

Agriculture Policy For Agriculture Development Facing The Era Of Industrial Revolution 4.0 In The Agriculture Sector

Gatot Hery Djatmika

Faculty of Social and Political Sciences, University of Prof. Dr. Moestopo

e-mail: gatot.hery@dsn.moestopo.ac.id

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Abstract

The purpose of this study is to analyze various factors required to formulate agricultural policy. Development in agriculture is the task of all Indonesians because the agricultural sector is the spearhead of the progress of the Indonesian nation in determining levels welfare of its people. In the era of the industrial revolution 4.0, the government began to proclaim agricultural modernization to increase agricultural production, especially rice. The method used is by performing descriptive qualitative research. High rice production can guarantee community food security so that it can achieve food self-sufficiency. Indonesia has achieved self-sufficiency in rice in 1984. This is a clear result of the agricultural modernization program implemented by the government. Agricultural policies is a government policy to accelerate the pace of agricultural development, especially in the face of the industrial revolution 4.0 era. Agricultural economic repositioning needs to be carried out immediately by stabilizing food prices and conducive the agricultural atmosphere to increase exports. Farmers must also be guaranteed access to land, water and capital. The Indonesian agricultural sector must be ready to face the current era of the Industrial Revolution 4.0. The mechanization of agricultural tools and machines must not only be able to run automatically, but also be integrated with the internet network. The mechanization system will play an important role in achieving the target of sustainable food self-sufficiency.

Keywords: Agricultural Policy, Industrial Revolution 4.0, Agricultural Development

Introduction

Agricultural policies does not aim to defend certain interests. Its task is to analyze various factors that need to be considered in formulating agricultural programs. These factors include economic, social, political, cultural, technical and other factors. The understanding of policy in terms of agricultural program is sometimes associated with policy related to the ways in which groups of people achieve their goals. In fact there is a connection. Farmers, as a group of people who have certain interests, always struggle to advance their interests, both in asking for a more adequate price for their products, and in seeking terms of trade that are not detrimental to them. Agricultural politics is basically a government policy to accelerate and accelerate the pace of agricultural development. And agricultural development does not only involve the activities of farmers, but also agricultural and plantation companies, transportation, shipping, banking, insurance or government and semi-government agencies. However, it turns out that the absolute condition for the success of rural development is still agricultural development. Agriculture is the main source of livelihood and employment for the rural population, so that in rural development the main attention should still be paid to agricultural development as a prominent sector of economic activity. Entering the era of the 4.0 industrial revolution, the agricultural sector has begun to improve the agricultural sector in Indonesia. The reforming the agricultural sector must start from reforming agricultural policy as without agricultural policy, agriculture will decline and decay will occur. The beginning of the fading of agricultural policies was in fact the glitz of agriculture during the self-sufficiency of rice in 1984. "Father of the Nation felt safe, felt that agriculture could be sufficient, in fact agriculture declined". History records the journey of agriculture in Indonesia starting from the era of the ancient kingdom when the knowledge of farming was brought by traders from other countries who stopped in Indonesia at that time. From there agricultural policy began to be gradually introduced to Indonesian society. Agriculture Age of Ancient Kingdoms Ancient kingdoms in Southeast Asia can generally be divided into two categories, namely agrarian kingdoms and maritime kingdoms. The main

activity of the agrarian kingdoms was agriculture. They are mostly located on the Southeast Asian peninsula. Examples of agrarian kingdoms are the Ayutthaya Kingdom, which was located in the Chao Phraya river delta, and the Khmer Empire, which was located in the Tonle Sap. The maritime kingdoms were mainly engaged in trading by sea. The Kingdom of Malacca and the Kingdom of Sriwijaya are examples of maritime empires. An aspect that is very important in the life of a society, is the livelihood of the community at that time. Based on the evidence and sources that exist today, it can be guessed how the livelihoods of the inhabitants of the ancient kingdom were about. If the assumption about merchandise originating from other regions is acceptable, then we get a picture that at that time hunting, mining, fishing and commerce were among the livelihoods of the inhabitants of the ancient kingdom in addition to agriculture, shipping and livestock.

