

# Evaluation of Indonesia's Rice Program: Comparative Analysis of Budget Efficiency using Provincial Data

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## Contents

- |   |  |
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| <ol style="list-style-type: none"> <li>1. Introduction</li> <li>2. Performance-based budgeting of Rice program</li> <li>3. Method</li> <li>4. Results and Discussion</li> </ol> | <ol style="list-style-type: none"> <li>4.1 The shift in the budgeting system</li> <li>4.2 Analysis of efficiency</li> <li>4.3 Prioritization</li> <li>4.4 Recommended province</li> <li>5. Conclusion</li> </ol> |
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## 1. Introduction

Indonesia is an agrarian country, with rice as its main product. The wetland area comprises as much as 8.1 million hectares (Ministry of Agriculture, 2013) and is scattered among 32 provinces. About 55–62% of the rice produced in Jawa Island indicates that the national rice production is highly dependent on the rice production in Jawa (Irawan et al., 2013). Over the long term, rice production in Jawa has decreased. For the period 1985–1995, the rate of rice production in Jawa was 1.6% per year, while for 1995–2005, it had decreased to 0.59% per year (Irawan et al., 2013). This is mainly the result of problems that have occurred since the 1990s, including irrigation network damage and land conversion which are serious problems today (Panuju et.al., 2013, Irawan et.al., 2013). To solve these problems, the government implemented the rice program in 2005, and it has been running ever since. In this study, we focus on three activities of rice program, namely wetland expansion, irrigation network rehabilitation, and the system of rice intensification (SRI).



Figure 1. The spread of wetland in Indonesia  
*Source: Ministry of Agriculture (2013)*

The Directorate General (DG) of Agricultural Infrastructure and Facilities, which falls under the Ministry of Agriculture, is the agency responsible for implementing these three activities at the provincial work unit level. It began using

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performance-based budgeting fully from fiscal year 2011. Along with reorganization, once the transition period from the traditional budgeting system was complete. Therefore, this system is relatively new for this organization and the work units that it contains.

Performance-based budgeting has a positive on the efficiency of a public budget (Curristine et.al, 2007). The nature of this output-oriented budgeting system is that the provincial work units have to use the budget as efficiently as possible to produce maximum output. Since rice program is closely linked to resources available in each province, the allocation needs to be adjusted based on each province’s characteristics. Prioritization makes it possible to allocate limited resources to where they will do the most good (Robinson and Last, 2009), and is a useful reference when allocating money from the beginning of a planning process, or if budget cuts occur during the fiscal year. Therefore, this research aims to 1) study the efficiency of the rice program at the provincial level, and 2) set priorities for the provinces involved in the rice program.

**2. Performance-based budgeting of Rice program**

Budgeting is essential to the planning, control, and evaluation processes of governments (Veiga et al., 2015). The guidance of Performance-based Budgeting (Department of Finance and National Development Planning Agency, 2009) states that determining the budget for a program begins with the vision and mission of President RI. His goal to achieve rice self-sufficiency is explained in the medium-term National Development Plan, which is applied by the Ministry of Agriculture as the rice program. This program was then documented in the Strategic Plan of the Ministry, explaining the target to be achieved over the next five years. Next, the DG of Agricultural Infrastructure and Facilities translated the Ministry’s vision and mission into a number of activities, three of which are wetland expansion, irrigation network rehabilitation, and the system of rice intensification. These activities were subsequently performed by work units at the provincial level. The success of the program is only measureable if performance indicators are available and supported by sufficient funds.

There are two viewpoints of performance-based budgeting in the planning and budgeting process (Department of Finance and National Development Planning Agency, 2009), top-down and bottom-up characteristics. Since these three activities became a priority, the government determined how much and where to allocate the budget using participatory planning. The budgeting process for the rice program is illustrated in figure 2.

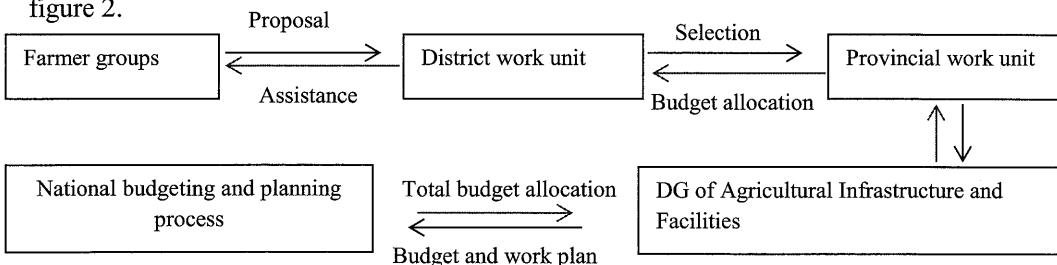


Figure 2. Planning process for the rice program

Source: DG of Agricultural Infrastructure and Facilities (2013a, 2013c), PMK No. 93/PMK.02/2011

The central government has used social aid patterns to distribute the money since 2007. A social aid pattern enables money to be transferred directly to society to fund a program (DG of Agricultural Infrastructure and Facilities, 2013d). This type of spending allows the DG of Agricultural Infrastructure and Facilities to avoid burdensome bureaucratic procedures to implement activities and to be able to reach farmers quickly (Armas et al, 2012). By using a social aid scheme to deliver the subsidy, the government embraces society as part of the development process.

