogor's economy, marked by its contribution to local revenue. Bogor District has an area of 39,000 ha of agricultural land with great potential in the development of organic farming, especially in the development of organic farming cultivation. Bogor district has a land area of 298,838.3 ha and a land suitability level of 16.7% for agricultural land [27]. Of all sub-districts (40) in Bogor district, 18 sub-districts already have groups of farmers or organic producers. The area of certified organic land in Bogor district is 106.03 ha.

Bogor town has an area of 2910.97 ha of agricultural land, much smaller than the area of agricultural land in Bogor district. The area of organic land in Bogor town is 14.5 ha.

## 2.2. Stakeholder Analysis

This research used a case study approach. Data were collected through observation and interviews with all stakeholders. Observation activities are intended to obtain an overview of the stakeholders managing organic farming in the Bogor area. Meanwhile, the interview activity was intended to obtain an explanation of the interests and power of each stakeholder in the management of organic farming in Bogor, West Java. This study used semi-structured interviews based on interview guidelines that have been prepared and conducted face-to-face with stakeholders. The instruments used were interview guidelines and stakeholder influence and interest assessment sheets. The types of data collected in this study were primary and supporting data. Primary data were obtained from field results through interview guides to stakeholders involved in developing organic agriculture. Primary data are information about the stakeholders involved, the role of stakeholders, as well as the interests and influence of stakeholders in development. The supporting data collected include the general condition of the research location.

The sampling technique used snowball sampling. The selection of crucial informants was purposively based on regional mastery, problems, and knowledge. The key informants in this study came from the City Food and Agriculture Security Service (DKPP) and the Bogor Regency Food Crops, Horticulture, and Plantation Service, the local government, the Indonesian Organic Alliance (IOA), Organic Certification Institute (LSO), farmer groups, organic product entrepreneurs, Agriculture and Technology Park (ATP) at IPB University, universities, and the community. Interviews were conducted with key informants, generally the head of the institution or those responsible for the institution concerned, and several critical informants from the community.

Stakeholder analysis includes three steps: identifying stakeholders, mapping and classifying stakeholders, and analyzing relationships between stakeholders [23,28]. The following steps of stakeholder analysis are explained as follows:

### 1. Stakeholders identification

Stakeholder identification was conducted to identify stakeholders involved in developing organic agriculture. Field observations and interviews were conducted to identify stakeholders and their interests. Stakeholder identification was conducted by verifying the stakeholders involved in developing organic agriculture with information about stakeholders from the first informant source. Selected stakeholders were considered based on experience and knowledge per the research focus. Furthermore, researchers can determine other stakeholders who provide more complete data based on data and information obtained from previous stakeholders.

### 2. Stakeholders mapping and classifying

Stakeholders are mapped into a stakeholder analysis matrix based on the magnitude of the interests and influence of stakeholders in the development of organic farming. The measurement of stakeholders' level of interest and influence is based on five main aspects (Tables 1 and 2). The interest level was assessed based on stakeholder involvement in developing organic farming (K1), benefits of developing organic farming for stakeholders (K2), stakeholder authority in developing organic farming (K3), stakeholder work program related to developing organic farming (K4), and stakeholder dependence in developing organic farming (K5) (Table 1). Furthermore, the influence level was assessed based on the strength of stakeholder sanctions in developing organic farming (P1), the strength of stakeholder compensation in developing organic farming (P2), the ability to interact in the context of developing organic farming (P3), strength of stakeholders in developing organic farming efforts (P4), and strength of stakeholder organizations in organic farming management efforts (P5) (Table 2). The measurement data used are five-tiered and have been modified from the model developed by Rachmawati and Anjana [29]. A score of 5

means very high, a score of 4 means high, a score of 3 means relatively high, 2 means less high, and 1 means low [30]. The total scores of the questions are added, and measurements are made with a difference of five (Table 3). The scoring results on the level of influence and interest of each stakeholder are grouped according to the type of indicators.

**Table 1.** Score and criteria of stakeholder interest level.

Aspect	Score	Criteria
K1–Stakeholder involvement in developing organic farming	5	Involved at all stages of development
✓Planning	4	Involved in three stages of development
✓Organizing	3	Involved in two stages of development
✓Implementation	2	Involved in one stage of development
✓Monitoring/evaluation	1	Not involved in the stage of development
K2–Benefits of developing organic farming for stakeholder	5	Gets all the benefits of developing organic farming
✓Source of livelihood	4	Gets three benefits
✓Create jobs	3	Gets two benefits
✓Environmental services	2	Gets one benefits
✓Open relationships	1	Does not get the benefits
✓Encourage regional development		
K3–stakeholder authority in developing organic farming	5	Has four authority
✓Protection and security of organic farming	4	Has three authority
✓Development of facilities and infrastructure	3	Has two authority
✓Community empowerment	2	Has one authority
✓Data and information provider	1	Has no authority
K4–Stakeholder work program related to developing organic farming	5	>20% in tasks and functions
✓>20% in tasks and functions	4	16–20% in tasks and functions
✓16–20% in tasks and functions	3	11–15% in tasks and functions
✓11–15% in tasks and functions	2	6–10% in tasks and functions
✓6–10% in tasks and functions	1	<5% in tasks and functions
✓<5% in tasks and functions		
K5–Stakeholder dependence in developing organic farming	5	81–100% as a source of income
✓81–100% as a source of income	4	61–80% as a source of income
✓61–80% as a source of income	3	41–60 % as a source of income
✓41–60 % as a source of income	2	21–40% as a source of income
✓21–40% as a source of income	1	20% as a source of income
✓20% as a source of income		

