Indonesian economic strength from food security of sustainable agricultural and fishery sectors

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Abstract. The concept of sustainable development comes from the environmental sectors. It covered by sustainable development include the agricultural and fishery sector. The sustainable fishery is a collection of activities that provide long-term production sustainability, maintain the balance of ecosystems through generations, and preserve biological, social, and economic systems. However, irresponsible fishing activities such as illegal fishing greatly disrupt the development of sustainable fishery. Besides that, Indonesia has vast amount of potential agricultural land, specifically 100.7 million hectares consisting of 24.5 million hectares suitable for wetlands (rice fields). Having a tropical climate, it is possible to conduct agricultural activities throughout the year. This study aims at analysing illegal fishing as threat to sustainable fishery development and observing land usage systems in integrated agricultural activities. This research utilizes a legal method with a normative juridical approach. Data was collected through a literature review and analysed qualitatively. The results suggest three elements in implementing sustainable agricultural and fishery development, namely economic, ecological, and social elements. Illegal fishing and sustainable agricultural development both affect the attainment of these elements. As a recommendation, implementing sustainable fisheries and agriculture management system which includes efforts to minimize illegal fishing and increase world food barns are very necessary.

1. Introduction
Food is the most basic human necessity for the population of a country. Therefore, since the establishment of the Republic of Indonesia, the 1945 Constitution has mandated that the State is obliged to exercise food sovereignty and to strive the needs of food. These obligations include the obligation to guarantee the availability, affordability, and fulfillment of sufficient, safe, quality and balanced nutritious food consumption for the prosperity of the people (the 1945 Constitution Article 33 section 3). Food also has a strategic role for a country because it can affect the social, economic and political conditions of the countries [1].

Food consumption development consists of agriculture, animal husbandry, fisheries and marine sectors. In the results of the National Seminar on the 42nd Anniversary of UNS in 2018 the Role of Biodiversity to Support Indonesia as a World Food Barn Potential for Biodiversity in Supporting Indonesia as a World Food Barn Bambang Pujiiasmanto, Ahmad Yunus and Samanhudi Professor of the Faculty of Agriculture in UNS Main Speakers Food Needs for 6.5 billion people in the world and the crisis of food availability that always haunts the world, provides an opportunity for Indonesia to become the basis of food production, including the dream of becoming a world food barn ready to supply food like rice at any time. This big goal is very reasonable because Indonesia claims to be an
agrarian country. Although the export value was 279.9 million (US dollars), in 2008 it was worth 452 million US dollars (export value 302.1 million US dollars). We have 17% of total species consisting of 37% of fish species (8500 species), 12% of mammal species (500 species), 16% of reptile and amphibian specialists (2000 species), 17% of bird species (1500 species), 25% of world plant species (25,000 species), 30% of mangrove forests and 250,000 species of insects. Besides, Indonesia has an area of coral reefs of 51,020 square km or 17.95% of the world's coral reefs. Indonesia is the second largest country that has world biodiversity including 800 types of food plants [2].

The development of food consumption in the agricultural sector to be maximum and can absorb labor and as a national food support so that supporting Indonesia's economic growth, it requires a sustainable agricultural landscape. It is known that, the existence of the agricultural sector in Indonesia, especially as seen from its land use is still not optimally utilized in maintaining the stability and growth of the national economy. The area of land in Indonesia that has been used for agriculture is 37.1% or 70.8 million acres of the total land area of 190.9 million acres. This causes a gap in productivity of agricultural land with population growth. Population growth continues to increase causing an increase in national food needs that have not been well met by the agricultural sector. Especially with the increase in population, conversion of agricultural land to settlements continues to increase [3].

Agricultural landscapes are landscape objects that are used for agricultural. Land use systems on this landscape scale use ecological boundaries. Farming activities on a landscape scale generally cover food crop farming, horticulture, plantations, even forestry, animal husbandry, fisheries, settlements, and tourism services as well as integrated or discretionary combination systems [4].

Structuring the agricultural landscape can be done by applying various components of maintenance and protection of the landscape's biological resources, such as fences, shelterbelt, riparian vegetation, and small ponds. Landscape Ecology is an interdisciplinary science that examines the structure, functions and changes that occur in a landscape. Agricultural landscapes include forest ecosystems, settlements, agricultural land, highways and dirt roads. Landscape structure is defined as the spatial pattern of various components of the landscape concerning its size, diversity, density and configuration [5].

