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Decentralization and Rice Production in Bali Province

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INFORMASI ARTIKEL

ABSTRACT

This study want to explore the link between decentralization and rice production. Also Analyses the effectiveness of local government policy in controlling rice production. To examine this aim, it need to determine the factor influencing rice production in Indonesia which is then used to analyze the linkage with decentralization in Bali Province. In order to determine the significant factor influencing rice production, Linear Regression Analysis is used. This study tried to answer two research question, which are (1) What is the significant determinant factor that influencing rice production in Indonesia. and (2) How is the relationship between decentralization and rice production in Bali Province. This study used secondary data analysis. Data collected from Indonesia Statistic Agency, FAO, Worldbank and other necessary document. The result of this test shows that the R square is 0.995. It means that the determinant factors are significantly influence the rice production in Indonesia, especially for rice area and fertilizer used. The agricultural employment is not significantly influence the rice production. Local government need to be more aware and sensitive of their people need, otherwise the people need to be more active through participation community.

1. Introduction

Rice is the basic need most of Indonesian people. Even old folks said that they are not feeling full enough yet before eat rice. Rice is important because it carries great emotional and symbolic weight through its association with the rural family (Kawagoe, 2004). More than 90% of the world`s rice is produced and consumed in Asia which have suitable climate for crop to grow. Indonesia becoming the third largest country for rice production, under China and India. Despite its 'achievement', Indonesia still has to import rice almost every year. It because the farmer not use optimal production techniques to compensate with large per capita rice consumption and the massive population.

Increasing rice production to achieve food self-sufficiency is an important goal for the country. The country has focused on achieving rice production through agricultural sector since New Order era – a 32

years of President Suharto's centralized government – through six of five-year development plans called Repelita which is derived from rencana pembangunan lima tahun. The first Repelita (1969 – 1974) aimed to improve agricultural sector. The second Repelita (1974 – 1979) focused on the availability of building materials and increasing employment opportunities. The third Repelita (1979 – 1984) focused on the "trilogy of development" comprising high economic growth, national stability and equitable wealth distribution. The fourth Repelita (1984 – 1989) focused on self-sufficiency in rice production and industrial machinery. In this period, Indonesia has had successfully achieving rice self-sufficiency and has been officially recognized by FAO. The fifth Repelita (1989 – 1994) focused on agricultural and industrial sectors. Sixth Repelita (1994-1999) still focused on development in the economic sector related to industry and agriculture as well as the development and improvement of human resource

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quality. In this period, there was a monetary crisis that hit Southeast Asian countries including Indonesia. Because of the monetary crisis and domestic political events that disrupted the economy caused the New Order era to collapse in 1998.

After the fallen of New Order era in 1998, there are many demand from regional area that unsatisfied with 32 years centralized system applied in Indonesia to change the government system. They want to change the system from an authoritarian to democratic system. Since then, the system changed through law 22/1999 which then being amandment and become law 32/2004 about local government. Which it become the initate state for system in Indonesia to be changed into decentralized system. With these changes, local governments are expected to become more independent in managing their resources, promoting their own interests, and initiating their own policies (Sujarwoto, 2012). The direct contact with local people can provide advantages to local policymakers in providing suitable services to the low-income earners, while reducing the transaction costs in identifying the poor (Oates 1999). Decentralization will also encourage initiatives of local governments to deregulate economic policies in facilitating development (Rondinelli 1990), leading to creation of jobs and improvement in local income.

By the possibility to direct contact with local people, local government have more opportunity to listen community aspirations directly. They will be will more sensible about the problem occurred in their own territory and will enhance community participation.

Furthermore, This study tried to answer two research question, which are (1) What is the significant determinant factor that influencing rice production in Indonesia. and (2) How is the relationship between decentralization and rice production in Bali Province.

2. Theory

2.1. Decentralization and Rice Production

There are few studies regarding topic about the relationship between decentralization and rice production. One of them is studied by Pantjar Simatupang & C. Peter Timmer (2008) and said that the steady decline in the rice production growth rate appears to have been arrested in the post-crisis period (although the level at which it has settled is well below that achieved during the Old Order and the early years of the New Order). The stabilization of production growth seems somewhat paradoxical: the huge debt-service requirements of the immediate post-crisis bailout of the banking sector meant that few government resources were put into rice production; meanwhile reduced government spending on maintenance and expansion led to the degradation of supporting infrastructure such as irrigation, rural roads and public agricultural institutions (Simatupang, Rusastra and Maulana, 2004).