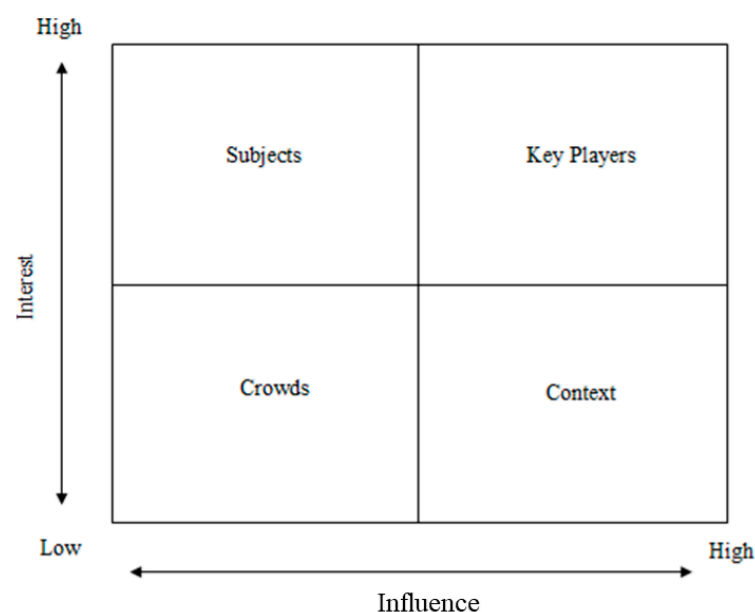
**Table 2.** Score and criteria of stakeholder influence level.

Aspect	Score	Criteria
P1–Strength of stakeholder sanctions in developing organic farming.	5	Four sanctions
➢ Administrative sanctions	4	Three sanctions
➢ Financial sanctions	3	Two sanctions
➢ Legal sanctions	2	One sanction
➢ Moral sanctions	1	No sanction
P2–Strength of stakeholder compensation in developing organic farming	5	Four compensations
➢ Giving a salary/wages	4	Three compensations
➢ Giving a plot of land	3	Two compensations
➢ Providing assistance/activities	2	One compensation
➢ Awarding	1	No compensation
P3–Ability to interact in the context of developing organic farming	5	Has four ability
➢ Hold a forum to discuss resource management plans	4	Has three ability
➢ Hold cooperation	3	Has two ability
➢ Mutual influence between stakeholders	2	Has one ability
➢ Changing the direction of resource management	1	Has no ability
P4–Strength of stakeholders in developing organic farming efforts:Opinion	5	Has four power
➢ Education and Culture	4	Has three power
➢ Promotion/advertising	3	Has two power
➢ Rules/monitoring	2	Has one power
	1	Has no power
P5–Strength of stakeholder organizations in organic farming management efforts:	5	Has four forms of capacity
➢ Budget strength (≥30%)	4	Has three forms of capacity
➢ HR Strength	3	Has two forms of capacity
➢ Suitability of functional areas	2	Has one form of capacity
➢ Licensing	1	Has no capacity

**Table 3.** A qualitative measure of the interests and influence of stakeholders.

Score	Value	Criteria	Information
Stakeholder interests			
5	21–25	Very high	Heavily dependent on organic farming
4	16–20	High	Depending on organic farming
3	11–15	Moderate	Quite dependent on organic farming
2	6–10	Less	Less dependent on organic farming
1	0–5	Low	Does not rely on organic farming
Stakeholder influence			
5	21–25	Very high	Greatly affects the management of organic farming
4	16–20	High	Highly influencing organic farming management
3	11–15	Moderate	Enough to influence the management of organic farming
2	6–10	Less	Affecting organic farming management less
1	0–5	Low	Does not affect the management of organic farming

The next step was stakeholder mapping by adding up the scores of interests and influences of each stakeholder, by forming coordinates with the position of the stakeholder roles (Figure 2). Quadrant 1 was occupied by stakeholders with a score of interest and influence of  $>12.5$ . Quadrant 2 was occupied by stakeholders with an interest score of  $>12.5$  and an influence of  $<12.5$ . Quadrant 3 was occupied by stakeholders with an interest score of  $<12.5$  and an influence of  $>12.5$ . Quadrant 4 was occupied by stakeholders with an interest score of  $<12.5$  and an influence of  $<12.5$ . Stakeholder classification uses an influence and interest matrix by classifying stakeholders into key players, context setters, subjects, and crowds [23,28]. The results of the mapping of stakeholders based on their influence and interests are divided into four groups, namely key player, subject, context setter, and crowd (Figure 2). Key players are stakeholders who have a high interest and influence in organic farming activities. Subjects are stakeholders with high interest but low influence in organic farming activities. Context setters are stakeholders with a strong influence but low importance in organic farming activities. Crowds are stakeholders who have low interest and influence in organic farming activities.

**Figure 2.** Matrix of influence and interest.

### 3. Relationships between stakeholders

Relationships between stakeholders were obtained through interviews. Data were analyzed using descriptive analysis to identify collaborative relationships between stake-



holders that still needed to be carried out. Stakeholder relationships are grouped into cooperative, coordination, and communication relationships [31]. The cooperation that has been carried out is in terms of coordination and division of labor for each stakeholder.

### 3. Results and Discussion

#### 3.1. Identification of Stakeholders in Developing Organic Farming in Bogor, Indonesia

Stakeholder identification is the initial stage in conducting stakeholder analysis. Stakeholders are people interested in or concerned about the problem [32]. These stakeholders are often identified with certain considerations, namely their relative power and importance to the issue [33], or their important position and influence [32]. The results of stakeholder interviews in developing organic farming in Bogor, Indonesia, obtained nine stakeholders, with the main task of each showing their involvement (Table 4). The form of stakeholder involvement in developing organic farming in Bogor, Indonesia, is the contribution of funding, land provision, human resources (HR), and information and knowledge facilities. Participation of stakeholders involved developing organic farming in Bogor, Indonesia, by cooperating and coordinating between stakeholders.

**Table 4.** Stakeholders involved in developing organic farming in Bogor, Indonesia.

No	Stakeholder	Main Tasks Related to Developing Organic Farming
1	Department of Agriculture	Planning and regulating the development of organic farming.
2	Bappeda	Play a role in planning and budgeting, including food security and agriculture.
3	Community	Take on the role of a user and engage in a promotion.
4	Farmer Groups	As a partner of the Regional Government in developing organic farming management, especially for producing/supplying organic farming products.
5	The Indonesian Organic Alliance	To strengthen the institutional quality and smallholder production to gain better market access, promote the movement for organic farming and fair trade, and strengthen national and international advocacy and networks.
6	ATP IPB	Play a role in increasing farmers' income by building a system that synergizes and becomes a storefront as well as a means of technology dissemination and marketing.
7	Private / Organic Entrepreneurs	As a working partner of the regional government, such as the providing seeds, maintenance, harvesting, packaging and marketing.
8	Certification Organic Institute	Play a role in the certification process for organic products that are produced by organic farming communities.
9	Universities	Play a role in conducting research and community service related to developing organic farming so that developing organic farming is based on relevant and comprehensive study results.