During the Dutch colonial period, the institution that organized agricultural development in West Java was the Provinciale Lanbouw Voorlichtings Dienst (LVD) which was headed by a Dutch inspector called Landbouw inspecteur. This institution is thought to have been established since 1912. The function of this institution is to provide guidance to indigenous farmers to increase production while technology transfer is given within certain limits due to political considerations. The LVD institution consists of 2 (two) parts, namely: a. Community Crops Section (Indlandsche landbouw) whose management includes rice crops, secondary crops, vegetables and fruits; b. Perennials Section, whose management includes plantation crops such as coffee, rubber, kapok, quinine and tea. The LVD organizational unit was organically under the Van Landbouw Nijverheid en Handel Department (Ministry of Agriculture, Industry and Trade) based in Batavia. LVD work areas are: a. The provincial level is headed by: Dutch inspector LVD. b. The Residency level is headed by Landbouwconsulenten who is a Dutch nation, c. District level head is headed by Adjunct Landbouwconsulenten generally held by natives; d. The degree of funding is headed by: Landbouw opzichters, who are held by natives; e. The subdistrict level is headed by Mantri Landbouw, who is held by Indigenous people. During the Dutch colonial period, there were several special institutions that administered education in the Agriculture Sector, namely: a. Cultur School (CS), domiciled in Sukabumi; b. Midlebaare Landbouw School (MLS), domiciled in Bogor; c. Landbouw Bedrijf School (LBS), domiciled in Tanjungsari, Sumedang district. The beginning of the arrival of the Japanese occupation in Indonesia in the city of Tarakan on January 10, 1942, then Japan expanded its wings to Minahasa, Balikpapan, Ambon, Pontianak, Makassar, Banjarmasin, Palembang and Bali which were successfully controlled by Japan from January to February 1942. Meanwhile, the capital city of Jakarta was occupied on March 5, 1942. The Dutch army, which was still in power in Indonesia at that time, was overwhelmed by the attack of the Japanese army, and finally the Dutch surrendered unconditionally to Japan to be precise on March 8, 1942 in Kalijati-Subang. During the Japanese occupation era, the implementation of agricultural development was carried out by Norinka, which was under Japanese rule. The policy of the program and the agricultural development system was applied no different in the Dutch era, namely providing guidance to farmers to increase production, but the goal was expanded with the main objective of meeting the need for foodstuffs to supply war needs for the Japanese army. During the Japanese period, the management of the Cihea Rice Seed Center was also continued by Norinka. Whereas in the field of agricultural education, during the Japanese colonial era it was marked by a change in the name Landbouw Berdrijf School (LBS) to become the First Agricultural School. After independence in 1950 the Province of West Java was born and became the authority of the regional bases, including agricultural affairs. Guidance, control and supervision are provided by the Regional People's Agricultural Service which is domiciled in the Residency. After Indonesia's independence, in 1945 the Agricultural Bureau of the Republic of Indonesia was established which is an institution under the Ministry of Prosperity. Its policies and programs are to increase production and income of farmers, while the fields that he handles include all aspects related to the prosperity of the people, plantations, fisheries, zoological and food supply.

Agriculture today in essence, a sustainable agricultural system is a return to nature, namely an agricultural system that does not destroy, does not change, is in harmony, and is in balance with the environment or agriculture that obeys and abides by natural principles. The word "sustainable" is now used widely in the scope of development programs, it can be interpreted as "keeping an effort going", "the ability to survive