The budgeting process ranges for a remarkably longer period, as shown in the following figure.

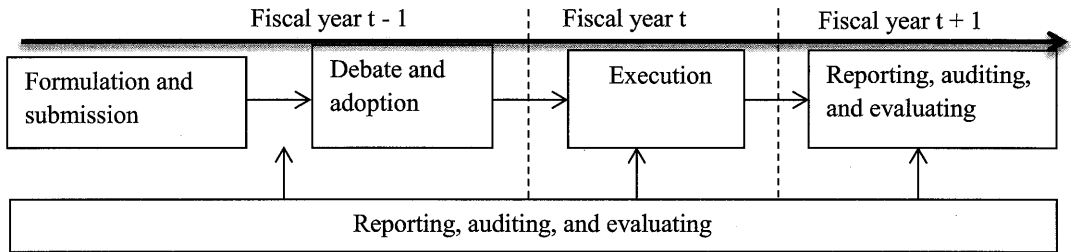


Figure 3. The budget cycle

Source: Veiga, et al. (2015)

Evaluation provides feedback to an organization to improve its performance. This indicator consists of the input, output, and outcome over the short term (USAID, 2009). This study, however, focuses on the efficiency of input usage to produce output in each province.

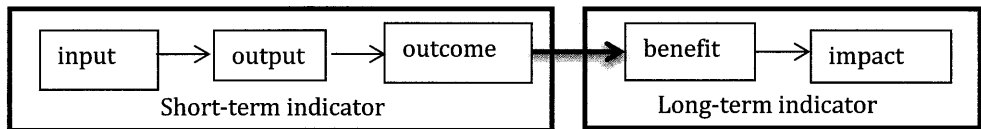


Figure 4. Indicator of performance

Source: USAID (2009)

### 3. Method

This study observes provinces conducting rice program activities a minimum of three times in 2011–2014. This gave a sample of 26 provinces for wetland expansion, 31 provinces for irrigation network rehabilitation, and 27 provinces for the SRI. Data of budget as the input and program's materialization as the output for each activity were collected from Ministry of Agriculture, and data of physical characteristics was collected from Statistics Centre of Bureau. It is also completed with the interview with key persons in Directorate General of Agricultural Infrastructure and Facilities.

To measure the relative efficiency of each province in Rice Program implementation, we use DEA. Data Envelopment Analysis (DEA) is the non-parametric mathematical programming approach to frontier estimation for the purpose of calculating efficiencies in production (Coelli, 1996). The output-orientated data envelopment analysis is used when the relative performance of different units needs to

be compared and evaluated (Cooper et al., 2000). This study measured it by using the equation:

$$0 \leq \frac{\text{output per input for a province}}{\text{output per input for most efficient province}} \leq 1$$

In addition to performance evaluation, the priority is also set for provinces to develop a rice program. Data used are the efficiency results and provincial characteristics of the program. We used scoring technique including classification. Classification is conducted by using the natural break method with ArcGIS software and followed with the process of overlay to see the result of priority in the form of a map.

## 4. Results and Discussion

### 4.1 The shift in the budgeting system

The DG of Agricultural Infrastructure and Facilities started to apply performance-based budgeting since fiscal year 2011, after it was reorganized. Previously, it applied traditional line-item budgeting. The difference of rice program's performance can be seen between the in-transition period (2006–2010) and the post-performance-based budgeting applied in 2011–2014:

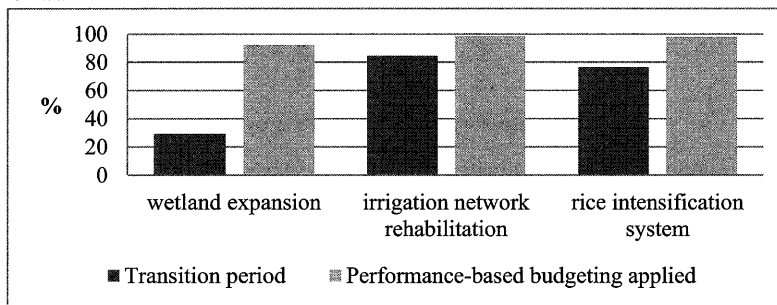


Figure 5. Percentage of the rice program performance

Source: Review of Strategic Plan of DG 2011–2014 and annual report of DG of Agricultural Infrastructure and facilities

The increase in government performance looks significant after performance-based budgeting was applied, particularly for the wetland expansion activity, which increased from 29.24% to 92.29%. In addition to wetland expansion, irrigation network rehabilitation and the SRI expanded by 13.8% and 35.85%, respectively, for the period 2011–2014. This previous period can be considered a trial period, so technical and administrative matters became a constraint. With the new budgeting system, which prioritizes output and information disclosure, the accountability of an organization becomes important. Since wetland expansion is the prioritized program of the National government and funded with a huge budget, control and supervision of its implementation are strict. Work units at the local level must report progress of physical work of the rice program once every three months to the central government. Reorganization and the appointment of the new Director General of Agricultural Infrastructure and Facilities at the end of 2010 also improved the performance.