#### 3.2. Mapping and Classifying Stakeholders in Developing Organic Farming in Bogor, Indonesia

The assessment results of stakeholders' level of interest and influence on developing organic farming in Bogor, Indonesia, are based on five questions/main elements and scores that have been prepared previously. The magnitude of interest is assessed based on the involvement of stakeholders in developing organic farming, the benefits of developing organic farming for stakeholders, the authority of stakeholders in developing organic farming, the priority scale of stakeholders in developing organic farming, and the level of dependence of stakeholders in developing organic farming. Additional questions during the field interviews were used for discussion. The results of the compilation of the assessment of the level of interest and influence of stakeholders in developing organic farming are presented in Table 5.

**Table 5.** The level of stakeholder interest and influence in developing organic farming.

No	Stakeholder	Value of Interest					Total	Influence					Total
		K1	K2	K3	K4	K5		P1	P2	P3	P4	P5	
1	Agriculture Department	5	5	5	5	5	25	4	5	5	5	5	24
2	Indonesian Organic Alliance	4	5	4	5	3	21	4	4	4	5	4	21
3	Bappeda	3	3	2	2	1	11	3	1	2	2	2	10
4	Organic Certification Institute	2	2	2	2	2	10	3	3	4	4	2	16
5	Farmer Groups	3	5	4	4	5	21	2	4	3	4	3	16
6	ATP IPB	2	2	3	2	3	12	2	4	4	4	3	17
7	Organic Entrepreneurs (Private)	1	2	3	2	3	11	3	3	4	4	4	18
8	Universities	2	2	3	2	1	10	2	2	2	3	2	11
9	Community	3	4	4	4	3	18	1	2	2	2	2	9

There are three stakeholder groups, including key stakeholders, main stakeholders, and supporting stakeholders [34]. Based on the results of the mapping of stakeholders in developing organic farming in Bogor, Indonesia, it can be seen that there are differences in key, main, and supporting stakeholders. This is closely related to each stakeholder's degree of interest and influence. Stakeholders generally have a low or high level of influence and interest because they usually do not have a direct relationship and are not interested in resources (organic agricultural land). However, in some instances, stakeholders who are not primarily related to resources may have a strong influence, such as the private sector/organic product entrepreneur. This happens if stakeholders are invited to cooperate with other parties who have direct links with the resources while the capacity stakeholder is sufficient. In this case, the stakeholders can determine the success of the main stakeholders related to organic products, especially in providing organic product seeds and marketing.

The main stakeholders, usually local communities or groups of people in general, have a lower or relatively high level of influence, but the level of importance is very high. In this case, people in the Bogor region who work as farmers of organic products depend on their lives through the added value of organic farming cultivation. Especially in well-organized community groups such as farmer groups, their dependence on organic agricultural resources is higher because they have a more complete access to the outside world when compared to the general public. However, although these organic farming communities are highly dependent on the sustainability of organic farming, they need a more substantial influence on maintaining the sustainability of organic farming resource management. This is often a source of obstacles in managing organic agriculture in the Bogor region of West Java.

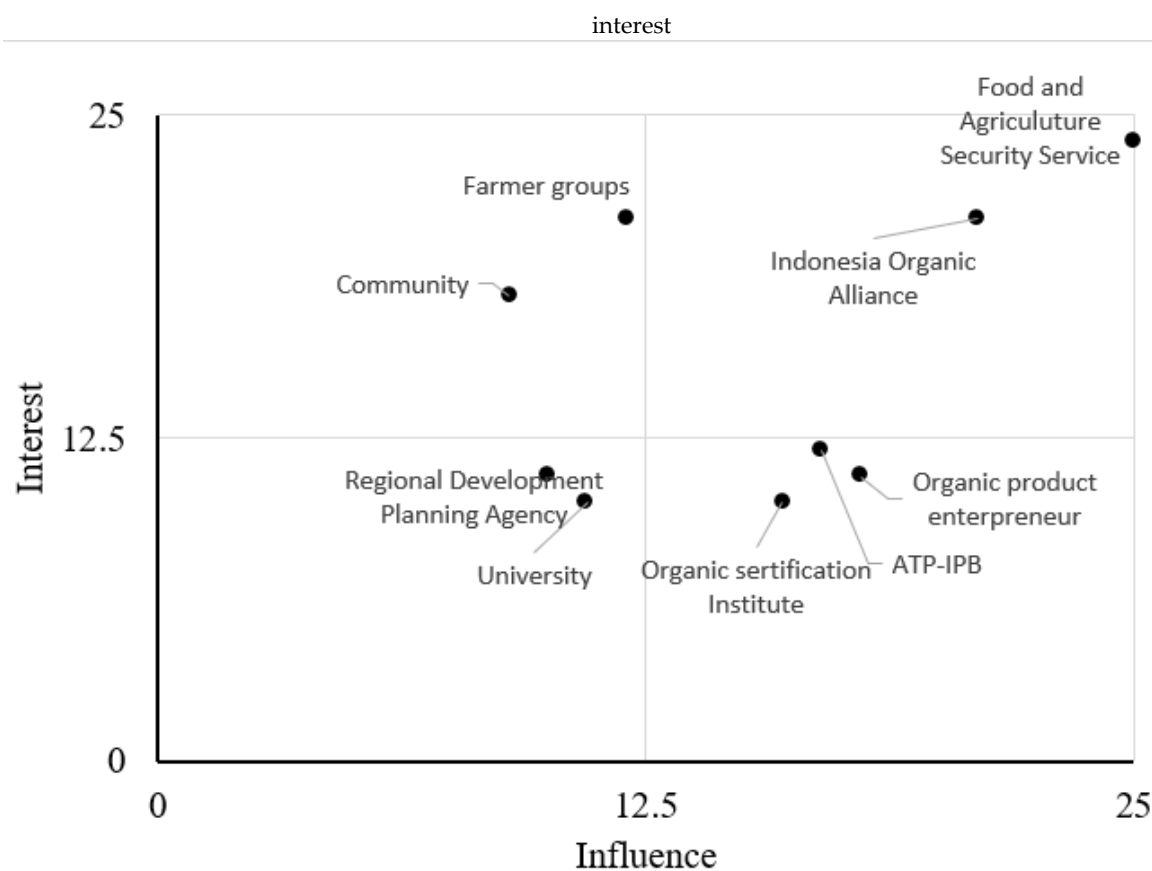
The stakeholders generally have a very high level of influence and interest in developing organic farming. However, sometimes both the importance and the strong influence do not positively impact the sustainability of the resource. This usually occurs when stakeholders' main tasks and functions are not directly related to the resource, or their main tasks and functions are related but in less of a practical sense. In this case, the Food and Agriculture Department (DKPP), as the main organization in charge of organic agriculture management, has very high importance and influence because its primary duties and responsibilities are directly related to organic agriculture, and its primary functions are carried out consistently. In contrast to Bappeda, the existence of which does not have high importance and influence, though it is responsible for land use planning and budgeting, because its primary duties and functions are not directly related to organic agriculture, its existence does not have high importance and influence. The results of the calculation of the level of influence and interest of each stakeholder are presented in Table 6.



