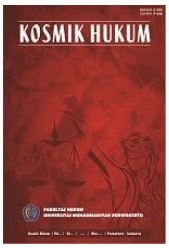

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Fertilizer Policies: The implementation in Indonesia Compared to European Countries

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Abstract

This study explores a case that occurred on land owned by the former mayor of Semarang, Sukawi Sutarip. On land, land measurement errors occur and land ownership overlaps with other people's ownership. Conflicts between adjacent landowners were inevitable. This study aims to determine the chronology of the conflict, the causes of land measurement error and the legal consequences. This research is juridical-normative in nature, meaning that the truth of statements is measured based on positive legal norms. The data analysed is limited to secondary data collected from the internet. Data were analysed qualitatively. The results showed that it was true that there were errors in land measurement and the main causal factor was due to unprofessional officers; and give rise to legal conflict in the court. The legal consequence is that the certificate becomes legally and administratively flawed.

Keywords: Conflict, Land, measurement, administrative flaw

Abstrak

Penelitian ini mendalami kasus yang terjadi di lahan milik mantan Wali Kota Semarang Sukawi Sutarip. Di bidang tanah terjadi kesalahan pengukuran tanah dan tumpang tindih kepemilikan tanah dengan milik orang lain. Konflik antar pemilik tanah yang bersebelahan pun tidak terhindarkan. Penelitian ini bertujuan untuk mengetahui kronologi konflik, penyebab kesalahan pengukuran tanah dan akibat hukumnya. Penelitian ini bersifat yuridis-normatif, artinya kebenaran suatu pernyataan diukur berdasarkan norma hukum positif. Data yang dianalisis hanya sebatas data sekunder yang dikumpulkan dari internet. Data dianalisis secara kualitatif. Hasil penelitian menunjukkan bahwa memang terdapat kesalahan dalam pengukuran tanah dan faktor penyebab utamanya adalah karena petugas yang tidak profesional; dan menimbulkan konflik hukum di pengadilan. Akibat hukumnya adalah sertifikat tersebut menjadi tidak sah secara hukum dan administratif.

Kata Kunci: Konflik, Tanah, pengukuran, cacat administrasi

I. Introduction

Fertilizer is one of important production factors in agriculture to gain high productivity. Since Indonesia has rice as a staple food, the government put a lot of efforts on increasing the production of rice, such as introducing new policy related to fertilization strategy when Green Revolution came to Indonesia around 1971. At that time, Indonesia began subsidizing fertilizer to encourage its use as a complement to the new high-yielding rice varieties that were becoming available. The objective of the subsidy was directed exclusively toward the expansion of rice supply in Indonesia. By any measure, the policy pursued by Indonesia in the period from 1969 to 1986 has been successful. Nitrogen use has increased by 19.7%, phosphate use by 28.7% and potash use by 13.7% per annum over the years 1972 to 1986. In 1986, over 60% of fertilizer went to rice,

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over 80% went to all food crops, and over 80% of all fertilizer was used on Java.[1] Finally, rice self-sufficiency in Indonesia was achieved between 1984-1989.

Cultivation activities by use intensive fertilization have an impact on the environment. Green Revolution also had succesfully brought environments to the adverse condition. The excessive use of chemical input for agriculture has decreased soil fertility and increased dependency of farmers to industrial sector for their mineral fertilizers and pesticides. They believe that the more fertilizer used will give the more production. Therefore, stakeholders are keeping reconstructing the policy time by time to improve rice productivity without damaging the environment. This paper aims to study the concept of fertilizer policies applied by Indonesian government to reach the goals of self-efficiency compared to European Countries.

II. Research Method

1. Research Design

This study employs a comparative analysis approach to examine and contrast the fertilizer policies of Indonesia and selected European countries. The research aims to understand the differences in regulatory frameworks, distribution mechanisms, and environmental impacts.

2. Data Collection

Data were collected from multiple sources, including secondary Sources: Review of existing literature, policy documents, government reports, and academic articles on fertilizer policies and their impacts.

3. Data Analysis

Data analysis involves several steps: *First,* content analysis: thematic analysis of policy documents to identify key themes and patterns related to fertilizer use, regulatory frameworks, distribution mechanisms, and environmental impacts; *Second,* comparative analysis: a systematic comparison of the findings from Indonesia with those of European countries to highlight similarities, differences, and best practices.

