Environmental policy, ecology, and threat towards the unsustainable agriculture development in Indonesia

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Abstract. Sustainable Development Goals that are targeted to be achieved in 2030 are the answer in balancing development activities and their impact on the environment and natural ecosystem. Since the New Order Era (Orde Baru), Indonesia has been implemented a development strategy that focused on growth. This strategy contributes a significant impact to biodiversity, natural resources, and environment. Agriculture activities itself in the traditional or modern term refers to the effort to exploit the ecosystem. However, the level of exploitation in many cases is not controllable, and overexploitation occurs along the development process. The study of social ecology aims to examine and predict whether agricultural development has complied with sustainable principles or, on the opposite, it leads toward an unsustainable manner. At a global level, agricultural policy or commodities policy is translated into a new measurement that has a potential impact on market access for several commodities. European Union introduces this measurement as European Green Deal, while the UK introduces a similar measurement and known as the environmental bill. Indonesian agricultural development history has marked the principles that have been in place affiliated with neo-liberal values and translates into over-exploitation to natural resources, environment, and local biodiversity. Review toward the existing agriculture policies that have been implemented nationwide and the existing requirements toward green economics principles are important for Indonesia, in particular, to measure the level of readiness to supply global with stringent standardization toward environment and biodiversity.

1. Introduction

Rambo [1] illustrated the special interaction between community system and ecosystem as social ecology, which is also introduced by many experts as human ecology. Agriculture activities traditional or modern is considered as human activity in managing the ecosystems. The interaction between agriculture activities and ecosystems creates an impact on livelihood, including biodiversity, natural resources, climate, and other environmental values. Social ecology can be used to measure whether the relation between community and agricultural development activity leads to sustainable agriculture or the opposite. The balance in social ecology will change over time and will be very dynamic. It is also heavily affected by government policy. In many cases, the policies tend to create instability of social ecology and unsustainable.

This paper aims to illustrate agricultural development in Indonesia, where there is a strong argument that the development process has not included social ecology principles in the development strategy. Over-exploitation of natural resources including land and forest has been considered a problem in agricultural development in Indonesia. Nowadays, the damage from development is not only considered

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by stakeholders in Indonesia but also at the global level. However, agricultural development involves various stakeholders and various ministries, although the Ministry of Agriculture is the lead in the process, in practice some activities are distributed under different ministries’ responsibilities and authorities.

From the cultural perspective, Indonesia is considered as a very mature population and very close to culture. The communities have implemented local culture and wisdom in their daily life, unfortunately, the high degree of exposure to culture by the communities are not always translated properly into agricultural development strategy and program. At the global level, Indonesia in 2019 was ranked as number 111 in the Human Development Index, meanwhile, between ASEAN member countries, Thailand was ranked number 77, Malaysia 61, and the Philippines in 106th position [2].

In the history of agricultural development, Indonesia had experienced political and economic crisis. Political instability during 1965-1969 led to a long economic crisis, at that time poverty incidence, malnutrition found in many places in Indonesia. The most recent crisis is a monetary crisis in 1998 and 2008. Learning from these experiences, recovery from the crisis should not only focus on the economic and monetary aspects but also natural ecosystems and environment. Actually, during the colonized era for almost 350 years, the awareness to balance development and environment has been introduced by the Europeans. These principles slowly diminished when the Indonesian economy was exposed to the American economic principles (liberalization and globalization). Regardless, the Europeans also violated human rights and restricted the freedom of Indonesian people through that dark era in 1965-1969.

There are two basic principles that have been thought of during the Dutch colonialization. First, the development process has to avoid impoverishment (human) and 2) natural ecosystem degradation (destruction). At that time the “pribumi” was not allowed to be rich and prosperous, but at the same time the Dutch governance system was also minimized poverty[3].

To date, agricultural development still finds difficulties in answering those basic principles – how to minimize or to avoid impoverishment to human and natural ecosystem destruction or degradation. This discussion has started since the era of the Club of Rome, Willy Brandt - the Chancellor of Federal Republic of Germany (1969-1974), and has continued until Rio de Janeiro Earth Summit in 1992 [4]. Global attention has started to discuss the damage of development from those two fundamental issues. There were 4 subjects in the discussion 1) government policies; 2) the competition of academic hegemony, history, and globalization. This paper elaborates the perspectives of those subjects in relation to agricultural development.

2. Materials and methods
This paper used the meta-analysis approach, which heavily elaborates from journal articles and other sources of information. It encompasses reviewed articles on the history of social ecology in Indonesia from the 13th century (CE) to today. These articles have been observed to understand the impact of agricultural development on social ecology from the perspectives of human resources and natural ecosystems.