**Table 6.** The mapping stakeholders results based on the level of influence and interest.

No	Stakeholders	Level of Interest	Level of Influence
Key stakeholders			
1	Department of Agriculture	Very High	Very High
2	Bappeda	Sufficiently High	Not High
Main Stakeholders			
1	Community	High	Not High
2	Farmer Groups	Very High	High
3	The Indonesian Organic Alliance	Very High	Very High
Supporting Stakeholders			
1	ATP IPB	Sufficiently High	High
2	Private/Organic Entrepreneurs	High Enough	High
3	Organic Certification Institute	Less High	High
4	Universities	Less	Moderate

Based on the calculation of the value of the stakeholders' influence and interests, the position and role of each stakeholder in the organic farming management program in the Bogor area at this time can be described. The picture below describes an existing stakeholder interacting with organic farming management efforts. In total, the results of the mapping of stakeholders in organic farming management based on their level of influence and importance can be seen in Figure 3. Based on Figure 3, all stakeholders involved in organic agriculture management in the Bogor area of West Java are classified into four groups: key player, subject, context setter, and crowd.

**Figure 3.** Mapping of stakeholder by level of influence and interest.

#### a. Key Players (Quadrant 1)

Stakeholders in developing organic farming included in Quadrant 1 (Key Players) are the Department of Agriculture and the Indonesian Organic Alliance (AOI). The Department of Agriculture has the authority to draft regulations and plan and implement developing organic farming programs in Bogor, Indonesia. The Department of Agriculture has the main task of optimizing organic farming resources in its area. The Indonesian Organic Alliance (AOI) is a civil society organization incorporated as an association, non-profit and independent. The Indonesian Organic Alliance has a program focused on strengthening the institutional quality and smallholder production to gain better market access, advancing organic agriculture and the fair trade movement, and strengthening national and international advocacy and networks. This institution in the Bogor area has provided assistance, education, and advocacy to organic farmers concerning the development of organic agriculture. For this reason, the AOI institution is included as the key player (Quadrant 1).

Key players are stakeholders in management because they have a strong influence and interest in developing a project [23]. Stakeholders in key players are the most critical group because they have important values and a significant influence on the success of management [35]. In every natural resource management activity, the manager with legal power always occupies a position as the main stakeholder [36,37].

The Bogor region (town and district) is part of the potential area to be used as a developing organic farming area. Therefore, in its primary duties and responsibilities, the Department of Agriculture has a great interest and responsibility to develop the area to improve the community's welfare and increase the APBD. To simplify and synergize organic agriculture management as a source of food security in the Bogor area of West Java, the Department of Agriculture must cooperate with the Indonesian Organic Alliance (AOI) institution and other parties interested in developing organic farming in the Bogor area.

Stakeholders with significant influence and high interest (key players) must be fully involved in all stages of the management program to give them confidence that the program's success is due to their support [38]. Thus, efforts are needed to equalize the perception of all stakeholders on the importance of sustainable organic farming management in the Bogor area of West Java.

#### b. Subject (Quadrant 2)

The subject has high importance but a low level of influence. A stakeholder is supportive and has little capacity to change the situation. However, they can influence others if they form alliances with stakeholders and vice versa may be influenced by stakeholders [23]. Stakeholders included in Quadrant 2 (subject) are farmer groups and communities.

Farmer groups and communities are highly interested in developing organic farming, which is currently one of the sources of people's income, for some even their primary source of income. They are highly dependent on the existence of organic farming land to fulfill their daily needs. Farmer groups and communities utilize their agricultural land by cultivating various commodities such as rice, vegetables, and fruits, which are managed in an environmentally friendly (organic) manner. Organic products have a high economic value compared to other agricultural products, so some people jointly carry out organic farming activities and make various efforts for their development through collaboration with other parties.

Stakeholders with little influence but very high interest need special efforts and strategies to have confidence that their needs align with management objectives and that their involvement is significant [38]. Stakeholders who fall into the subject category are involved through empowerment and can include at every stage of management [35]. Therefore, people who own organic agricultural land need to be involved in formulating policies related to organic farming management to have a high sense of responsibility for their agricultural land resources. The community's belief in a government (in this case, the

Department of Agriculture) program that aligns with the community's needs in various aspects will increase.

Organic product farmers in the Bogor area of West Java together form a farmer group based on the Regulation of the Minister of Agriculture no. 82/Permentan/OT.140/8/2013, concerning Guidelines for the Establishment of Farmer Groups and Farmer Group Associations, and Minister of Agriculture No. 67/Permentan/SM.050/12/2016 concerning Farmer Institutional Development. The farmer group was established to increase community participation in developing organic agriculture. In this study, farmer groups have a role as local government partners in developing organic farming management. Farmer groups, together with other parties who care about organic products, are trying to invite people to switch to consuming organic products that are healthy and environmentally friendly. Therefore, stakeholders who fall into the subject (Quadrant 2) must cooperate with other parties to achieve the desired results and resolve various problems encountered.