Furthermore, Cheema and Rondinelli (1983) stated that decentralization is transfer planning, decision making or administrative authority from the central government to intensities field organization, local administrative unit, semi-autonomous and parastatal organizations, local governments, or non-government organization. Smith (1985:185) argue that the developing countries need decentralization because it is necessary for development of economic, social and political. Ideologically, the concept of decentralization is needed, but the burden of development defined by the concept of decentralization is too large to be borne by local governments. Developing countries find that the promise of decentralization performance is often disappointing and not as expected. Decentralization may take many forms for example; delegation, deconcentration, devolution, privatization (Lister & Betley, 1999; UNDP, 2004) and deregulation (Rondinelli, 1981).

In managing common resources, the community rules of access and management are required to maintain it, but problems arise when one individual determines to utilize it without contribute to its maintenance, which over time will damage the system (Buck, N.A.). According to literature, two solutions are often presented; centralized governmental regulation or privatization. However, Ostrom (1990) offers a third alternative; the establishment of a cooperative management system, governed by the consumers. Ostrom (1990) denies the benefit of a centralized regulation as the danger of misinformation and miscommunication between the authority and the locals is likely.

2.2. Determinant Factor of Rice Production

The existence and availability of rice area have a strategic role for Indonesia regarding that most of Indonesian people need rice for their staple food. By applying decentralization system, it expected increase the rice area to support the production of staple food. But, Wasilewski & Krukowski (2004) on his study find that decentralization and the extension of private control over land have led to a loss of rural landscapes in Poland because farmers, county governments, and rural society in general gained from the conversion of agricultural to housing land.

Moreover, fertilizer also had a significant effect on rice production. Additional fertilizer on agricultural land increased the nutrients nitrogen, sulfur and potassium in the soil that were needed by rice. In determining the factors influencing rice production in Igbemo-Ekiti Region of Nigeria, Basorun and Fasakin (2012) found that the status of rice farmers, area of land cultivated, availability of market for the rice products, the number of laborers engaged in production and the use of agro-chemicals are crucial factors in production. While Tanko et., al. (2016) argue that government hold important role to improve farmers' access to fertilizer and credit. In contrast, some scholars argue that using fertilizer have side effect to the environment. As stated by (Roche 1994) that excessive chemical fertilizer use in rice farming has long been identified as a problem. (Sofyan, Nurjaya and Kasno 2004) also support and argue that continuing excessive use of phosphate and potassium fertilizers induces unbalanced soil nutrient

content. Furthermore, Indonesian sawah (paddy field) suffer from over-intensification or soil fatigue syndrome (Adiningsih,1997; Christianto 1997).

Beside the need of fertilizer, labor force also considered as a factor influencing rice production. As stated by De Los Reyes that the labor requirements for agricultural production in the developing world have often been underestimated because only primary operations such as land preparation, seeding and harvesting have been taken into consideration (De Los Reyes et al., in Freedman, 1980). Additional labor allows rice farm activities, for example, soil tillage, weeding, fertilization, pest and disease control, that will increase rice production.

2.3. Overview of Bali Province

Located between Java and Lombok in the Indian Ocean, Bali is one of 17,500 islands that comprise the Republic of Indonesia, and the only island that is predominately Hindu. It has a complex, rural, and recently democratic society that is both decentralized and stratified.

Bali province has eight regencies which are Badung, Tabanan, Buleleng, Jembrana, Karangasem, Bangli, and Klungkung and one municipality which is Denpasar. Based on its location, Bali has a lot of beautiful beaches. White sand beach which lie along the south area of Bali province have attracted many tourist. It made the southern area which are Badung and Denpasar, turned from agricultural based into tourism based.

Bali Province has 5.636,66 km2 wide area or 563.666 ha, with 75.980 ha of agricultural land area or 13.47% from total area of Bali province. Based on statistical data irrigated land in Bali has decreased from 81.040 ha in 2010 to 75.980 ha in 2014. Most of land converted has been used to build for resident and industrial purpose.