and keep it from deteriorating". The term sustainable agriculture as an equivalent to the term agroecosystem was first used around the early 1980s by agricultural experts FAO (Food Agriculture Organization). Agroecosystem itself refers to the modification of natural ecosystems with a touch of human intervention to produce food, fiber and wood, to meet human needs and welfare. Conway (1984) also uses the term sustainable agriculture with agro-ecosystems which seeks to combine productivity, stability, and equity, so it is increasingly clear that the concept of agro-ecosystem or sustainable agriculture is the answer to the uncertainties of the impact of green revolution, among others, in Southeast Asia, by decreasing agricultural productivity (leaving off). The failure of modern agriculture forces agricultural and environmental experts to think hard and try to reformulate an environmentally friendly agricultural system or back to nature. So actually the sustainable agricultural system is an old paradigm which is starting to be re-actualized towards the entry of the 21st century. This is a phenomenon of natural cycle order according to the turn of the century. Entering the era of the industrial revolution 4.0, various social, educational, economic activities and so on are always associated with the use of automation machines that are integrated with the internet network. The technological sophistication of this era makes many conditions change. All sectors of business, education and politics have evolved. Then what about the agricultural sector in the era of revolution 4.0?

Methodology

Researchers used descriptive qualitative research methods. This is done by researchers to describe a symptom, events and events that occur factually, systematically and accurately. In this study, the researcher attempted to describe the events at the center of the study without giving special treatment to these events.

Discussion

The World Food Bank, as the ideals and direction of the agricultural political struggle, leaves many notes. Not only did the ideals and direction of the struggle seem ignorant of the national conditions but also failed to achieve. Agricultural policies to combat food cartels have not been won, price fluctuations, worrying national food stocks and the welfare of farmers have not been realized. Agricultural conditions in 2014-2018 did not provide a good record. Repairing irrigation networks, reservoirs, granting People's Business Credit (KUR), Subsidizing Seeds and Fertilizers by establishing a Self-Sufficiency program for 6 commodities by 2019, distributing Alsinan, Indonesian Farmers Shop (TTI), PAJALE Program, Upsus does not guarantee to stop food imports. Although it has been supported by a drastic increase in the agriculture and food budget of Rp. 15.47 trillion in 2014 to 22.6 trillion in 2018, as a result rice imports remain unstoppable. Based on a study by the Association of Seed Banks and Farming Technology (AB2TI) in 2017, Indonesia continued to import rice throughout 2014-2017

No	Year	Imported Rice (tonnes)
1	2014	842.171
2	2015	851.670
3	2016	1.231.112
4	2017	306.425

Source: Indonesia Statistic Agency

Food imports are an indicator of farmers' incapacity nationally to support food. Lack of food stocks resulted in fluctuations in food prices. The highest retail price (HET) for rice set by the government is Rp. 9,450 per kg only lasted one year, namely in 2014, the increase in rice prices above the HET began to get out of control in early February 2015.

No	Year	Rice Price (Rp)
1	2015	9.600 – 10.300
2	2016	10.400 – 10.600
3	2017	10.500 – 10.800

Source: Ministry of Agriculture.

And the most phenomenal is the beginning of 2018 the price of medium rice reached Rp. 11,300 / Kg. Soaring rice prices were not followed by an increase in farmers' welfare. The profit of rice remains with the traders because the long supply chain and distribution of rice is an advantage that is maintained by the traders. Poor Communication on the achievement of the Ministry of Agriculture's performance always leaves problems. The communication system that was built was always bombastic and excessive, sometimes even nihilism towards the performance of farmers and the performance of the previous Ministry of Agriculture. It is as if the entire achievement of national food production is an independent effort, not the effort of the entire Indonesian nation. Bad communication was also shown when there were rice imports in 2015 and 2017. The government appeared to be insistent that there was an increase in production by 6.42% or a surplus of 10 million tons of rice in 2015. However, in the same year it was decided to import rice for November (317,925 tons) , December (281,981 tons) and continued in January 2016 (381,546 tons), February (296,375 tons), March (313,077 tons). Likewise, the attack of the Brown Planthopper (WBC) in 2017. The government does not believe that WBC is not something serious. The Ministry of Agriculture again blundered by issuing a statement that there was an increase in national grain production from 79.1 million tons of GKG to 81.6 million tons of GKG. Even though there is a threat of crop failure of 25-45% in Java, the results are predictable. Imports are being carried out again to reduce the risk of national food shortages.