Apart from the agricultural sector, there are fisheries and marine sectors which support the fulfillment of Indonesian community food. The welfare of fishery business actors, including cultivation, capture, processing and marketing, is one of the important pillars in enhancing the nation's competitiveness in the era of free trade and the application of the ASEAN Economic Community (AEC). However, the welfare conditions of fishermen and businesses to be able to meet their needs with the income they obtain is still very limited. The problem faced is the absence of protection for small and medium businesses (SMEs) to increase competitiveness through cross-sector synergies (including in accessing sources of financing), protection of the domestic market, and product certification. Other problems are related to the still low productivity and competitiveness of the marine and fisheries business caused by the fishing fleet structure which is still dominated by small-sized vessels, not yet optimally integrated upstream and downstream production systems, and the limited supply of adequate facilities and infrastructure. Other than that, the fundamental aspects that affect the weak competitiveness and productivity are the quality human resources and their institutions. At present, the number of human resources who depend on marine and fisheries business activities is very large, but the knowledge, skills, technology and accessibility to infrastructure and information are inadequate and not evenly distributed throughout Indonesia, especially in the islands [6].

Increasing population growth requires the supply of food which also continues to increase including the supply of quality animal protein. Fish production as a source of animal protein also continues to increase from 7.7 million tons in 2010 to 10.9 million tons in 2014. Furthermore, fisheries production, including fish, seaweed, salt and processed products, is expected to reach 40-50 million tons by the end of 2019. Indonesia is one of the fisheries producing countries largest in the world after China (FAO, 2016). However, these advantages have not been followed by the ability to increase added value and meet national food sufficiency. Indonesia's food security index based on affordability,
availability, quality, and safety criteria is ranked 64th under Asia Pacific countries such as New Zealand, Japan, Australia, South Korea, Malaysia, China, Thailand, Vietnam, and Philippine. This research discusses how to implement the sustainable fisheries management system and sustainable agriculture that is needed including efforts that can minimize illegal fishing actions and increase world food barns.

2. Methods
The research used normative juridical analysis of legal materials through literature studies [7]. This study analyzes the factors that show that there are three elements that must be achieved through implementing sustainable agriculture and fisheries development. So it is necessary to recommend the implementation of a sustainable fisheries management system and sustainable agriculture which includes efforts that can minimize illegal fishing actions and increase world food barns.

3. Results and discussion
3.1. The development of the agricultural and the fishery
The Indonesian Government has a large role in supporting the development of the fisheries, agriculture and food sectors in Indonesia itself. The role, in fact, can still be improved when the utilization of natural resources is managed seriously and professionally. The development and of the fisheries, agriculture and food sectors will encourage production activities, accelerate economic development and preserve a sustainable environment. Optimizing the utilization of fisheries, agriculture and food resources in each region can be done through exploration, development and rehabilitation of fisheries and agriculture facilities and infrastructure. Thus the utilization of fisheries and agricultural resources is also expected to be able to revive the economic sector for fisheries businesses, so as to improve the welfare of the Indonesian people.

There is a need for coordination and synchronization in achieving the development objectives of the Government of Indonesia overall. One of the strategic development plans in the context of a development plan is a medium-term development plan. The medium term development plan document is one of the basis of annual planning and at the same time as a sectorial development policy as outlined in the strategic plan document. The development of sustainable agricultural landscapes can be in form of producers of rice barns and as a destination for natural and cultural tourism in each regional area that is able to spur economic growth in the region. The development of agricultural products, natural and cultural tourism is carried out by determining areas with good potential for agricultural tourism in all regions. According to the Government's Regional Spatial Plan (RTRW), one of the areas that has the potential to be developed as an agricultural tourism site is visible from the natural beauty sector, the type of land. The potential of agricultural landscapes and agricultural activities with integrated farming systems in each area needs to be managed by making the area an integrated agricultural tourism destination. In making plans to manage the agricultural and fisheries and marine landscapes in Indonesia, coordination is needed from various parties such as the local community, local government (PEMDA), the private sector, and related stakeholders. In its development efforts, it is better to have community readiness and participation. In addition, the development of local potentials such as arts and crafts as well as efforts to vertically integrated farming systems must be further enhanced through skills training.

3.2. The food security of sustainable agricultural and food sector
Formulation of sustainable fisheries and marine issues is an effort to integrate social, economic and ecological objectives [8]. The concept of sustainable fisheries emerged from environmental awareness. Sustainable fisheries are developed because of fears of a decline in the ability of the aquatic environment to support the availability of fish resources. The initial idea of sustainable fisheries is to be able to capture or harvest fish resources at a sustainable level, so that fish population and production do not decrease or in another word becomes available over time. Fish resources are
included as renewable resources. However, this does not mean that fish resources can be used without limits. If fish resources are used without limits or are not rational and exceed the maximum carrying capacity of the ecosystem, it can result in damage and depletion of the fish resources themselves, even if not immediately addressed can also lead to the extinction of these fish resources. Realizing the importance of the meaning of sustainability, in 1995 the FAO formulated the concept of sustainable fisheries development by compiling a Code of Conduct for Responsible Fisheries (CCRF).