Agriculture, and especially rice crop growing, has been the main economic foundation in Bali, but after the tourist boom and urban growth in the recent past, land areas have been reduced as a result (Mitchell, 1994). While Indonesia is mainly a Muslim country, more than 90% of the Balinese population practices Hinduism (EAP, 2011), or more specific; Balinese Hindu. This religious orientation is a merger between Hindu religion and a deep love and respect for nature, and has a fundamental philosophy; Tri Hita Karana. This ancient Balinese philosophy refers to three sources of prosperity: the existence of equality, harmony and balance between human beings in relation to their Gods, to other human beings, and to their nature and environment (Rudana, 2007). These values are connected with many of the core ideas related to sustainable development (Mitchell, 1994:193).

"The Bali Irrigation Project" (1981) was set out to benefit a vast area through a larger number of small-scale irrigation systems, and increase the food production (ADB, 1981). This Green Revolution approach tried to convert subsistence crop to cash crop,

which involved the use of chemical pesticides that went against traditional irrigation methods and a disregard of the water temples (Sepe, 2000). The new farming system of the Green Revolution tried to increase the production by growing rice in a continuous production, and not only twice a year which is the traditional Balinese system of crop growing. But the production results were not that great, and areas planted with high yields varieties (genetically improved yield), declined, resulting in farmers leaving this new system for their own traditional (Bardini, 1994). According to the Bali Rice Ecosystem Simulation Model, ecological consequences, such as disruption of the ecosystem as result of heavy use of pesticide and increase in crop intensity, were the main reason for the decrease of rice yields (Kremer 1989 cited in Bardini, 1994).

3. Research Method

Quantitative analysis used to determine the factor influencing the rice production in Indonesia. It used time series data from 1970 - 2014. This study used the multiple linear regression method. Briefly speaking, the goal of the multiple linear regression is to point out the relation between a dependent variable (rice production) and a great deal of independent variables (rice area, agricultural employment, and fertilizer) as proposed above. It can determine to what extent of the dependent variable is influenced by the variation of the independent variables.

The specific equation proposed in this study was:

$$PROD = \beta 0 + \beta 1\ (RICAR) + \beta 2\ (EMP) + \beta 3\ (FERTZ)$$

Where:

PROD	= Rice production (tonne)
RICAR	= Rice Area (Ha)
EMP	= Agricultural Employment
FERTZ	= Fertilizer (tonne)

In addition, it also used qualitative analysis to explain the relationship between decentralization and the significant determine factors in Bali Province.

Data were collected from Central Statistic Agency publication years 2004 to 2014, Food and Agriculture Organization (FAO) and from world development indicator (World Bank).

4. Results and Discussion

4.1. Factors Affecting Rice Production in Indonesia

The finding show a significant relationship between rice production and its independent variables (rice area, agricultural employment and fertilizer).

It can be seen from the table that rice area and fertilizer have high significant value over the dependent variable. In contrast, the numbers of employment that work in agricultural sector are not significant over rice production. The result cn be seen in following table:

Table 4.1. Summary

Model	R	R Square	Adjusted R Square	Std. Error of The Estimate
1	.995ᵃ	.990	.989	1,366.31854

Source: Analytical result, 2017

Table 4.2. ANOVAᵃ

No	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6282390078.018	3	2094130026.006	1121.759	.000ᵇ
	Residual	65338922.822	35	1866826.366		
	Total	6347729000.840	38			

Source: Analytical result, 2017

Table 4.3. Coefficientsᵃ

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-25315.299	8748.019		-2.894	.007
	rice_area	5.597	.582	.658	9.621	.000
	agricultural_employment	-16.534	80.148	-.001	-.206	.838
	Fertilizer	93.918	15.081	.339	6.228	.000