Based on a study by the Third World Network that 90% of the control of hybrid rice seeds, 90% of hybrid maize seeds and 70% of horticultural seeds are transnational companies. Another thing is the condition of agricultural land which tends to be critical. The use of synthetic fertilizers can no longer be used as a benchmark anymore. The Fertilizer Study (2009) has given a strong warning that excessive use of synthetic fertilizers has no effect on increasing yield. The increase in the use of Urea by 80.8%, TSP / SP36 by 302%, ZA / AS by 371% and NPK by 8220% only increased rice production by 17.4% or increased 51.90 million tonnes to 60.93 million tonnes. Mastery of agricultural land and agricultural households is also a serious concern. Agrarian inequality where 0.2% of the population controls 56% of national assets and agricultural food land that supports 91.9 million small farmers only increased by 2.96% (1986 - 2012), while plantation land owned by a few people increased 144%.

The decline in the number of agricultural households (RT) is also a problem that should not be ignored. Decrease in the RT of Agriculture from 31.170 million (2003) to 26.126 million (2013) already reflects concerns with the loss of 5 million agricultural households. The condition of the land area owned by farmers has also not moved from an area of 0.2 Ha per farmer household. All the prerequisites for the food and agricultural land crisis have occurred, namely in the form of low control of farmers over seeds, narrow land area, uncertain prices, land tends to be critical and leveling off, and the government is not united with the peasants because of bad communication. It is as if the warning of the food crisis that will occur in 2025 will come true. The Political Welfare of the Peasants to reverse the current situation should be the political task of the peasants. Farmers who are not sovereign over seeds, yields and prices must seize their sovereignty. Farmers must be given sovereignty prerequisites in the form of true agrarian reform, agroecology, and the realization of food sovereignty. The romanticism of land tenure structures can be learned from the success story of Movimento dos Trabalhadores Rurais Sem Terra (MST) in Brazil. Land occupation by landless communities has been able to revive new communal villages. An organized village that is able to provide healthy food and guarantee a good future for its communal members. Agrarian reform is a manifestation of the realization of the recognition of the right to food. - is an agricultural approach designed in accordance with ecological principles; natural metabolism, social systems and culture; as well as local knowledge. Agroecological practices may differ from one region to another, including differences in practice due to social and cultural differences, however principles must still be applied. The principles of agro-ecology are using local seeds (Adapted Seed), Increasing organic matter in the soil to improve soil physical, chemical and biological properties, Polyculture systems to increase plant resistance and plant health and avoid pest attack and pest explosion, Soil conservation treatment for healthy soil and avoid land crises and manage biodiversity in land. These agroecological principles are able to strengthen farmer institutions.

Basic Food Sovereignty and Food Sovereignty Mandates have been manifested in the Law of the Republic of Indonesia. A paradigm shift in food security, namely a situation where everyone, at any time, has physical, social and economic access to adequate, safe and nutritious food (FAO). Regardless of the type, method of production and where the food comes from, Indonesian farmers must replace it with food produced in a healthy manner. A paradigm shift must be made to make import practices a problem of national sovereignty, not just a problem of food shortages. The Seven Pillars of Food Sovereignty according to Dwi Andreas Santosa (2014) are as follows: 1. Right to food, redistribution of land for farmers; 2. Access to productive resources (smallholder access to water, genetic and natural resources); 3. Community and family based agro-ecological farming model (Organic Agriculture, sustainable agriculture); 4. Green rationalism: recognition of the complexity of food production, farmer-farmer and farmer-nature communal relations; 5. Protection of farmers (from unfair international food trade); 6. Farmer Democratization (small farmers have the right to establish agricultural policies at all levels related to agriculture) for example there is the "Farmer Jury" in India and the Food Sovereignty Movement in India, with 1.21 billion people still able to export 4.5 million rice tons, corn 2.2 million tons, and soybean flour 4.2 million tons (2011); 7. Agricultural Political repositioning is reversing the direction of agriculture from being corporate-based to farmer-based. Agricultural Revolution 4.0