#### c. Context Setters (Quadrant 3)

Stakeholders in the context setter have a significant influence but little importance. Stakeholders who play a role in context setters can pose a significant risk because they can block the development of natural resource management, so they must be monitored and managed carefully [36]. Stakeholders in organic farming management are included in Quadrant 3 (context setters), namely the Organic Certification Institute (LSO), Agribusiness and Technology Park (ATP) IPB, and organic product entrepreneurs.

The LSO is responsible for the certification process for organic products produced by organic farming communities. This certification is voluntary, but every organic product to be commercialized must obtain organic certification from this institution. Therefore, this institution is very influential in increasing the number of certified organic products circulating in the market. Several institutions are engaged in organic certification in the Bogor area of West Java, including PT Icert Agritama Internasional, BIOCert Indonesia, and INOFICE. On average, these certification bodies are engaged in fresh plants and plant products, livestock, and livestock products, processed plant and livestock products, uncultivated products, beekeeping, and organic fertilizers. This certification body does not provide education and assistance to the community regarding organic farming, unlike the Indonesian Organic Association (AOI). Considering the role and function of this institution, organic certification bodies are included in the context setter or Quadrant 3, which has a strong influence, but with low importance.

The Agribusiness and Technology Park (ATP)-IPB is an Academic Business Unit (SUA) under the Business Directorate of IPB in the field of Agribusiness and is the center of IPB's innovation and business storefront. Agribusiness and Technology Park (ATP) aims to increase farmers' income by building a system that synergizes and becomes a storefront and a means of technology dissemination and marketing. This institution is included in the context setter because it influences the sustainability of developing organic farming in Bogor, Indonesia, by providing organic product seeds and organic marketing products from farmers or farmer groups who are partners of ATP IPB. The cooperation between ATP institutions and farmer groups has long been established, but it is still limited to the relationship between sellers and buyers.

Stakeholders included in the context setters are organic entrepreneurs or private parties. The private sector can significantly influence the success of developing organic farming by providing complete agricultural facilities, infrastructure, and significant capital owned by the private sector. People who own organic farming land are currently constrained by the need for more capital to develop organic products as a viable and adequate agricultural business.

As one of the stakeholders in developing organic farming, the private sector becomes one of the local government partners in fulfilling organic food needs, starting from providing seeds, maintaining, harvesting, packaging, and marketing. In other words, the private sector will operate an organic farming business that may be developed on agricultural land. The business world's profit-oriented role must also be responsible for the sustainability of

developing organic farming in Bogor, Indonesia. Stakeholders who have strong influence but are not too interested (context setters) need to be taken seriously; their existence is essential, important information must always be given to them, and their views must be acknowledged [38].

d. Crowd (Quadrant 4)

Stakeholders who fall into the crowd are stakeholders with low influence and interest in the desired development program, so they must be included in decision making. Influences and interests will change from time to time, so it needs to be considered to involve stakeholders [23]. Stakeholders require little monitoring and evaluation but low priority [35]. Stakeholders in developing organic farming in Quadrant 4 (Crowd) are universities and Bappeda.

The Regional Development Research Planning Agency (Bappeda) of Bogor is a government institution that plays a role in planning and budgeting of food security and agriculture in Bogor. The breadth of the sectors handled makes Bappeda less interested in organic farming programs. Based on the results of the interview, it is known that Bappeda has a duty that is not directly related to developing organic farming, so their interests are not reflected in the programs run by the institution. Bappeda only has the authority to plan land use in the Bogor.

In general, universities emphasize the community's interests through education, training, and advocacy for the community and publishing critical writings in the mass media. Universities play a role in conducting various research and community services related to developing organic farming so that the development of organic agriculture is based on the results of appropriate and comprehensive studies. Often, the role of research results is not utilized in developing organic farming. Universities can carry out various community services to contribute to developing organic farming in the Bogor area of West Java. Therefore, it is necessary to communicate and collaborate with universities to develop organic farming in the future.

Stakeholders with little influence and interest must also be involved in the program or project [38]. However, they do not require a particular strategy for their participation. Thus, stakeholders included in Quadrant 4 (Crowd) still have the potential to be invited to cooperate in developing organic farming in Bogor, Indonesia.

Based on the results of the identification and mapping of stakeholders above, it can be identified that stakeholders have the potential to be involved in developing organic farming in Bogor, Indonesia, namely: (1) Food and Agriculture Security Department (DKPP), (2) Indonesian Organic Alliance (AOI.), (3) Organic Certification Institute (LSO), (4) farmer groups, (5) organic product entrepreneurs, (6) Agriculture and Technology Park (ATP) IPB, and (7) the community.

The Food Security and Agriculture Department is responsible for developing organic farming in Bogor, Indonesia. The Regional Government can make policy regulations to cover various sustainable developing organic farming programs. A clear legal umbrella or regulation for the community will provide certainty and direction in developing organic farming policies in Bogor, Indonesia.

In addition to regulations, the regional government also has the authority to formulate programs and their financing for developing organic farming programs. It has a high success rate if fully supported by the regulatory and program execution functions owned by the regional government.

The farmer groups and the community, as the parties affected by a program, must be actively involved because they depend on organic agricultural land resources for their lives. The uneven understanding of community groups regarding the urgency of agriculture or organic products requires special attention from the regional government through various education and assistance programs so that the optimization of the role and contribution of the community in developing organic farming in Bogor, Indonesia, can be continuously improved.

The private sector as a stakeholder has an equally important role in developing organic farming in Bogor, Indonesia. As a stakeholder who has network and financial strength, the presence of the private sector in developing an organic farming in Bogor, Indonesia program will significantly determine the sustainability of the program through the provision of complete agricultural facilities and infrastructure, as well as information and promotion networks that can be optimized to determine the success of developing organic farming in Bogor, Indonesia.