Source: Analytical result, 2017

4.2. The Relationship Between Decentralization and The Determining Factors in Bali Province

4.2.1. Rice Area

Based on the result, rice area has a significant influence in the rice production in Indonesia. Wider the area, it will give more production on rice. Although the trend of agricultural land in Indonesia is gradually increased, this case is not applied in Bali Province. When the country tends to wider its rice area every year, Bali rice area trend is more likely to decrease. The difference trends can be seen in the chart below:
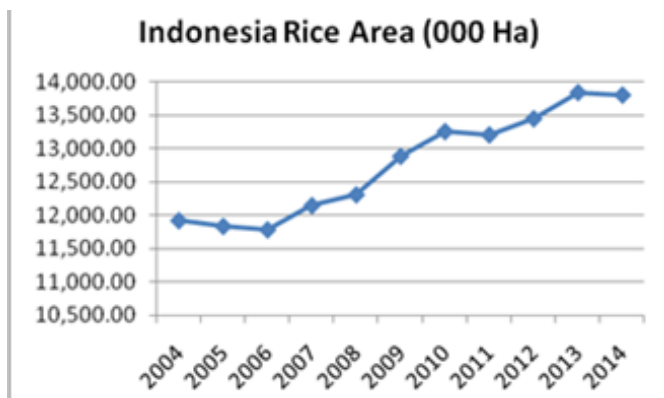

Figure 4.1. Indonesia rice area (000 Ha)
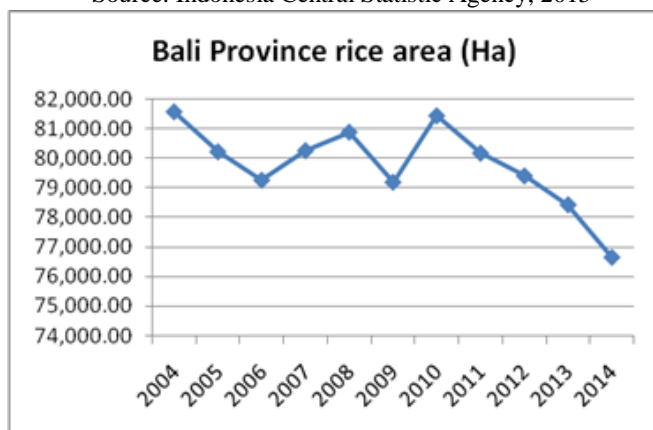Source: Indonesia Central Statistic Agency, 2015

Figure 4.2. Bali Province Rice Area (Ha)
Source: Indonesia Central Statistic Agency, 2015

The phenomenon of the rice area conversion to non-agricultural area is triggered by the rapid development of the tourism sector. There is tendency that the conversion in Bali becoming more massive and accelerative as the rapid development of tourism. Real estate speculation has created a real estate bubble that currently allows families to sell their ancestral farmland for exorbitant profits. Due to this, ethical challenges have risen as people change the way they think that personal gain over community good.

It can be seen from Figure 4.3 that the widest rice area is on Tabanan Regency followed by Gianyar regency and the smallest is on Bangli Regency. It also shows that the trends is decrease except on Jembrana Regency and Karangasem Regency.
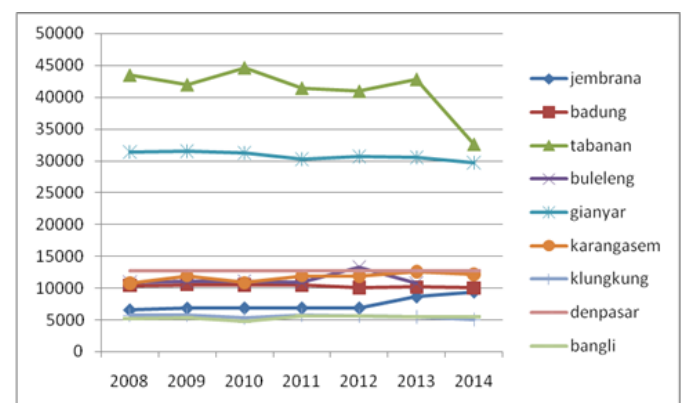

Figure 4.3. Rice area (Ha) in each Regency
Source: Indonesia Central Statistic Agency, 2015

During the decentralization system the local government has issued regulation to limit the agricultural land conversion. One of the regulation is local government of Jembrana regency regulation no. 12/2012 about Spatial Plan of Jembrana Regency within 2012 to 2032. In article 11 letter f said that the local government is intent to strength the existence of desa pakraman, subak other community organizations in establishing local wisdom as the foundation of ecotourism-based tourism development. Also in article 45 section 1 regulated that the total area used for crop plant more less is 9,90% from the total of Regency itself or 8.331,24 Ha distributed among 5 sub-district. In sum,

section 2 stated that 90% from the total area or 7.498,12 Ha established to be the protected area for the agricultural land sustainability - Lahan Pertanian Pangan Berkelanjutan (LP2B). It is prohibited to be converted unless for the public interest or a disaster as stated in article 86.