## 4.2 Analysis of efficiency

### 1) Wetland Expansion

The budget allocated to provinces funds activity components, such as land clearing and land leveling, pruning trees and shrubs, the lifting of stumps and roots, clearing and leveling of land, creating bunds, farm roads, irrigation networks, and embankments (DG of Agricultural Infrastructure and Facilities, 2013f). This program was mostly implemented in Sumatera Island (consisting of Provinces of Aceh, Sumatera Utara, Sumatera Barat, Riau, Jambi, Sumatera Selatan, Bengkulu, Lampung, and Kep. Bangka Belitung) and less implemented in Jawa Island, particularly Jawa Barat province (see figure 6).

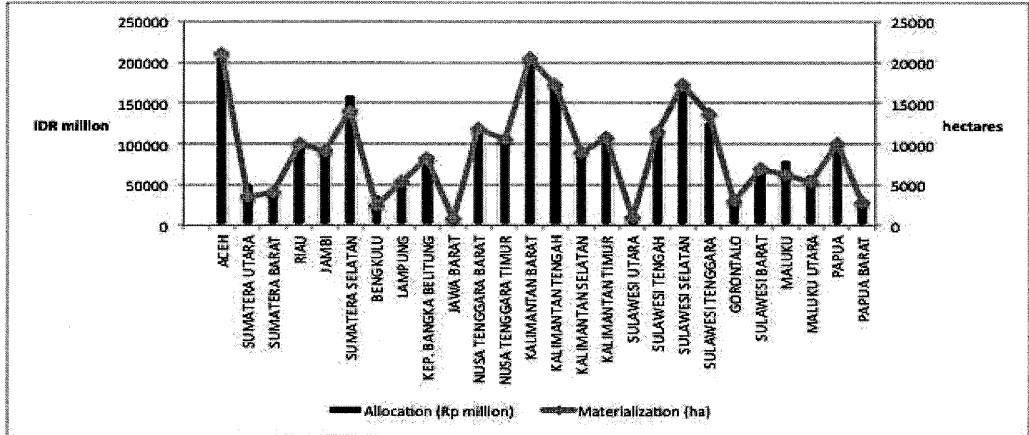


Figure 6. The allocation and materialization of wetland expansion program in 2011-2014

Source: DG of Agricultural Infrastructure and Facilities

By using DEA with Stata software, we got the result of efficiency score of each province for wetland expansion as figure follows:

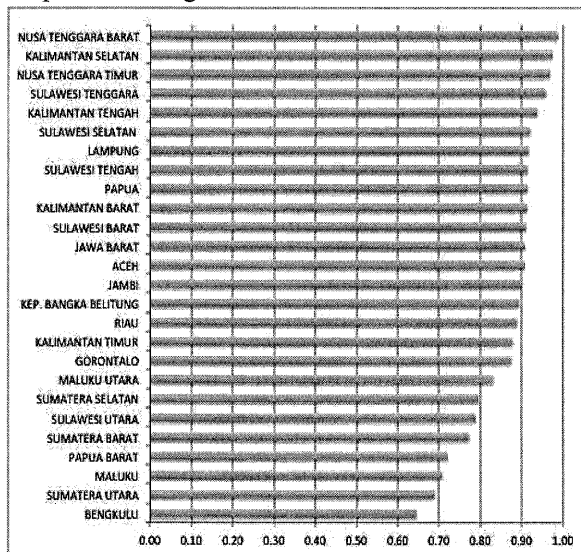


Figure 7. The average relative efficiency in wetland expansion 2011-2014

With regard to average efficiency, Nusa Tenggara Barat is the most efficient province (score=0.99), while Bengkulu received the lowest scores. In addition to the good climate and fertile land for wetland development, the farmers in Nusa Tenggara Barat are cooperative and the officers are highly committed to making the program a success. However, in future, it will be difficult for the Nusa Tenggara Barat government to develop new wetland because, according to wetland suitability data, the potential area is becoming smaller. To develop new wetland, detailed assessments are needed to identify possible locations that satisfy the necessary criteria, particularly in terms of climate and water availability.