The contribution of the agricultural sector to the national gross domestic product (GDP), as reported by LINE Jobs, has now decreased significantly. The agricultural sector is no longer one of the largest sources of economy in Indonesia. To meet the needs of the growing population, the world of agriculture then adopted the term Agricultural Revolution 4.0, where agriculture is expected to involve digital technology in its development process. The concept of agricultural development that is being developed at present is the concept of smart agriculture, which is also known as smart farming or precision agriculture. This concept refers to the application of ICT in agriculture. The main purpose of applying this technology is to optimize the form of increased yield (quality and quantity) and efficient use of existing resources. The industrial revolution 4.0 in the agricultural sector is more dominant in Europe. This is due to a demographic disaster, which is a situation in which the number of people who are of productive age is less than those of non-productive age so that the population must be replaced by technology. Whereas in Indonesia itself, the industrial revolution 4.0, especially in the agricultural sector, has not developed much success. The following are some of the reasons why the 4.0 industrial revolution has not been successfully implemented in Indonesia. 1. Human Resources in fact, most of the farmers are more than 40 years old and more than 70 percent of farmers in Indonesia have only elementary school education and even less. This low formal education leads to knowledge in agricultural processing is not developed and monotonous. Farmers only cultivate agriculture as usual without creating the latest innovations for the sake of increasing abundant food yields. 2. Condition of Agricultural Land in Indonesia it is undeniable that the distribution of population and development in Indonesia is not fully even. This is evidenced by the fact that there are still many "sleeping lands" or land that have not been cultivated by the community in inland areas, meanwhile, land in a strategic area is being scrambled at a high price. Given the soaring price of land, the area of agricultural land ownership of farmers in Indonesia is also small on average. In fact, most farmers can only work on other people's land, so the results must be divided in half. In addition, the impact due to the conversion of agricultural land to non-agricultural land, which reaches 150-200 thousand per year, also causes farmers to lack land to cultivate crops. 3. Technology has not been fully accepted by the community. The system for transferring technology from traditional to modern in agricultural management has not been widely accepted by farmers who still prefer to use traditional equipment over sophisticated technology. Apart from limited costs, limited knowledge is also a factor that hinders the pace of technology from reaching the agricultural sector at large. This is where the role of the government is needed to provide sufficient education for farmers in order to advance the agricultural sector in this era of industrial revolution 4.0. Some things that can be done may be in the form of providing large-scale counseling and conducting demonstrations on the use of agricultural tools equipped with modern technology. As a first step, the Ministry of Agriculture has prepared the development of strategic agricultural commodities towards Indonesia as a world food barn.

The Indonesian agricultural sector must be ready to face the Revolutionary era Industry 4.0 today. Internet access in Indonesia is also still not evenly distributed from Sabang to Merauke, coupled with the average internet speed in Indonesia which is still very low compared to other countries. This also shows that there are still many problems that need to be fixed in addition to innovating the development of more modern agricultural mechanization technology to face the Industrial Revolution 4.0.

Conclusions

The economic repositioning of agriculture needs to be carried out immediately by stabilizing cheap food prices and conducive the agricultural atmosphere to enlarge exports. Farmers must also be guaranteed access to land, water and capital. The strength of the peasants must be returned, including the return of local wisdom. Returning the effectiveness of the agricultural instructor is also important. The agricultural extension is currently on a two-year contract. Two years is not enough to build farmers' trust in extension workers. Turn entrepreneurs into stakeholders. Domestic entrepreneurs certainly want their products to be competitive with other nations so that they will strive for development. Improve the quality of human resources at all levels, from researchers to farmers and eliminate market distortions. Imports do not benefit farmers and leave only market distortions. Agricultural policies is a constitutional mandate. Self-sufficiency is not a goal, but an effort to meet domestic and export needs. It is no longer the time for this nation to rely on rice estates to increase food production. The Industrial Revolution 4.0, which demands the development of agricultural mechanization technology, will certainly have its own impacts and challenges. One of the obvious impacts is increasing the application of technology to a modern agricultural system will reduce the labor required. Although the value of production will increase, the number of farmers or labor needed will be far less because they have been replaced by machines or technology.

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