Sustainable fisheries activities can be achieved through appropriate and effective fisheries management, which is generally characterized by improved quality of life and human well-being as well as the preservation of fish resources and the health of their ecosystems. In addition, the national fisheries sector still faces quite a number of complex obstacles or problems. The main problem is the weakness of fisheries management system in Indonesia which is not running sustainably, both for capture fisheries and aquaculture. Weak fisheries management, both directly and indirectly, will certainly lead to irregularity and uncontrolled national fisheries business, which in turn will cause national fisheries activities to become unsustainable. Then, the other main sustainability issues that are more specified faced by capture fisheries and aquaculture in Indonesia in general are as follows:

Capture fisheries a. Illegal, unreported, and unregulated (IUU) fishing problems. IUU fishing activities are not only carried out by foreign-flagged fishing vessels, but also by domestic fishing vessels. This is reflected by the low level of compliance of domestic fishing vessels in the rules of the game in the management of fish resources, such as the failure of national fishing vessels to use VMS (vessel monitoring system) and reporting logbook of their catches. In addition, there are still fishermen or capture fisheries entrepreneurs who use destructive types of fishing gear or harmful materials in their fishing operations. It is estimated that there are still a lot of catches that are not reported, one result is that there is a bias of information about the status of fish resources in a waters, which in turn will lead to over intensive or over-fishing activities, which in the long run will certainly reduce fish resources itself because there is no chance for the fish to recover its population stock. Furthermore, for unregulated fishing, the estimated amount of the value is also relatively large due to negative impacts on the environment, although there are no reports related to it.

The government acts decisively against the perpetrators of illegal fishing crimes by participating in ratifying the United Nations Convention on the Law of the Sea (UNCLOS 1982) Concerning the Law of the Sea followed by promulgating Law No. 45, 2009 and Law No. 31, 2004 concerning Crime of Illegal Fishing. The judiciary also supports the issuance of Supreme Court Regulation (PERMA) No. 13, 2016 regarding Criminal Acts of Corporations, especially for corporations that carry out illegal fishing.

4. Conclusions
Food is the most basic human basic necessity for the population of a country. Indonesia has the character of an integrated agricultural landscape because it has a horizontal integration of agricultural commodities, fisheries, and livestock both in overlapping by farmers. Apart from the Agriculture sector, the fulfillment of food consumption demand also comes from the Fisheries and Maritime sector. The problem of illegal fishing must be faced by the government in the fisheries sector. The government acts decisively against the perpetrators of illegal fishing crimes by participating in ratifying the United Nations Convention on the Law of the Sea (UNCLOS 1982) Concerning the Law of the Sea followed by promulgating Law No. 45, 2009 and Law No. 31, 2004 concerning Crime of Illegal Fishing. The judiciary also supports the issuance of Supreme Court Regulation (PERMA) No. 13, 2016 regarding Criminal Acts of Corporations, especially for corporations that carry out illegal fishing. With the support of law enforcement, the performance of the fisheries sector will be maximal and be able to provide significant regional income for Indonesia. Collaboration among agencies involved in providing solutions to problems that occur in the midst of the community is needed, especially in the case of a lack of community understanding related to the optimal use of land and natural resources with agricultural techniques that can provide optimal results. In addition, the
development of local potentials such as arts and crafts as well as efforts to vertically integrated farming systems must be further enhanced through skills training.

References
[1] Syahrir I 2013 Kedaulatan pangan dan kecukupan pangan negara wajib mewujudkannya [Food sovereignty and state food adequacy are mandatory to realize it] Info Risiko Fiskal IV
[2] Pujiasmanto B, Yunus A and Samanhudi 2019 Potensi keanekaragaman hayati dalam mendukung indonesia sebagai lumbung pangan dunia [The potential of biodiversity in supporting indonesia as a world food granary] Prosiding Seminar Nasional Fakultas Pertanian UNS 2(1)
[3] Kementerian Pertanian [Indonesian Ministry of Agriculture] 2014 Strategi Induk Pembangunan Pertanian 2015-2045: Pertanian-Bio Industri Berkelanjutan Solusi Pembangunan Indonesia Masa Depan [master strategy for agricultural development 2015-2045 Sustainable Bioindustry Agriculture Solutions for Indonesia's Future Development] (Jakarta, Indonesia: Kementerian Pertanian [Indonesian Ministry of Agriculture])
[4] Arifin H 1992 Beberapa pemikiran pengembangan agrowisata pada kawasan cagar budaya betawi di Condet, Jakarta Timur [Some thoughts on agro-tourism development in the Betawi cultural heritage area in Condet, East Jakarta] Makalah Seminar Agro (Bogor, Indonesia : IPB)
[5] Forman RTT and Gordon M 1986 Landscape Ecology (New York: John Willey and Sons) p 620
[6] Indonesian Ministry of National Development Planning (PPN/Bappenas)
[7] Soekanto S and Mamudji S 2011 Normative Legal Research: A Short Review (Jakarta: Raja Grafindo Persada) p 1
[8] Badan Perencanaan Nasional (Bappenas) [National Planning Agency] 2014 Kajian Strategi Pengelolaan Perikanan Berkelanjutan [Study of Sustainable Fisheries Management Strategies] (Jakarta, Indonesia: Badan Perencanaan Nasional (Bappenas) [National Planning Agency])

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