4.2.2. Agricultural Employment

Based on data from the Central Bureau of Statistics (BPS) Bali, in 2013 recorded 408,233 agricultural households, decreased 17.09% compared to 2003 as 492,394 agricultural households. The problem faced by the Balinese farmer is that the decreasing interest of younger generations to continue as farmers. The youngsters are enticed by the allure of the tourism industry which leads them to pursue careers in tourism and hospitality. Young Balinese have found it difficult to earn a living in the rural north of the island. Arable land continues to be "developed" with more tourist facilities and residences. Working on the family farm is no longer an option for most. So they have left their ancestral land to seek economic opportunities in the urban south. Regarding there is no policy that can impose people to become a farmer. Balinese government has strived to encourage young people to study agriculture and promote sustainable farming practices.

4.2.3. Fertilizer

Balinese farmers pride themselves with their time-tested methods of sustainable farming based on the Tri Hita Karana philosophy and the ingenious irrigation system known as subak. In fact, Balinese farmers are masters of organic farming. Back then, Balinese use few of fertilizer and pestiside. During "Green Revolution", the traditional farming ways of the Balinese were modified to meet increasing demand. Balinese Rice used to take six month to harvest but government at that time urged Balinese farmer to grow an "approved" variety of rice. The new variety only took three months to harvest but required increased use of pesticides and artificial fertilizer. The excessive use of fertilizer can cause soil degradation and reduce soil fertility.

The history of fertilizer that used in Bali is shown in the following table:

Table 4.4. The Time Table of Fertilizer in Bali Province

Years	Description	Type of Fertilizer
In 1950	Farmers grew local traditional rice followed by a rotation crop (palawija), usually soya beans, in the dry season	Used only natural fertilizers—green material and cattle and chicken manure—and pesticides made from ash and plants
In 1968	Farmers resisted the change, hiding the fertilizer or throwing it into their	Government introduced synthetic
	backyards or dry fields where there were only banana trees. But the banana trees thrived as never before so they started using it on their rice and it thrived too, and thus began a new era	nitrogenous fertilizers, ammonium sulphate, and urea
In 1972	They sprayed these every two weeks and the diverse creatures of the rice fields—small eels, fish, frogs, snails, and insects—immediately disappeared and the soil hardened. Despite these side effects, farmers kept using the new system because The harvests were good and work was easier than before. But after a few harvests they found they had to increase the quantities of fertilizer to maintain production levels; this did not matter a great deal because fertilizers were cheap.	Government introduced new seed varieties with names such as IR5 and IR89 and also new pesticides—first Endrin, then Diasinon, Basasinon, and Sevin
In 1978	Were hit by the brown plant hopper (wereng coklat, Nilaparvata lugens). New, more resistant varieties of seeds were introduced— IR26 and IR36, among others—but the diseases kept erupting.	Farmers stopped using the pesticides and the pest problems decreased.
In 1980	Planting three crops per year	Each with 50kg/ha (kilograms per hectare) of urea
In 1985	Reverted to two crops per year	Urea usage had increased to 100kg/ha
In 2002	Two crops per year, constant level of production	Gradual increase of urea usage to 300kg/ha.
In 2009	The Department of Agriculture has begun researching and conducting field trials of organic methods	Oganic

Source: MacRae, 2011

Government subsidies for seed, fertilizer, and pesticides were progressively reduced from the late 1980s and had all but ended by the end of the 1990s. By this time, the authoritarian New Order regime had also ended, leaving the country in economic and political turmoil, but also creating room for new freedoms of choice and action, including for farmers. But, as mentioned above, most farmers were at least fifty years old by that point and had spent their entire working lives under a regime of top-down commands and had little experience of making their own decisions. At the same time, the local knowledge that their fathers once had

was now largely lost. It was in this mixed climate of lost knowledge and new opportunity that a few experiments began. Following that In Ubud, several shops and restaurant served organic food and a number of experiments with organic production have begun.

Provincial government has developed integrated agricultural system community (Simantri) since 2009, and until 2105 Simantri community has successfully formed 549 groups distributed among all regency. From Simantri community can produce more than 20.000 tonne solid organic fertilizer and 20 million litre liquid fertilizer (bio urine). The organic fertilizer derived from animal waste, especially cattle and goats.