3. Results and discussion

3.1. The historical changes in the ecosystem
The changes in ecosystems are evolving over time. For example, the exploitation of mangrove areas in Indonesia which has started in 1800 [5]. The development of brackish water shrimp aquaculture (tambak) and exploitation of timber products are considered as the main drivers for the change. The authors also claimed that by the end of the 1960s, Indonesia is estimated to have lost more than 200,000 ha of its mangroves mostly in Java and Sumatra. This rate increased and expanded to Kalimantan and Sulawesi in 1970. Exploitation was also found in water resources, sedimentation of the reservoir evolved and reduced the function of a river basin. Therefore, the drivers of the changes are (1) the changes in the ecosystem over time and (2) government policies.
3.1.1. The changes in ecosystems
The changes in ecosystems are marked by the extension of wetland area (paddy field) in Java and outside Java (South Sulawesi). The expansion is considered as the political strategy at national, regional, and local levels. The history of ancient governance systems in Java is closely related to this approach. The measurement of security conditions is determined by the level of self-sufficiency in producing rice. For a long time, there is a belief in Indonesia, the key to the success of any governance is measured by their ability to secure food production in this case rice [6]. Indonesian history is also marked by the ideas to maximize the power in managing wetland areas or paddy fields, for example, the ideas of separation the kingdoms in Java (Mataram) and South Sulawesi (Gowa) [6-7].

The central government was located in an area dominated by rice fields (wetland or sawah) while dry land or upland area was considered as the peri-peri. Even mountain areas were known as “exile” places for a political leader who was against the government. Central economic activity was also heavier at low land or wetland areas compare to other ecosystems.

During the colonialization, agricultural development is biased to the west and to food crops. The lack of awareness of this approach triggered the social revolution at the end of the 19th century. A war took place between local communities and “Pelzer” (the owner/manager of estate crops areas). Which was caused by the failure of The Dutch government in developing economic systems based on estate crops commodities [8].

3.1.2. Government policies
Indonesian government policies in agriculture during ancient history is very biased to rice and food. The governance system during the Kingdom era in Sriwijaya, Majapahit, Bugis or Gowa and Mataram was very rice-centric. Only a few from those kingdoms generated their income from non-rice commodities. The Kingdom in the eastern parts of Indonesia like Bima (West Nusa Tenggara), Ternate and Tidore focused on the economic sector from estate crops commodities. Moreover, agriculture development that managed natural ecosystem into non-rice policies has been introduced since the Kingdoms of Indonesia has been involved in trading activities with the European traders originating from Portugal, Spain, Dutch and England [9].

The history also proofed that, the governance during colonialization was ruled under a regulation that was very biased to rice or food and contributed to significant problems of human rights violations. The condition was slightly different to the area in which non-rice producers like Ternate and North Sulawesi. Meanwhile, many research claimed that the rice sector is very labour-intensive compare to the non-rice sector.

3.2. The conflict of academic hegemony
The process of agricultural development is highly dependent on the group of experts or think tanks that support government policies in agriculture. The implementation of agriculture policies is not solely explained by the competency of the officers on the ground and when it was designed, but also highly depends on the mindsets of those policy makers when designing the policies. During the New Order Era (Orde Baru), development policies in all sector were dominated by western “thinking”, as the majority of Indonesian think tank members were graduates of US ivy league universities. Academic hegemony was also heavily correlated with political interest or agenda at the national or global. In many cases, civil servants are trapped in those interests which resulted in the inefficiency of the development process.

During the colonial era, the role of academicians in maintaining ecosystems was very strong. The healthy environment or ecosystem is considered as an accountability measure of governance systems from the top (central) to the bottom (village level). The intervention of academic hegemony from the anti-ecosystem or environment started in the New Order Era. The government was ruled by focusing on economic growth and centralistic power. Decentralization principles and equality were less recognized. Discussions on equity, strengthened the function of the environment and protected natural ecosystems
were discussed only at academician discourse or at the university/research centre. The role of environmentalists or ecologists was diminished [10].

3.3. The False Policies
The definition of policy in this context is operational of the vision in the development. The objective of every agricultural development is to maximize people’s welfare in rural areas. At the implementation level, the agricultural development process operates at sectoral and partial levels, but at the end, it has to be able to increase rural population welfare and prosperity. Nowadays, the policies are shifting from holistic to sectoral or even sub-sectoral [11].

The measurement of false policies is proven by the effectiveness and the outcome of the policy. Debates between protecting the environment versus economic growth-maniac were never solved from the past to date. Overexploitation of natural resources and biodiversity contributed significantly to the performance of sustainable agriculture development in Indonesia. Ecosystem and environment degradation led to the stagnation of the development process or even to the extinction of the generation (species (plants, animal) or human generation)[12]. Compatibility in managing and increasing the role of ecosystem is highly correlated with policies in production, agricultural growth, economics, political (sectarian) and governance (autonomy and decentralization), culture and security and defence [13].

Variance of false policies in agriculture development can be measured by these following:
1) Ecosystems known as the strength and the main support in sustainable agriculture development. Synergy between factors such as land, water, biodiversity, civil society and good governance are important in providing food and basic needs.
2) As part of good governance and smart society, ability to manage political system and governance considered as the basic principles of social ecology in agricultural sector. Political systems and government include the aspect of designing, implementing and controlling the ecosystem in vertical (central, regional and rural), cross spatial and topography (including across river basin).
3) Political economy that pro equity and sustainable development are based on the healthy environment. To date, there is no formula or strategy in political economy policy that able to compromise a) the principles of increasing growth and centralistic, but at the same time less friendly to ecosystem with b) equity, decentralized and friendly to the environment.
4) Social culture is formatted the social capital and civil society which based on collective trust, law enforcement, cooperation and net-working. Ecosystems management is part of community empowerment that highly depend on the strength of social capital and civil society at local and national level.