4. Validity and Reliability

To ensure the validity and reliability of the findings use Triangulation. Data from different sources (interviews, documents, and literature) are cross verified to ensure consistency and accuracy.

By employing these research methods, the study aims to provide a comprehensive understanding of fertilizer policies in Indonesia and Europe, and to offer recommendations for improving the sustainability of agricultural practices in Indonesia.

III. Result and Discussion

1. Fertilizer Policies in Indonesia

Talking about fertilization is not only about fertilizer application technically, but also about regulation made by government to control the distribution of fertilizer at downstream level. Efforts to manage procurement, distribution, and proper fertilizer application have been regulated, implemented, and controlled by the government. Nevertheless, complaints related to fertilizer distribution problems still exist[2], such as shortage due to overuse of fertilizers at farm level. Legacy of green revolution has increased the consumption of fertilizer year by year up to 236.442 kilograms per hectare of arable land in 2018 according to World Bank (Fig. 1). These

[1] Hedley D. D. and Tabor S. R. 1989. Fertilizer in Indonesian Agriculture: The Subsidy Issue. Agricultural Economics. 3(1): 49-68. https://doi.org/10.1016/0169-5150(89)90038-8.

[2] Suryana A., Adang A., Rangga D. Y. 2016. Policy Alternatives on Subsidized Fertilizer Distribution for Food Farmers. Analisis Kebijakan Pertanian. 14(1): 35-54. http://dx.doi.org/10.21082/akp.v14n1.2016.35-54.

fertilizer products cover nitrogenous, potash, and phosphate fertilizers (including ground rock phosphate).

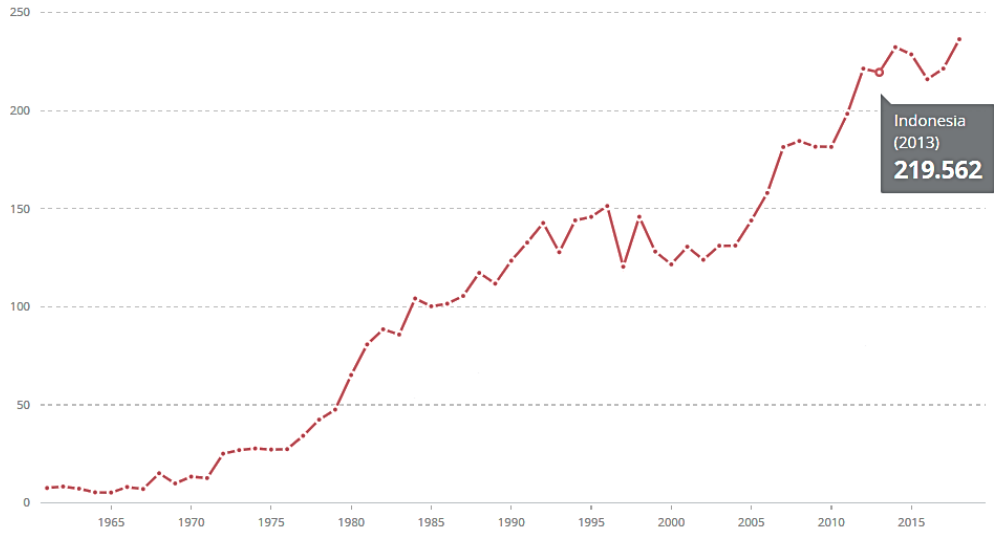

Figure 1. Fertilizer consumption in Indonesia[3]

Furthermore, many farmers still lack information on how to apply fertilizer in the proper way. Even though many research work on fertilizer application in Indonesia, the connection between researcher and stakeholder to compile the invention and circulate the information for the farmers is hampered. This condition aggravates the problem of fertilization in Indonesia.