4.3. Rice Production in Bali

The rice production trends in each Regency/ municipality of Bali Province can be seen in figure 4.4.
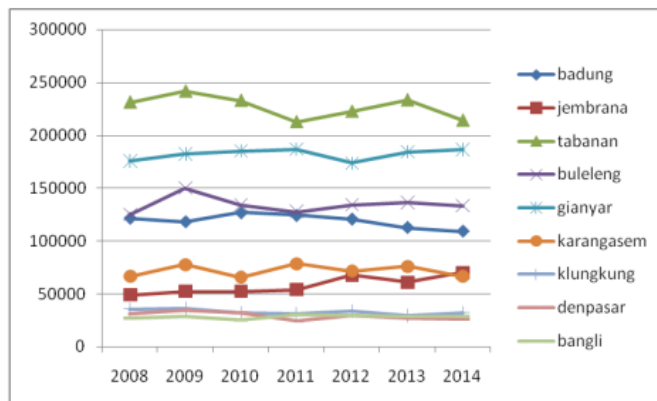

Figure 4.4. Rice Production in Bali
Source: Indonesia Central Statistic Agency, 2015

The figure shows that rice production in each Regency/ municipally have different trends. Badung Regency and Tabanan Regency Badung regency and Tabanan regency experience decrease in rice production from 2008 to 2014. Otherwise, Gianyar Regency and Jembrana Regency increased slightly in rice production. While the others experience fluctuations.

It means that, sometime the implementation of the local government policy is not effective. This is supported by some weakness in the regulation system and negative responses from the community to the local government policy implementation.

5. Conclusion

This study conclude that rice production has determinant factor influencing its productivity. There are rice area, fertilizer and agricultural employment. From the test we know that the most significant factor that influencing rice production are rice area and fertilizer. And the least influencing factor is agricultural employment. Rice area in Bali province tend to decrease every year. This is because the phenomenon of the rice area conversion to non-agricultural area that triggered by the rapid development of the tourism sector. To prevent massively conversion, local government has issued policy to stop the conversion, at least to slow down it. Another factor to improve rice production is the use of fertilizer. From the test show that greater number

of fertilizer can increase more production of rice. Nonetheless, the excessive use of non-organic fertilizer can harm the environment. Therefore, government try to change over into organic fertilizer. In this case, community participation and awareness need to be improve. The other factor is agricultural employment. Although it is not prominent factor, it still have role to increase the rice production.

Decentralization make possible to government to stay close with their people. They need to be aware of their community need. Also they need to listen to the aspirations of their people. As Oates (2014) argue that the direct contact with local people can provide advantages to local policymakers in providing suitable services to the low-income earners, while reducing the transaction costs in identifying the poor. As long as the government is sensitive to what people need, decentralization system will be going well to support the people need including sustainability of rice production.

But sometime the implementation of the local government policy is not effective. This is supported by some weakness in the regulation system and negative responses from the community to the local government policy implementation. This explains that the amount of rice production in each regency is different. This depends on the ability of local governments to manage their area.

References

ADB. (1981). *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Republic of Indonesia for the Bali Irrigation Project, 25 August, 1981.* Available at https://www.adb.org/sites/default/files/project-document/72980/14014-ino-rrp.pdf [Accessed on 20 August 2017].

Adiningsih, S. (1997). The Use Fertilization and Its Effect on Pests and Deseasses of Rice in Indonesia. *Proceeding Dahlia Grendinger International Symposium Fertilizer and Environment,* Heifa Israel.

Basorun JG., & Fasakin JO. (2012). Factors influencing rice production in Igbemo-Ekiti Region of Nigeria. *Journal of Agriculture, Food and Environmental Science*, 5(1), pp.1-9.

Cheema, G. S., & D. A. Rondinelli. (1983). *Eds. Decentralization and Development.* Beverly Hills: Sage.

Christianto, L. (1997). Potensi dan Kendala Sumberdaya Tanah Menunjang Produksi Pertanian di Indonesia. *Proseding Symposium Nasional dan Kongres VI Peragi, hal 65-85. Perhimpunan Agronomi Indonesia.*

Freedman, Stephen M. (1980). Modifications of Traditional Rice Production Practices in The Developing World: An Energy Efficiency Analysis. *Agro-Ecosystems*, Vol. 6(2), pp.129-146.