### 3.3. Relationships between Stakeholders in Developing Organic Farming

The group stakeholders in organic farming management in the Bogor area of West Java can be seen through documents and interviews with key informants. The document is in the form of a primary task and function document that is owned and implemented by the stakeholders. The results of key informant interviews explain the relationship between stakeholders in the field. Stakeholder relationships can be grouped into three groups: communication, coordination, and collaboration [39].

The description of the relationship between stakeholders based on documents and interviews is presented in Figure 4. Based on Figure 4, it can be seen that all stakeholders involved in organic farming management have established a relationship of communication, coordination, and collaboration. However, some forms of relationship, especially cooperation in standard written form, need to be improved, especially between the community, farmer groups, and other parties. The relationship between the community and stakeholders still needs to be more intensive in some regards, such as field operational cooperation, and there is no official document agreement agreed upon between the two parties.

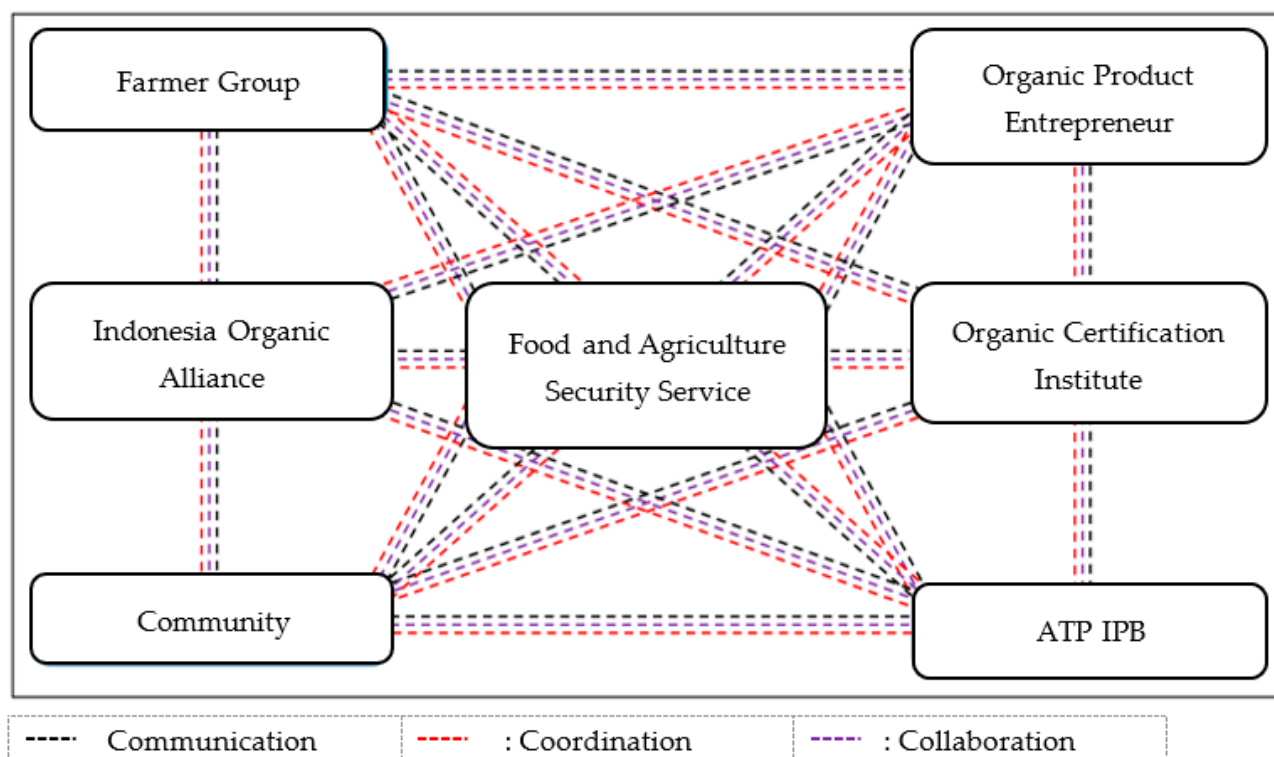


Figure 4. Description of the relationship between stakeholders.

Communication is sharing information, ideas, or opinions from every communication participant to achieve the same meaning [40]. Three essential elements are always present in every communication: the source of information, the media, and the recipient of information. The form of communication between stakeholders and local governments is related to the mentoring program by the local government for the organic agriculture development

program. Meanwhile, communication between stakeholders and the community is related to the supply of several organic product commodities from the community as raw materials for businesses, carried out by business actors in the field of organic products.

Coordination is a synchronous and regular effort to provide the right amount of time and direct the implementation to produce a uniform and harmonious action on predetermined targets [41]. Coordination may not have a direct interaction between organizations. Still, considering the organization's activities or other parties in the planning, it also belongs to the category of coordination [42]. Coordination carried out by all stakeholders in the field is formal and informal as well as routine and incidental, depending on the type of program to be coordinated. The initiation of coordination activities is generally carried out by the local government, in this case, the agriculture office. At the same time, communication is carried out between stakeholders and the government group.

Collaboration is a joint effort between individuals or groups to achieve one or more shared goals [43]. Collaboration is carried out to achieve their mission and goals more effectively [44]. Collaboration at the operational level of activities will be achieved if each stakeholder has the same interests and threats. Therefore, collaboration in achieving a shared vision and mission is effectively needed [44]. Collaboration between farmer groups and communities with private parties involved in the development of organic farming is optional, depending on the work program that has been prepared previously. Meanwhile, cooperation with local governments is carried out according to the capacity and authority of local governments, especially those related to the guidance and assistance of each stakeholder involved in developing organic farming programs.

#### 4. Conclusions

Nine stakeholders are involved and potentially involved in developing organic farming in Bogor, Indonesia: the Food and Agriculture Department, Indonesian Organic Alliance (AOI), Organic Certification Institute (LSO), group farmers, entrepreneurs of organic products, the Agriculture and Technology Park (ATP)-IPB, Bappeda, universities, and the community. All stakeholders involved in developing organic farming in Bogor, Indonesia, are classified into four groups, namely key player (Agriculture Department and the Indonesian Organic Alliance (AOI), subject (farmers and community groups), context setter (Organic Certification Institute, ATP IPB, and Organic Entrepreneurs), and the crowd (Bappeda and Universities).