2) Irrigation network rehabilitation

For the activity of irrigation network rehabilitation, the allocated budget is intended to finance physical building materials and to pay workers for repairing irrigation networks. Provinces in Jawa were dominantly allocated the activity while Provinces in Papua is the least provinces which received it. The budget allocation and its materialization as well as the efficiency level of each province can be seen in figure 8 and figure 9:

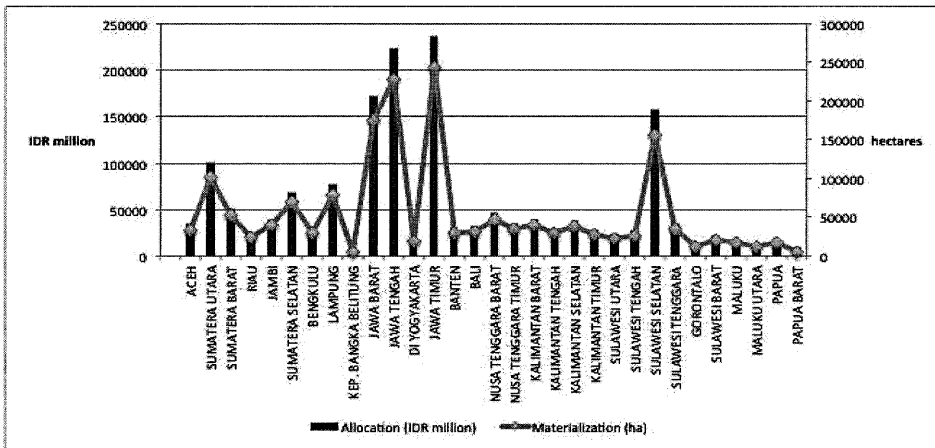


Figure 8. The allocation and materialization of irrigation network rehabilitation program in 2011-2014  
 Source: DG of Agricultural Infrastructure and Facilities

Based on the chart of figure 9, we found that the most efficient province, on average, was Jawa Barat (score=0.99). The most inefficient province was Papua Barat. It indicates that this province proposed the budget too much more than its capacity so that its work unit could not realize the target completely. The main caused of inefficiency was the unpreparedness of beneficiary farmer groups and their location. It shows the lack of coordination between the officers and water user farmer groups.

## Evaluation of Indonesia's Rice Program

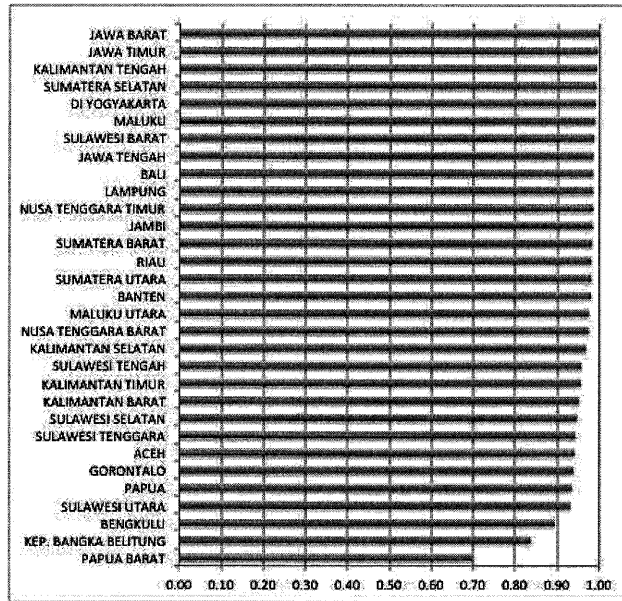


Figure 9. The average relative efficiency in irrigation network rehabilitation in 2011-2014

### 3) The system of rice intensification

The budget provided by the government fund activities such as meetings, training, purchasing production inputs, agricultural tools, non-operational items for SRI activities, and practices in the field. During the four years, the allocation of the SRI tended to increase. However, Maluku Utara, Papua and Papua Barat are the region that received the least allocation for this activity while the provinces in Jawa stood as the opposite (figure 10).

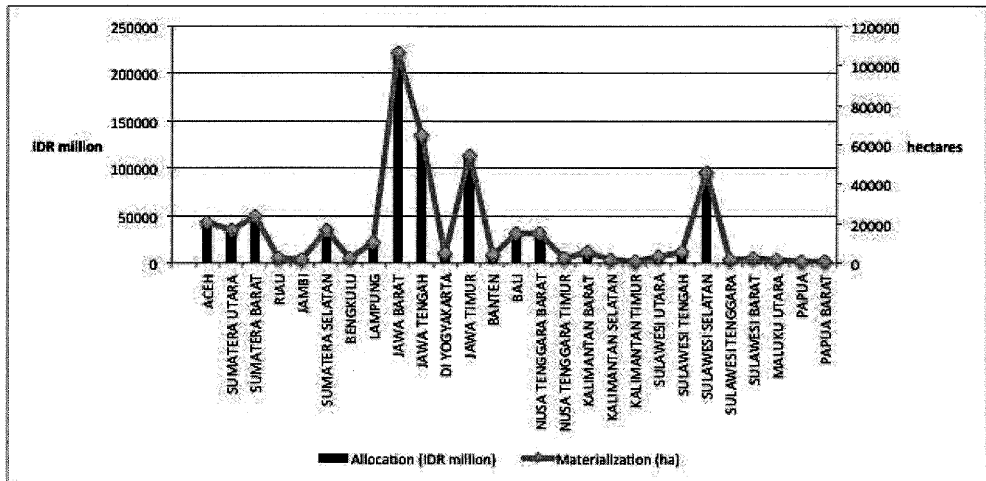


Figure 10. The allocation and materialization of the SRI program in 2011-2014  
Source: DG of Agricultural Infrastructure and Facilities