Kawagoe, T. (2004). *The Political Economy of Rural Development in Indonesia. In Rural Development and Agricultural Growth in Indonesia, the*

Philippines and Thailand, edited by T. Akiyama and D.F. Larson, pp.162-213. Canberra: Asia Pacific Press.

Lister, Stephen., & Betley, M. (1999). Approaches to Decentralisation in Developing Countries. *Background paper to MEFM/ DFID workshop on Good Practice in Public Expenditure Management*, Capetown, June 1999.

MacRae, Graeme. (2011). Rice Farming in Bali. *Critical Asian Studies,* Vol.43(1), pp.69 — 92.

Mitchell, Bruce. (1994). Sustainable Development at the Village Level in Bali, Indonesia. *Human Ecology*, Vol. 22, No. 2, pp.189-211.

Oates, W. (1999). An Essay on Fiscal Federalism. *Journal of Economic Literature,* Vol. 37(3), pp.1120–1149.

Ostrom, Elinor. (1990). *Governing The Commons: The Evolution of Institutions for Collective Action (Political Economy of Institutions and Decisions), 1st Edition.* Cambridge University Press, UK.

Rudana, Nyoman. (2007). *Tri Hits Karana; The Philosophy Behind Nature Preservation in Ubud, Bali.* Prepared for the UN Climate Change Conference in Nusa Dua, Bali, 3-14 December 2007.

Roche, F.C. (1994). The Technical and Price Efficiency of Fertilizer Use in Irrigated Rice Production. *Bull. Indo. Econ. Stud,* Vol. 30 (1), pp.59–83.

Rondinelli, D. A. (1981). Government Decentralization in Comparative Perspective: Theory and Practice in Developing Countries. *International Review of Administrative Sciences,* Vol. 47(2), pp. 133-145.

Rondinelli, D.A. (1990). *Decentralizing Urban Development Programs: a framework for analyzing policy.* Washington, DC: US Agency for International Development.

Sepe, Jonathan. (2000). *The Impact of the Green Revolution and Capitalized Farming on the Balinese Water Temple System.* Available at http://eclectic.ss.uci.edu/~drwhite/Anthro129/balinesewatertemplesJonathanSepe.htm [Accessed on 20 August 2017].

Simatupang, Pantjar., & C. Peter Timmer. (2008). Indonesian Rice Production: Policies and Realities. *Bulletin of Indonesian Economic Studies,* Vol. 44(1), pp.65-80.

Smith, B.C. (1985). *Decentralization: The Territorial Dimension of the State.* George Allen and Unwin Publishers Ltd, UK.

Sofyan, A., Nurjaya., & Kasno, A. (2004). *Status Hara Tanah Sawah Untuk Rekomendasi Pemupukan.* Pusat Penelitian dan Pengembangan Tanah dan Agroklimatologi, Bogor.

Sujarwoto. (2012). Political Decentralization and Local Public Services Performance in Indonesia. *Journal of Public Administration and Governance,* Vol. 2, No 3, pp.55-84.

Tanko, Mohammed., Iddrisu, Abukari., & Alidu, Abdul Fatahi. (2016). Determinants of Rice Yield in Northern Region of Ghana, the Role of Policy. *Asian Journal of Agricultural Extension, Economics & Sociology,* Vol. 9(2), pp.1-11.

Thierry, Bardini. (1994). A Translation Analysis of the Green Revolution in Bali. *Science, Technology & Human Values*, Vol. 19(2), pp.152-168.

UNDP. (2004). *Decentralised Governance for Development: A Combined Practice Note on Decentralisation, Local Governance and Urban/ Rural Development.* Available at http://www.undp.org/content/dam/aplaws/publication/en/publications/democratic-governance/dg-publications-for-website/decentralised-governance-for-development-a-combined-practice-note-on-decentralisation-local-governance-and-urban-rural-development/DLGUD_PN_English.pdf [Accessed on 20 August 2017].

Wasilewski, A., & Krukowski, K. (2004). Land Conversion for Suburban Housing: A Study of Urbanization Around Warsaw and Olsztyn, Poland. *Environmental Management,* 34(2), pp.291-303.