The relationship between stakeholders in the form of communication, coordination, and cooperation has been written in the document and applied in the field. Stakeholders included in the key players classification have many relationships between stakeholders, play a significant role in developing organic farming in Bogor, Indonesia, and are expected to support the involvement of potential supporting stakeholders.

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## References

1. Davis, K.F.; Gepharta, J.A.; Emeryb, K.A.; Leachc, A.M.; Gallowaya, J.N.; D’Odoricoa, P. Meeting future food demand with current agricultural resources. *Glob. Environ. Chang.* **2016**, *39*, 125–132. [\[CrossRef\]](#)
2. Tsvetkov, I.; Atanasov, A.; Vlahova, M.; Carlier, L.; Christov, N.; Lefort, F.; Rusanov, K.; Badjakov, L.; Dincheva, I.; Tchamitchian, M.; et al. Plant organic farming research e current status and opportunities for future development. *Biotechnol. Equip.* **2018**, *32*, 241–260. [\[CrossRef\]](#)
3. Udeigwe, T.K.; Teboh, J.M.; Eze, P.N.; Stietiya, M.H.; Kumar, V.; Hendrix, J.; Mascagni, H.J., Jr.; Ying, T.; Kandakji, T. Implications of leading crop production practices on environmental quality and human health. *J. Environ. Manag.* **2015**, *151*, 267–279. [\[CrossRef\]](#) [\[PubMed\]](#)
4. Cai, J.; Xia, X.; Chen, H.; Wang, T.; Zhang, H. Decomposition of fertilizer use intensity and its environmental risk in China’s grain production process. *Sustainability* **2018**, *10*, 498. [\[CrossRef\]](#)
5. Zhang, L.; Yan, C.; Guo, Q.; Zhang, J.; Ruiz-Menjivar, J. The impact of agricultural chemical inputs on environment: Global evidence from informetrics analysis and visualization. *Int. J. Low Carbon Technol.* **2018**, *13*, 338–352. [\[CrossRef\]](#)
6. Shakoov, A.; Xu, Y.; Wang, Q.; Chen, N.; He, F.; Zuo, H.; Yin, H.; Yan, X.; Ma, Y.; Yang, S. Effects of fertilizer application schemes and soil environmental factors on nitrous oxide emission fluxes in a rice-wheat cropping system, east China. *PLoS ONE* **2018**, *13*, e0202016. [\[CrossRef\]](#)
7. Nicolopoulou-Stamati, P.; Maipas, S.; Kotampasi, C.; Stamatis, P.; Hens, L. Chemical pesticides and human health: The urgent need for a new concept in agriculture. *Front. Public Health* **2016**, *4*, 148. [\[CrossRef\]](#)
8. Aghasafari, H.; Karbasi, A.; Mohammadi, H.; Calisti, R. Determination of the best strategies for development of organic farming: A SWOT—Fuzzy Analytic Network Process approach. *J. Clean. Prod.* **2020**, *277*, 124039. [\[CrossRef\]](#)
9. Fess, T.L.; Benedito, V.A. Organic versus conventional cropping sustainability: A comparative system analysis. *Sustainability* **2018**, *10*, 272. [\[CrossRef\]](#)
10. Muller, A.; Schader, C.; Scialabba, N.E.; Brüggemann, J.; Isensee, A.; Erb, K.; Smith, P.; Klocke, P.; Leiber, F.; Stolze, M.; et al. Strategies for feeding the world more sustainably with organic agriculture. *Nat. Commun.* **2017**, *8*, 1290. [\[CrossRef\]](#)
11. Smith, L.G.; Lampkin, N.H. Greener farming: Managing carbon and nitrogen cycles to reduce greenhouse gas emissions from agriculture. In *Managing Global Warming*; Letcher, T.M., Ed.; Academic Press: London, UK, 2019; pp. 553–577.
12. Ferro, N.D.; Camarotto, C.; Piccoli, I.; Berti, A.; Mills, J.; Morari, F. Stakeholder Perspectives to Prevent Soil Organic Matter Decline in Northeastern Italy. *Sustainability* **2020**, *12*, 378. [\[CrossRef\]](#)
13. Zagata, L.; Uhnak, T.; Hrabak, J. Moderately radical? Stakeholders’ perspectives on societal roles and transformative potential of organic agriculture. *Ecol. Econ.* **2021**, *190*, 107208. [\[CrossRef\]](#)
14. Halloran, A.; Magid, J. The role of local government in promoting sustainable urban agriculture in Dar es Salaam and Copenhagen. *Geogr. Tidsskr.-Dan. J. Geogr.* **2013**, *113*, 121–132. [\[CrossRef\]](#)
15. Zanetti, L.; Candiotti, P. Organic Products Policy in Brazil. *Land Use Policy* **2018**, *71*, 422–430.
16. Qiao, Y.; Martin, F.; He, X.; Zhen, H.; Pan, X. The changing role of local government in organic agriculture development in Wanzai County, China. *Can. J. Dev. Stud.* **2019**, *40*, 64–77. [\[CrossRef\]](#)
17. Prasetyaningtyas, S.W.; Sobir; Hermawan, A.; Maarif, M.S. Utilizing stakeholders analysis on sustainable organic farming in West Java: The case of Cisarua organic farming. *J. Manaj. Agribisnis* **2019**, *16*, 56–65. [\[CrossRef\]](#)
18. Jitareanu, A.F.; Mihaila, M.; Robu, A.D.; Lips, F.D.; Costuleanu, C.L. Dynamic of Ecological Agriculture Certification in Romania Facing the EU Organic Action Plan. *Sustainability* **2022**, *14*, 11105. [\[CrossRef\]](#)
19. Le, N.P.; Nguyen, T.T.P.; Zhu, D. Understanding the stakeholders’ involvement in utilizing municipal solidwaste in agriculture through composting: A case study of Hanoi, Vietnam. *Sustainability* **2018**, *10*, 2314. [\[CrossRef\]](#)
20. Ludovico, N.; Dessi, F.; Bonaiuto, M. Stakeholders Mapping for Sustainable Biofuels: An Innovative Procedure Based on Computational Text Analysis and Social Network Analysis. *Sustainability* **2020**, *12*, 10317. [\[CrossRef\]](#)
21. Mushove, P.; Vogel, C. Heads or tails? Stakeholder analysis as a tool for conservation area management. *Glob. Environ. Chang.* **2005**, *15*, 184–198. [\[CrossRef\]](#)
22. Eidt, C.M.; Pant, L.P.; Hickey, G.M. Platform, participation, and power: How dominant and minority stakeholders shape agricultural innovation. *Sustainability* **2020**, *12*, 461. [\[CrossRef\]](#)
23. Reed, M.; Graves, A.; Dandy, N.; Posthumus, H.; Hubacek, K.; Morris, J.; Prell, C.; Quinn, C.H.; Stringer, L.C. Who’s nad why? A typology of stakeholder analysis methods for natural resource management. *J. Environ. Manag.* **2009**, *90*, 1933–1949. [\[CrossRef\]](#)
24. Venegas, C.; Sánchez-Alfonso, A.C.; Celis, C.; Vesga, F.J.; Mendez. Management strategies and stakeholders analysis to strengthen the management and use of biosolids in a colombian municipality. *Sustainability* **2021**, *13*, 12180. [\[CrossRef\]](#)
25. Wegrzyn, J.; Wojewnik-Filipkowska, A. Stakeholder analysis and their attitude towards PPP success. *Sustainability* **2022**, *14*, 1570. [\[CrossRef\]](#)
26. Central Bureau of Statistics. *Town and District of Bogor Indonesia in Numeric 2022*; The Central Bureau of Statistics of the Town and District of Bogor: Bogor, Indonesia, 2022.
27. Widiatmaka; Ambarwulan, W.; Sudarsono. Spatial multi-criteria decision making for delineating agricultural land in jakarta metropolitan area’s hinterland: Case study of Bogor Regency, West Java. *AGRIVITA J. Agric. Sci.* **2016**, *38*, 105–115. [\[CrossRef\]](#)
28. Bryson, J.M. What to do when stakeholders matter: Stakeholder identification and analysis techniques. *Public Manag. Rev.* **2004**, *6*, 21–53. [\[CrossRef\]](#)