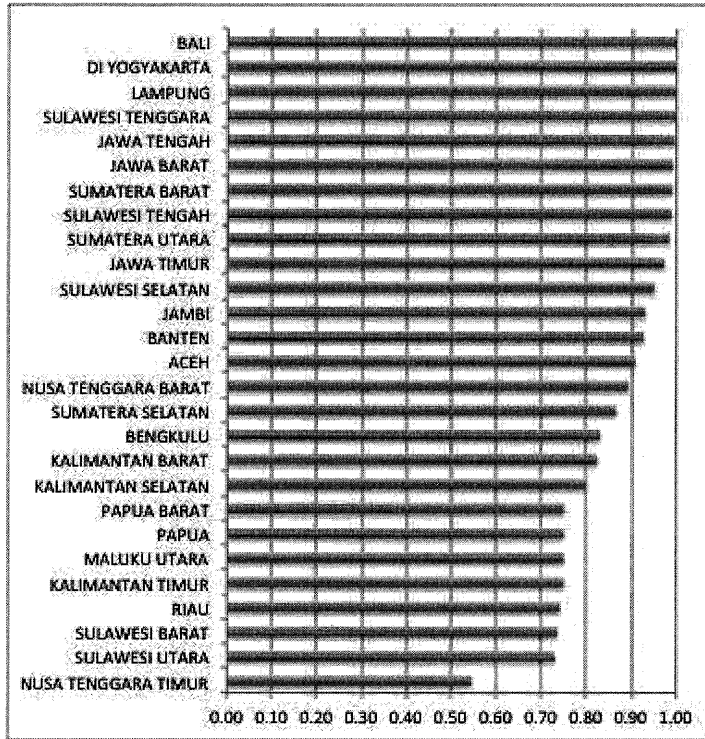


Figure 11. The average relative efficiency in the system of rice intensification 2011-2014

Based on the average scores, Bali, DI Yogyakarta, Lampung, and Sulawesi Tenggara have the maximum score of efficiency (100%), while Nusa Tenggara Timur (NTT) is the least efficient province (figure 11). NTT had difficulty in finding a proper location for the SRI because the climate tends to be dry and there is less water available, making the SRI activities ineffective and inefficient. Although targets are specified in hectares, the SRI aims to increase the skills of the rice farmers. This has not always succeeded. However, the DG of Agricultural Infrastructure and Facilities allows farmers to apply twice if they need continued support. Constraints faced by implementers include proposed locations overlapping with other similar programs, such as field schools. Moreover, it is not easy to change cultivation methods or farmers' mindsets from conventional cultivation to the SRI.

### 4.3 Prioritization

#### 1) Wetland expansion

To make a priority in allocating budget for Rice Program, we use factor of efficiency level, the available area that is suitable to wetland development in each province, and ratio of labor per 10 ha (table 4). In addition to performance in terms of efficiency, expanding new wetlands requires suitable land that meets biophysical terms such as topography, climate, soil characteristics, drainage, land use, etc (Balai Besar Sumber Daya Lahan Pertanian 2007; Muslim, 2014). The area of suitable land measured by Balai Besar Sumber Daya Lahan Pertanian, adjusted with the increase of wetlands due



to Rice program, shows that the largest suitable land is located in Papua Island of 5,169,920 ha, and the smallest suitable land is located in Nusa Tenggara Barat as much as 2,233 ha. Since the government requires minimum land area to be developed not less than 10 ha per overlay, supported by the availability of food crops farmers, the need of them to maintain the sustainability of the wetland is also important.