Fertilization policies have been issued by government such as (a) Kepmentan No. 237/Kpts/OT.210/4/2003 about guidelines for supervision of procurement, distribution and use of inorganic fertilizers; (b) Kepmenneg No-KEP183/MBU/2003 about component of cost of subsidized fertilizer sold; (c) Permentan No. 42/Permentan/OT.140/09/2008 about needs and Highest Retail Price (HET) of subsidized fertilizer for the agricultural sector for the 2009 fiscal year; (d) Permendag No. 21/M-DAG/PER/6/2008 revised with Permendag No. 07/M-DAG/PER/2/2009 about procurement and distribution of subsidized fertilizer for the agriculture sector; and (e) Permenkeu No. 74/PMK.02/ 2008 about procedures for budget provision, calculation, payment and accountability for fertilizer subsidies; Also (f) Inpres No. 1/2010 about trials of direct transfer of fertilizer subsidies to farmers.[4] A lot of policies managing fertilizer have been developed, but in reality, the problems seem like never end, especially the scarcity of fertilizers in several locations and high prices of fertilizers at farm level. Based on Indonesia Fertilizer Producers Association (IFPA), the fertilizer production increased recently (Table 1.), but this number is still below the capacity of the production which is 8.57 million tons urea for potential production. This is caused by old age of the factories (75% factories >20 years old) and diminishing in its efficiency.[5]

Table 1. Fertilizer production, year 2014 - 2020

Year	2014	2015	2016	2017	2018	2019	2020

[3] World Bank. Fertilizer consumption (kilograms per hectare of arable land) – Indonesia. https://data.worldbank.org/indicator/AG.CON.FERT.ZS?contextual=default&end=2018&locations=ID&start=1961&view=chart . Accessed on 4 May 2023.

[4] Darwis, Valeriana, and Saptana Saptana. 2010. Rekonstruksi Kelembagaan Dan Uji Teknologi Pemupukan: Kebijakan Strategis Mengatasi Kelangkaan Pupuk. Analisis Kebijakan Pertanian. 8(2):167-186. doi: http://dx.doi.org/10.21082/akp.v8n2.2010.167-186

[5] Rachman B. and T. Sudaryanto. 2010. Impacts and Future Perspectives of Fertilizer Policy in Indonesia. Analisis Kebijakan Pertanian. 8(3): 193-205.

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Fertilizer production	Ton/year	Ton/year	Ton/year	Ton/year	Ton/year	Ton/year	Ton/year
Urea	6.724.366	6.917.372	6.462.938	6.838.063	7.444.697	7.722.799	7.983.042
SP-36	400.508	281.579	464.982	480.131	450.576	479.443	451.972
ZA/AS	816.001	694.570	755.330	798.782	589.341	698.392	795.930
NPK	2.716.098	3.001.087	2.764.687	3.282.957	3.159.966	2.923.452	3.023.235
K_2SO_4	8.326	7.842	10.681	15.184	16.475	14.366	9.655

Moreover, domestic fertilizer demand has increased along with the intensification of rice, corn, and soybean. Meanwhile, national fertilizer production tends to be stagnant at an average of 75 percent utilization of capacity.[6] Demand for SP-36 and ZA for the agriculture sector has exceeded national fertilizer production (Table 2.). The shortages of fertilizer supply are met by imports of fertilizer imports which are mostly for private estates and industrial subsectors.

Table 2. Fertilizer consumption on domestic market and export market, year 2014-2020[7]

Year	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020 (Jan-Sept)**
Consumption/export	Ton/year	Ton/year	Ton/year	Ton/year	Ton/year	Ton/year	Ton/year
Urea							
Domestic consump.	5,589,484	5,490,515	5,329,717	5,970,397	6,265,196	5,425,656	3,962,668
Export	1,107,880	831,894	1,253,200	766,864	1,141,720	1,860,700	1,854,873
Total sales	6,697,364	6,322,409	6,582,917	6,737,261	7,406,916	7,286,356	5,817,541
SP-36							
Total sales	798,816	829,134	865,434	860,270	861,707	819,195	412,380
ZA/AS							
Total sales	1,011,141	996,645	1,021,505	980,505	1,004,704	1,017,167	570,642

Source: IFPA (2021)

The gap between demand and supply of chemical fertilizers is due to the limited budget of subsidy and production capacity of fertilizer. On the other hand, fertilizer subsidies to farmers based on six appropriate indicators (the right price, the right amount, the right place, the right quality, the right type and the right time) are still considered ineffective because in terms of indicators of the right price, the right amount, the right place and the right quality have not been met, while the indicators of the right type and on time have been fulfilled. The related government should improve the mechanism of fertilizer subsidy distribution and improve supervision on the process of distributing fertilizer subsidies to farmers, so that the effectiveness indicators of fertilizer subsidy policies are met so that the agriculture production process can be maximized. The improvement and supervision mainly concerned indicators of price, quantity, location, and quality of subsidized fertilizers.[8]