3.4. Globalization
Globalization is not new for Indonesia. Since the seventh century, Indonesia had entered global activities, such as in education (Kingdom Sriwijaya establish a university which affiliated with India), in cultural (shrine, inscription, written documents in highquality leaf or called as lontar), geopolitical interests called as “Melayu Common Wealth” located in three angular Riau, Sumatera and Western Borneo, and economic integration (Sunda Kelapa/Jayakarta, Tuban/Gresik, Malaka and Gowa) [14]. The ultimate result of globalization after World War II was the independence of Indonesia on 17 August 1945. After Indonesia marked our proclamation of independence, the next issue was to get full sovereignty from the Dutch. A conference of 120 delegates assembled in The Hague in August of 1949. After ten weeks of haggling, led by Hatta on November 2nd, the conference reached an agreement that transferred Dutch sovereignty to the United States of Indonesia. These long processes of negotiation were examples of how our founding fathers were heavily involved in international debates in order to save the nation [15].

Related to agricultural development, globalization is translated as the freedom of a nation to have self-independency in providing food for their people. The spirit of anti-globalization is marked by there is no independency for the consumers to provide their own food. In the history, rice considered as commodity that effectively creates a synergy between social, economic, political and culture across
archipelago. Although historical facts demonstrated that integration between communities and ecosystems can be harmonised in providing food, liberalization that created free market access also contributed to the formation of disintegration between those two factors (deliver on the speech by former President Soekarno at the first establishment of Bogor Agricultural University on 27 April 1952).

The shifted paradigm of globalisation started when western-capitalist approach penetrated the nation from different direction. At the moment, this definition led toward the opening of market access and promoting free trade agreement with developed countries. Indonesia is more open to the world and experiences what is called by westernization. The attributes from this new paradigm is characterized as these following: 1) the ability to manage the economy that based on capital formation; 2) more access to specific technology; 3) double function of some scientist that also took a role as marketing agent and at the same determined the way of thinking of the consumers to western goods and services. Vested interest that created along this new paradigm has shifted the understanding and creates false translation of globalization at the consumer level. John Perkins wrote the evidence in his popular book “Economic Hitman”, the book illustrates how the capitalist leading the world economy.

In certain area, globalization also used as justification in exploiting the nature. Land expansion creates land degradation and deforestation. Globalization in economic contributes to the significant impact to poverty incidence and ecosystem destruction. At the urban areas, consumers are heavily influenced by consumerism and hedonic life style. Neo-liberalization and neo-capitalism took a role in creating the changes on the livelihood in local communities and village area.

Nowadays, globalization that limit access and reduces self-sufficiency ability of a nation in food security is considered as new version of colonialization. This approach is not compatible with Indonesian agriculture sector that build under the perspective of conservation of biodiversity and strengthened the ecosystems [16].

4. Conclusions
The collapse of Orde Lama (Old Era) governance in the late 1960s to date, agricultural development in Indonesia has not adopted social ecology in a full format. Ecosystem degradation during the early stage of the New Era has not significantly changed the livelihood in rural areas since the penetration of capitalism and consumerism is dominated in urban. In the mid-1970s, values of neo-liberalization are adopted and used in development plans, strategy and implementation to maximize economic growth. Development principles that are selected under growth maniac led to the over-exploitation of natural resources.

Deforestation, land degradation, and water resources exploitation in upstream are examples of maniac growth approach that are less likely to consider the balancing of conservation and exploitation. Ecosystems and natural resources are exploited progressively by the avarice values from the misconception of globalization and any other bubble-economics activities.

The anticipation of ecosystems damage caused by agricultural development is in progress. There is a strong need to prepare the early warning system of strategic natural ecosystem destruction in order to minimize the impact on livelihood and rural welfare.

Compared to the 1990s, agriculture ecosystems before 1990 were relatively sustainable. Policies that promoted self-sufficiency, centralized economic and holistic principle in agricultural development are considered as determinant variables. These approaches are implemented following a hierarchy from national to local, from top-level decision-maker to the staff (vertical coordination) and started at the upstream level (pre-production (development of reservoirs and dams, including securing green belt in the surrounding), middle sector (agribusiness system, distribution channel and marketing actors (farmer group, cooperatives, and BULOG) and down-stream (consumers). At that time, there was an integration of operation in reservoir and river basin to the success in achieving self-sufficiency in rice production.

Since the separation of the forestry sector into the Ministry of Environment and Forestry, the Ministry of Agriculture experienced paralyzed during the implementation of agricultural development. The Ministry of Agriculture does not have full authority to manage the ecosystems and mitigate the destruction process and, in the end, it influenced the achievement to the farmer welfare and well-being.
Lack of intervention from rural communities and the weakness of civil society caused by the miss designed of agricultural development creates false approaches and values during the process. There is a strong need to refocus the policy that prioritizes balancing ecosystems, natural resources, and economic benefits.

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