29. Rachmawati, E.; Anjana, M.R.G. Stakeholders in the adventure tourism development at curug bibijilan Sukabumi regency. *Media Konserv.* **2021**, *26*, 99–110. [\[CrossRef\]](#)
30. Hani, E.S.; Mustapit. Stakeholder response to the development strategy of sugarcane dry land agriculture in East Java. *Agric. Agric. Sci. Procedia* **2016**, *9*, 469–474. [\[CrossRef\]](#)
31. Santoso, H.; Muntasib, E.K.S.H.; Kantodihardjo, H.; Soekmadi, R. The role and requirement of stakeholders in tourism governance in Bunaken National Park, North Sulawesi. *J. Penelit. Sos. Ekon. Kehutan.* **2015**, *12*, 197–211. [\[CrossRef\]](#)
32. Fletcher, A.; Guthrie, J.; Steane, P.; Roos, G.; Pike, S. Mapping stakeholder perceptions for a third sector organization. *J. Intellect. Cap.* **2003**, *4*, 505–527. [\[CrossRef\]](#)
33. Mitchell, R.K.; Agle, B.R.; Wood, D.J. Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *Acad. Manag. Rev.* **1997**, *22*, 853–888. [\[CrossRef\]](#)
34. Sundawati, L.; Sanudin, D. Stakeholder Analysis on Ecosystem Restoration of Lake Toba Catchment Area. *JMHT* **2009**, *XV*, 102–108.
35. Widodo, M.L.; Soekmadi, R.; Arifin, H.S. Analysis of stakeholders in Betung Kerihun National Park's ecosystem development, Kapuas Hulu district. *J. Pengelolaan Sumberd. Alam Lingkungan* **2018**, *8*, 55–61. [\[CrossRef\]](#)
36. Sembiring, E.; Basuni, S.; Soekmadi, R. Conflict resolution of teluk cenderawasih national park management in teluk wondama regency. *J. Manaj. Hutan Trop.* **2010**, *16*, 84–91.
37. Maguire, B.; Potts, J.; Fletcher, S. The role of stakeholders in the marine planning process-stakeholder analysis within the solent. *Mar. Policy* **2012**, *36*, 246–257. [\[CrossRef\]](#)
38. Rietbergen-McCracken, J.; Narayan-Parker, D. *Participation and Social Assessment, Tools and Techniques*; IBRD-World Bank: Washington, DC, USA, 1998.
39. Wang, L.; Li, W.; Qi, L. Stakeholder pressures and corporate environmental strategies: A meta-analysis. *Sustainability* **2020**, *12*, 1172. [\[CrossRef\]](#)
40. Luan, H.; Li, L.; Zhang, S. Exploring the impact mechanism of interface management performance of sustainable prefabricated construction: The perspective of stakeholder engagement. *Sustainability* **2022**, *14*, 10704. [\[CrossRef\]](#)
41. Jakubeit, N.; Haanstra, W.; Braaksma, J.; Rajabalinejad, M.; Dongen, L.V. Co-designing sustainable coordination to support inter-organizational decision making. *Sustainability* **2022**, *14*, 6467. [\[CrossRef\]](#)
42. Zeug, W.; Bezama, A.; Moesenfechtel, U.; Jähkel, A.; Thrän, D. Stakeholders' interests and perceptions of bioeconomy monitoring using a sustainable development goal framework. *Sustainability* **2019**, *11*, 1511. [\[CrossRef\]](#)
43. Dragomir, C.C.; Foriş, D.; Țițu, A.M.; Foriş, T. The role of intermediaries in supporting collaboration for sustainability: A model of commissioning intervention in the multi-stakeholder collaboration for sustainable territorial development. *Sustainability* **2020**, *12*, 6769. [\[CrossRef\]](#)
44. Guo, L.; Hao, S.; Ranasinghe, U.; Tang, M.L.; Hardie, M. Stakeholder collaboration mechanism in elderly community retrofit projects: Case study in China. *Sustainability* **2021**, *13*, 10759. [\[CrossRef\]](#)