In the short run, in order to increase distribution efficiency of subsidized fertilizer to farmers, it is recommended that some adjustments to the current fertilizer policy must be done on price of natural gas as raw material for urea, level of subsidized price of fertilizers paid by farmers, document of definitive plan of fertilizer needs of farmer groups (RDKK), and function

[6] Rachman B. and T. Sudaryanto. 2010. Impacts and Future Perspectives of Fertilizer Policy in Indonesia. Analisis Kebijakan Pertanian. 8(3): 193-205.

[7] IFPA (Indonesia Fertilizer Producers Association). 2021. Fertilizer consumption on domestic market and export market. https://www.appi.or.id/supply-report. Accessed on 4 May 2023.

[8] Kholis I. and Setiaji K. 2020. Analisis Efektivitas Kebijakan Subsidi Pupuk Pada Petani Padi. EEAJ. 9(2): 503-515. DOI: https://doi.org/10.15294/eeaj.v9i2.39543

of fertilizer supervision commission at regional levels.[9] Fertilizer subsidy is an important policy tool for this purpose but becomes too great a burden on the government's finances, especially during the economic crisis, so it must adjust to the prevailing conditions.

2. The Application of Fertilizer in Indonesia Based on The Government Regulation

Research has shown that integrated plant nutrient management (IPNM) systems based on soil and plant analyses, with the application of appropriate types of fertilizer integrated with the use of available organic materials, and with proper application techniques, are keys to increased agricultural productivity. In addition, the provision of fertilizers of the appropriate type, available at the place and time required, with guaranteed quality and affordable prices, should be the objective.[10]

Based on fertilization policy, Permentan No.40/Permentan/OT.140/4/2007 about recommendation of NPK fertilization on location specific of paddy field, the government suggested the fertilization based on nutrient status in the soil. This is expected to be useful to gain national rice production and fertilization efficiency to increase farmer's income and preserve the environment. The government also has issued several applied technologies on appropriate dosages of fertilizers in specific locations, such as the use Leaf Color Chart (BWD), Wet land Soil Test Kit (PUTS), and Integrated Crop Management (PTT). Site-specific nutrient management is an approach to providing appropriate nutrients (dosage, type and time of application) considering the needs of plants and soil capacity from the supply of natural nutrients.[11] However, fertilization recommendation in some areas of Indonesia still need to be improved because it is using conventional method and not based on nutrient status in the soil.

The stakeholders tried to give recommendations of fertilization use together with a set of farming practices to fulfill the needs of rice growth and development set in specific agro-ecosystem areas. These include selection of superior varieties and seed quality management, proper land preparation and soil nutrition management, application of water saving and efficient technologies, and integrated pest management. However, there were some challenges for farmers in adopting the policy because of limitation in knowledge and capacity, and availability of guidelines and tools. Coordination among key stakeholders (i.e., government, extension workers, universities, supporting partners, and farmers) within the rice sector should be institutionalized to address the actions nationally.[12]

Furthermore, the government has provided organic fertilizer equipment as many as 1,411 units in 2008. Provision of these equipments aimed to help self-reliance of farmers or farmer groups in producing organic fertilizer. In addition, to improve farmers' skills, they are also supported by trainning on a local decomposers manufacturing technology. Future development of organic fertilizers is expected to offset the lack of availability of fertilizer, particularly urea fertilizer. Nevertheless, the use of organic fertilizer by farmers is still low due to the high retail price of organic fertilizer which is almost equal to the highest retail price of urea fertilizer. Therefore, farmers tend to buy urea instead of organic fertilizer.[13] The government reduced the high price of organic fertilizer to encourage the farmers to use it and the policy of subsidized manure also has been implemented, but the distribution mechanism was not going properly.[14] On the other hand, the possibility of the farmers to use organic fertilizer at a lower price can be

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[9] Suryana A., Adang A., Rangga D. Y. 2016. Policy Alternatives on Subsidized Fertilizer Distribution for Food Farmers. Analisis Kebijakan Pertanian. 14(1): 35-54. http://dx.doi.org/10.21082/akp.v14n1.2016.35-54.

[10] FAO. 2005. Fertilizer Use by Crop in Indonesia. Rome.