Table 4. Determinants of wetland expansion program per province

PROVINCE	EFFICIENCY LEVEL	AVAILABILITY OF SUITABLE LAND (HA)	LABOUR RATIO / 10 HA
BENGKULU	0.645	19,488.50	38
SULAWESI UTARA	0.788	24,026.00	45
SUMATERA UTARA	0.689	71,069.50	98
SUMATERA BARAT	0.773	104,387.00	30
MALUKU	0.708	113,353.00	14
KEP. BANGKA BELITUNG	0.894	16,566.00	2
GORONTALO	0.875	16,772.25	67
SULAWESI SELATAN & SULAWESI BARAT	0.903	31,426.56	302
LAMPUNG	0.917	33,951.11	165
ACEH	0.908	45,584.00	81
RIAU	0.889	73,608.00	11
MALUKU UTARA	0.831	116,698.25	3
SUMATERA SELATAN	0.795	218,205.00	21
NUSA TENGGARA TIMUR	0.968	17,218.00	429
SULAWESI TENGGARA	0.957	103,019.80	13
KALIMANTAN BARAT	0.913	159,167.48	19
SULAWESI TENGAH	0.914	176,540.73	10
JAMBI	0.900	187,055.59	4
KALIMANTAN TIMUR	0.877	217,905.02	6
NUSA TENGGARA BARAT	0.987	2,233.00	1,642
JAWA BARAT	0.908	6,617.00	3,567
KALIMANTAN SELATAN	0.974	321,413.00	9
PAPUA & PAPUA BARAT	0.831	5,169,920.00	2
KALIMANTAN TENGAH	0.937	627,356.42	2

Source: Balai Besar Sumber Daya Lahan, 2007; DG of Agricultural Infrastructure and Facilities (2013b); Ministry of Agriculture (2013), and Muslim (2014)

Each factor is classified into three classes by using natural break classification method<sup>1</sup> and given score (table 5). The more efficient, the higher score. The more suitable area to wetland, the higher potential to be developed as new wetlands. In addition, more farmers who work in food crops sector (instead of horticulture or plantation) will have good effect to the implementation of this program.

Table 5. Criteria of wetland expansion determinants

Determinant	Criteria	Score	No. of province
Efficiency Level	0.64 - 0.79	1	6
	0.80 - 0.92	2	15
	0.93 - 0.98	3	5
The area of suitable land	2,233 – 218,205 ha	1	22
	218,205.1 – 627,356.4 ha	2	2
	627,356.5 – 5,169,920 ha	3	2
Labor ratio per 10 ha	2 – 429 labor/10 ha	1	24
	430 – 1,642 labor/10 ha	2	1
	1,643 – 3,567 labor/10 ha	3	1

## 2) Irrigation network rehabilitation

In determining irrigation network rehabilitation location, we use factors of efficiency level, cropping index, and area of irrigation network, specifically the damaged ones (*DG of Agricultural Infrastructure and Facilities (2013e)*; *Mardianto et al (2009)*; *Peraturan Menteri Pekerjaan Umum No. 14/2015*). Data per province is shown in table 6. According to audit data of the Ministry of Public Works (2014), the damaged irrigation network in Indonesia has remained 3.5 million hectares, where 950,000 ha are under the authority of the central government, and 2.55 million hectares are under local government authority (table 6). Therefore, there are still large areas that cannot increase their cropping index because of damaged irrigation networks. By using natural break method, criteria of the determinants can be seen in table 7.

Table 6. Determinants of irrigation network rehabilitation program per province

PROVINSI	EFFICIENCY LEVEL	IRRIGATED LAND UNDER LOCAL AUTHORITY (HA)	CROPPING INDEX
PAPUA BARAT	0.699	5,371	0.718
KEP. BANGKA BELITUNG	0.837	3,301	1.328
BENGKULU	0.895	60,669	1.663
SULAWESI UTARA	0.931	42,557	2.079
PAPUA	0.935	7,034	1.062
GORONTALO	0.939	17,891	1.952
ACEH	0.942	196,261	1.279
SULAWESI TENGGARA	0.944	89,860	1.450
SULAWESI SELATAN	0.947	279,519	1.670
KALIMANTAN BARAT	0.952	85,867	1.396
KALIMANTAN TIMUR	0.956	85,423	1.298
SULAWESI TENGAH	0.957	80,134	1.553
KALIMANTAN SELATAN	0.968	71,047	1.155
NUSA TENGGARA BARAT	0.975	101,780	1.706
MALUKU UTARA	0.976	9,487	2.015
BANTEN	0.981	106,938	1.927
SUMATERA UTARA	0.981	269,195	1.656
RIAU	0.981	8,180	1.211
SUMATERA BARAT	0.983	222,828	2.228
JAMBI	0.985	33,109	1.443
NUSA TENGGARA TIMUR	0.985	181,540	1.427
LAMPUNG	0.985	126,823	1.787
BALI	0.985	55,757	1.862
JAWA TENGAH	0.985	519,265	1.863
SULAWESI BARAT	0.987	38,440	1.514
MALUKU	0.989	18,670	1.599
DI YOGYAKARTA	0.990	37,986	2.920
SUMATERA SELATAN	0.992	66,699	1.315
KALIMANTAN TENGAH	0.994	8,666	1.125
JAWA TIMUR	0.996	480,352	1.881
JAWA BARAT	0.999	350,798	2.146

Source: *DG of Agricultural Infrastructure and Facilities (2013e)*; *Mardianto et al (2009)*; *Peraturan Menteri Pekerjaan Umum No. 14/2015*

Table 7. Criteria of determinants of irrigation network rehabilitation

Determinant	Criteria	Score	No. of province
Efficiency Level	0.699 – 0.837	1	2
	0.838 – 0.957	2	10
	0.958 – 0.999	3	19
Cropping index	1.79 – 2.92	1	10
	1.33 – 1.78	2	12
	0.71 – 1.32	3	9
The irrigated land under local authority	3,301 – 80,134 ha	1	17
	80,135 – 222,828 ha	2	9
	222,828 – 519,265 ha	3	5

### 3) The System of Rice Intensification

As a way to increase rice productivity, the SRI is highly recommended for land with low productivity (Makarim, 2014). In addition, according to the technical guidance (DG of Agricultural Infrastructure and Facilities, 2013c), the SRI is suggested for land with adequate water availability. Therefore, the SRI is prioritized on extensive irrigated land. Determinants of the SRI per province can be seen in table 8 and the result of criteria with natural break method can be seen in table 9.

Table 8. Determinants of the SRI program per province

PROVINSI	EFFICIENCY	PRODUCTIVITY (QU/HA)	IRRIGATED LAND (HA)
NUSA TENGGARA TIMUR	0.546	47.65	32,693
SULAWESI UTARA	0.731	48.91	48,875
SULAWESI BARAT	0.736	42.55	19,339
RIAU	0.742	43.09	2,348
KALIMANTAN TIMUR	0.750	52.95	103,282
MALUKU UTARA	0.750	36.35	12,152
PAPUA	0.750	33.46	87,055
PAPUA BARAT	0.750	34.01	7,752
KALIMANTAN SELATAN	0.798	40.21	5,479
KALIMANTAN BARAT	0.824	42.05	36,200
BENGKULU	0.830	45.26	86,381
SUMATERA SELATAN	0.866	45.53	33,150
NUSA TENGGARA BARAT	0.893	60.12	60,980
ACEH	0.908	57.87	40,127
BANTEN	0.926	30.35	75,401
JAMBI	0.930	40.2	61,860
SULAWESI SELATAN	0.951	48.8	202,348
JAWA TIMUR	0.973	48.39	170,644
SUMATERA UTARA	0.984	52.17	369,537
SULAWESI TENGAH	0.988	46.54	80,643
SUMATERA BARAT	0.990	46.84	73,747
JAWA BARAT	0.991	59.81	805,199
JAWA TENGAH	0.994	50.62	255,046
BALI	1.000	50.06	176,302
DI YOGYAKARTA	1.000	58.82	634,807
LAMPUNG	1.000	51.18	190,886
SULAWESI TENGGARA	1.000	53.57	620,780

Source: DG of Agricultural Infrastructure and Facilities (2013c); Makarim (2014)

Table 9. Criteria of determinants of the SRI

Determinant	Criteria	Score	No. of province
Efficiency Level	0.546 – 0.750	1	8
	0.751 – 0.930	2	8
	0.931 – 1.000	3	11
Rate of productivity	5.12 – 6.01 ton/ha	1	7
	4.02 – 5.12 ton/ha	2	15
	3.03 – 4.02 ton/ha	3	5
The area of irrigated land	2,348 – 103,282 ha	1	18
	103,283 – 369,537 ha	2	6
	369,538 – 805,199 ha	3	3

#### 4.4. Recommended Provinces

After all these criteria are calculated, we got the final result as shown in table 10-12. According to the result, not all of the most efficient provinces become the priority. Only provinces obtained the highest score are recommended to receive the related program. Provinces categorized as second priority are provinces that have potential to develop rice program, but on the other hand they need to increase their performance to become more efficient. Provinces categorized as third priority are less prioritized to receive rice program possibly because the performance of work units was not good enough than others, or the province does not necessarily need the program.

Table 10. Prioritization for wetland expansion

Priority	Score for wetland expansion	No. of provinces
I	4.000001 - 6.000000	8
II	3.000001 - 4.000000	12
III	3.000000	6

Table 11. Prioritization for irrigation network rehabilitation

Priority	Score for Irrigation network rehabilitation	No. of provinces
I	6.000001 - 9.000000	12
II	4.000001 - 6.000000	10
III	3.000000 - 4.000000	9

Table 12. Prioritization for the system of rice intensification

Priority	Score for the system of rice intensification	No. of provinces
I	6.000001 - 7.000000	6
II	5.000001 - 6.000000	7
III	4.000000 - 5.000000	14

Since Provinces of Jawa Barat, Kalimantan Tengah, Kalimantan Selatan, Sulawesi Tenggara, Nusa Tenggara Barat, Nusa Tenggara Timur, Papua, and Papua Barat gain the highest score to receive the allocation of wetland expansion, they should be the first priority to receive it (figure 12). While provinces in Sumatera Island, some provinces in Kalimantan and Sulawesi Island are commended to receive the program after the first priority. Considering that the largest suitable land is located outside Sumatera Island, the government needs to evaluate the allocation of this program particularly to provinces Sumatera Utara and Sumatera Selatan.