[11] Makarim A K, N I Widiarta, S Hendarsih and S Abdulrahman 2003 Panduan Teknis Pengelolaan Hara dan Pengendalian Hama Penyakit Tanaman Padi Secara Terpadu

[12] Perdinan, Dewi N. W., Dharma A.W. 2018. Lesson Learnt from Smart Rice Actions in Indonesia. Future of Food: Journal on Food, Agriculture and Society. 6(2): 9-20.

[13] B. and T. Sudaryanto. 2010. Impacts and Future Perspectives of Fertilizer Policy in Indonesia. Analisis Kebijakan Pertanian. 8(3): 193-205.

[14] Nuraini L. 2007. Instrument Kebijakan Pupuk Bersubsidi bagi Petani Indonesia. Dialogue Jurnal Ilmu Administrasi dan kebijakan Publik. Vol. 4, No. 1, Januari 2007: 62-68.

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afforded since many farmers have livestock, but livestock waste has low nutrients and slow-release effects causing the use of organic fertilizer must be much more and affect its transportation.

3. Agricultural Policy in European Countries

Not like Indonesia, European Union (EU) has Common Agricultural Policy (CAP) which is one of the world's largest agricultural policies and the EU's longest prevailing one. The CAP aims at providing a policy framework and financial support for farmers enabling a decent standard of living and ensuring stable food supply in a sustainable way and at affordable prices for more than 500 million Europeans.[15] Originally focused mostly on supporting production and farm income, the CAP has progressively integrated instruments to support the environment. Nonetheless, there is considerable agreement among EU citizens that that CAP is still insufficient to tackle ongoing environmental degradation and climate change.[16] Furthermore, agriculture is one of the main drivers of environmental degradation in Europe. Contaminants in EU fertilising products, such as cadmium, could pose a risk to human, animal, or plant health, to safety or to the environment as they accumulate in the environment and enter the food chain.[17] Therefore, recently, the government has focused to reconstruct the policies related to environment rather than only focus on increase farmer's welfare. Fertilizer producers, traders and farmers will be confronted with the EU Fertilizing Products Regulation (FPR), which will radically change the way fertilizers are receiving the labelling requirements provided on the products, such as organic fertilizers, organo-mineral fertilizers, growing media or biostimulants (Regulation 2019/1009 of The European Parliament and of The Council).

The CAP also regulates agricultural subsidies to increase farm income, but agricultural subsidies become an environmental risk factor. For instance, from the perspective of a single farmer, under the assumption that crop yields increase monotonically with the application of fertilizers, any fertilizer subsidy provides an economic incentive to increase the application of fertilizer, independent of the amount that has already been applied. Subsidies have played historically, ranging from agricultural systems that have generally over-fertilized, such as urban agriculture in China, Vietnam, or Indonesia, to countries where fertilizer subsidies are provided to compensate for significant land degradation.[18]

IV. Conclusion

Fertilizer policies in Indonesia still needs to be renewed, especially in terms of fertilizer subsidies because subsidies consume a vast share of the national budget and make an unsustainable allocation of public money since other sectors, such as health, education, or social security, may be neglected. The implementation of fertilization policy alternatives requires availability of accurate data on rice farmers, agricultural land ownership and use, and food farming system profile nationwide. So, subsidized fertilizers frequently should reach the intended beneficiaries.

European Union has complex regulation in Common Agricultural Policy and cannot be compared to the Indonesian Fertilization Policy. To implement the regulation, Indonesia still struggles to fix the upstream and downstream problems. Instead of fixing environmental problems due to fertilization, Indonesia has difficulties reaching food self-sufficiency from agricultural products.

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[15] Ludwig Hermann, Ralf Hermann. 2019. Report on Regulations Governing Anaerobic Digesters and Nutrient Recovery and Reuse in EU Member States. Doi: https://doi.org/10.18174/476673

[16] Pe'er G., Bonn A., Bruelheide H., et al. Action Needed for the EU Common Agricultural Policy to address sustainability challenges. People Nat. 2020; 2: 305– 316. https://doi.org/10.1002/pan3.10080

[17] NUTRIMAN. 2019. The New Fertiliser Regulation-Consequences for Farmers. https://nutriman.net/news/new-fertiliser-regulation-consequences-farmers.

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