## Evaluation of Indonesia's Rice Program



Figure 12. Priority for wetland expansion

For irrigation network rehabilitation program, there are 12 provinces that got the highest score, among others Jawa Timur, Jawa Barat, Sulawesi Tenggara, Nusa Tenggara Barat, Lampung, Sumatera Utara, Sulawesi Selatan, Kalimantan Tengah, Kalimantan Selatan, Kalimantan Timur, Riau and Aceh (figure 13). These provinces are categorized as location that needs rehabilitation and cropping index increase. Since irrigated lands have been developed in most provinces of Sumatera, Kalimantan, Jawa, and Sulawesi Islands, we recommend that irrigation network rehabilitation program is more suitable there instead of wetland expansion program. While provinces of Kalimantan Barat, Papua, and Papua Barat are more recommended to receive wetland expansion program instead of irrigation network rehabilitation.



Figure 13. Priority for irrigation network rehabilitation

For the system of rice intensification, based on scoring, there are six provinces as the 1st priority to receive the allocation, namely Jawa Timur, Sumatera Utara, Sumatera Barat, Jawa Barat, Jawa Tengah and Lampung. Although these provinces have relatively high rate of productivity, they are still recommended to receive the SRI program than other provinces (figure 14). While other provinces, although need to increase productivity, are commended to receive this program after the 1<sup>st</sup> priority because the performance or efficiency in previous years were not good enough. Next it

will be the duty of the Government to improve the performance of policy implementer in the field so that the SRI program can be developed in all over country especially outside Jawa and Sumatera. Now, the provinces of Papua, Papua Barat, Kalimantan Timur, Kalimantan Selatan are recommended to receive wetland expansion program first, then developed with the SRI program later.

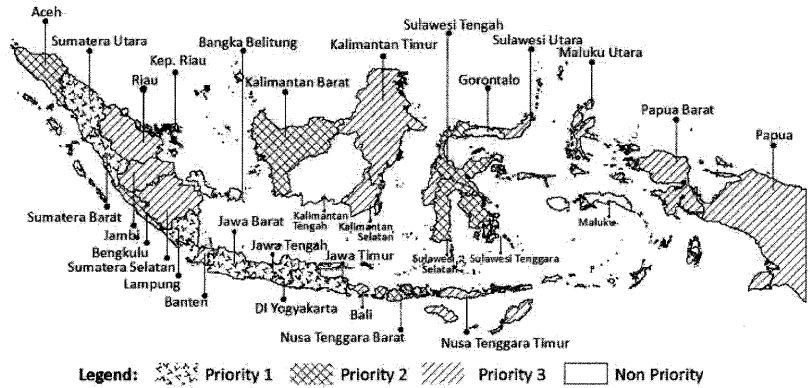


Figure 14. Priority for system of rice intensification

## 5. Conclusion

Findings show that there is no province successfully maintaining the perfect score (100%) of efficiency in both wetland expansion and irrigation network rehabilitation activities for the four successive years. While for SRI activity, Sulawesi Tenggara, DI Yogyakarta, Lampung, and Bali and successfully got the optimal score of efficiency in 2011-2014. On average, there are six most efficient provinces in the rice program implementation for the four years.

There are eight, 12 and six provinces that are highly recommended to receive wetland expansion, irrigation network rehabilitation and the system of rice intensification activities, respectively. Jawa Barat Province is the most potential province to develop these three activities all at once. Sulawesi Tenggara and Nusa Tenggara Barat are recommended to receive both allocation of wetland expansion and irrigation network rehabilitation. Jawa Timur, Jawa Tengah, Sumatera Utara, Sumatera Barat, Maluku Utara and Lampung are recommended to receive both allocation of SRI and irrigation network rehabilitation.

There are 12 provinces, ten provinces and seven provinces are placed in 2<sup>nd</sup> priority for wetland expansion, irrigation network rehabilitation and rice intensification system, respectively. These provinces need to increase their performance to be better. In 3<sup>rd</sup> priority, there are six, nine and 14 provinces for the activities of wetland expansion, irrigation network rehabilitation and rice intensification system, respectively categorized in this group. If there is an instruction of budget savings in the middle of fiscal year, these provinces are supposed to firstly experience.

This priority can be used as a brief reference for DG of Agricultural Infrastructure and Facilities to allocate the program besides considering the proposal from local governments. In future, the government should give more attention to work

units which perform lesser than other provinces so that rice program can be more widely implemented in many provinces in Indonesia efficiently.

### End Notes

<sup>1</sup> also known as Jenks Optimization method. It is a data classification method designed to determine the best arrangement of values into different classes therefore they can be displayed on a choropleth map. The method seeks to minimize each class's average deviation from the class mean, while maximizing each class's deviation from the means of the other groups. In other words, the method seeks to reduce the variance within classes and maximize the variance between classes (Jenks, 1967).

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