LEARNING SUSTAINABILITY OF AGRICULTURAL AND RURAL DEVELOPMENT FROM A PROJECT IN INDONESIA: FROM THE POINT OF VIEW OF IMPACT ASSESSMENT

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ABSTRACT

The Indonesian government has improved agricultural development by aiming at self-sufficiency in rice production since independence. Having attained this goal of self-sufficiency in rice production, it has now adopted a policy shift to other agricultural outputs. It examined the circumstances where some farmers in the rural society accepted paddy rice crop technology and the production system in the developmental process of self-sufficiency in rice production. Then, it tried to analyze the process in which traditional farmers who have not experienced paddy rice cultivation in a Southeast Sulawesi province accepts paddy rice cultivation. This report also examined under what kind of circumstances they would continue paddy rice culture. That is, it determined what factors the traditional farmers had to consider in accepting the paddy rice culture as a new agricultural method. It looked at the investment side from the viewpoints of the change or no change factors of agriculture.

The JICA Cooperation activities in Indonesia included the implementation of an agricultural and rural development project covering eight villages in this region as a model case between 1991 to1997. The project aimed to achieve a modest productivity increase over the current level, through the development of a small-scale but effective agricultural infrastructure and provision of operational guidance, rather than constructing large-scale facilities, based on the bottom-up approach by encouraging the active participation of local farmers. In general, the Tolaki traditional indigenous people consume both rice and sago starch as staple foods. Upland rice is grown in a field of slash and burn and the people also go to the lowlands, engage in sago starch extraction activity and enjoy food from sago starch. However, due to population pressure and the corresponding increase in food demand, more land for upland rice production has become a necessity. Therefore, shifting from the traditional farming to modern rice cultivation was practiced. The eight targeted villages were mostly composed of Tolaki people. However, some villages also have transmigrators from other areas. These transmigrators have experience in paddy rice cultivation which they inherited from their ancestors. On the other hand, the Tolaki people had never experienced paddy cultivation. The project focus was designed both to introduce and promote paddy cultivation. The project was supported through technological transfer, farm management and facility provision.

Successful technology transfer in agricultural and rural development relies on how the

technologies are accepted by villages and how they contribute to the increase in the income and improvement of rural living environment. Individual technologies are diversified in various fields, such as increased production and life improvement, and these technologies must be transferred directly to the farmers to obtain satisfactory results. Therefore, it is important to establish a system to promote technology transfer. Upon project termination, paddy cultivation had been carried out in the targeted villages, except in one village where assistance for paddy cultivation was not provided. If this paddy cultivation will be continuously carried out by the people, then the project would be evaluated as successful.

Ten years later, the project site was visited and evaluation was conducted. It was found that six out of the eight villages continued practicing the production system and using the facility. The facility was sustained in these villages because of the existence and support of the transmigrants who were the originators of the paddy rice cultivation system. On the other hand, the other two villages, where indigenous people mainly lived were not able to achieve sustainability of paddy rice cultivation. Moreover, it was discovered that in one of the village of the indigenous people, paddy rice cultivation continued to be carried out. However, in this village, half of a paddy field was managed by the transmigrators and the paddy field was expanded further. And paddy rice cultivation was performed briskly in the village in which indigenous people and migration people lived in the four remaining villages. It can be said that the sustainability of a paddy field from this was the influence of the migrants who have traditional experience of paddy cultivation. A comparatively large river is near the village, and it has a large flood plain in this riverside area. Many of villagers were growing field crops extensively. Therefore, even if there is no paddy field, it is in a position where it can sustain enough livelihoods. Moreover, in the B village, many farmers had an opportunity to work away from home and obtain income easily in Kendari City which is close by. Indigenous famers said that paddy rice culture had problems and difficulty compared with other crop cultivation because group work was needed in the use of water, facility management and large initial investment was also required. Therefore, when there was no additional economic merit as compared to the existing agriculture, it became clear that sustainability was impossible. It can be concluded that the needs for rice cultivation of two villages are limited because the rice yield is low and the price is also cheap. In order for indigenous people to put on new paddy-rice-cultivation technology and to make it sustainable, other important factors are required such as they are of great necessity (needs) for the paddy fields of the farmers.

KEYWORDS

Agricultural and rural development, Paddy rice production, Sago farming, Tolaki indigenous people, Technology transfer

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Learning sustainability of agricultural and rural development from a project in Indonesia; From the point of view of impact assessment

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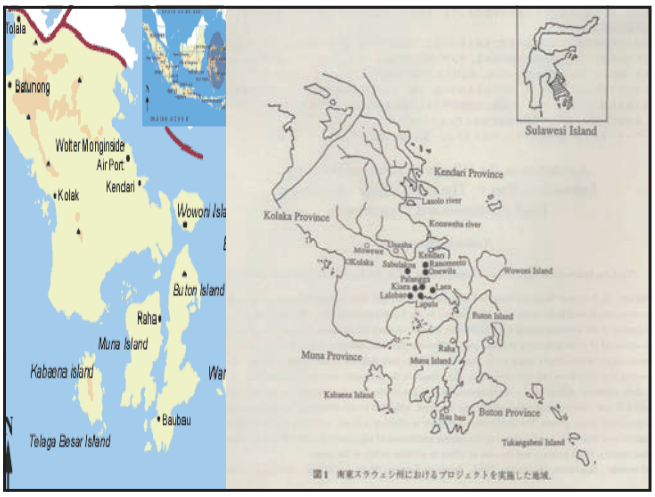
Project outline

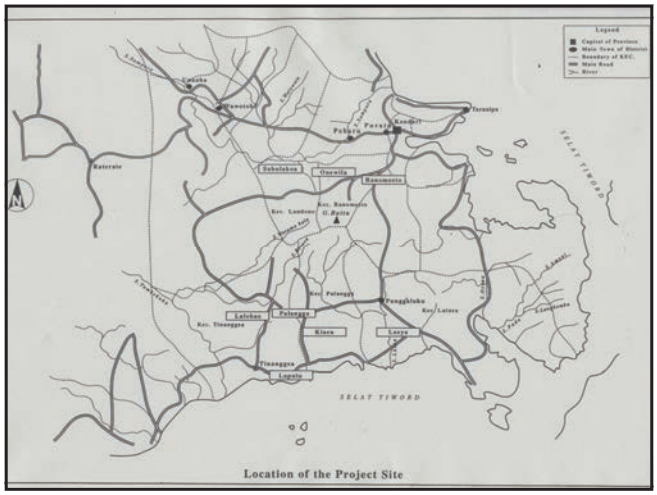
- In the 1990s the development methods used by ODA since postwar shifted from old paradigm to a new paradigm (Andrew Shepherd) .
- This shift from the approach of the economic development of the 1950s to the 70s to newly performing approach was as a result of social effects. It means that this paradigm shift changed in the direction which makes sustainability and validity of development and gain more prominence.

- In 1990 a new approach was also adopted in the agriculture and rural development plan. This approach focused on the synthesis and a participatory approach to development of the project. And the target of a project was established to reflect the capacity development of farmer or the organization.

- This presentation considers the impact which technology transfer of agriculture and a rural development project had on a farm village. The project was jointly carried out as a result of cooperation between ODA-JICA and Indonesia in 1991, and was shown here as part of development experience.

- Firstly, the report briefly shows an outline of the implementation and the result of the project. The result of technology-transfer of wet paddy rice to the farm village which was the main subject of this project is described after that. Then it investigates the continuity of the wet paddy rice cultivation after the end of the project. It goes further to analyze the conditions under which technology transfer of wet paddy rice cultivation was carried out.

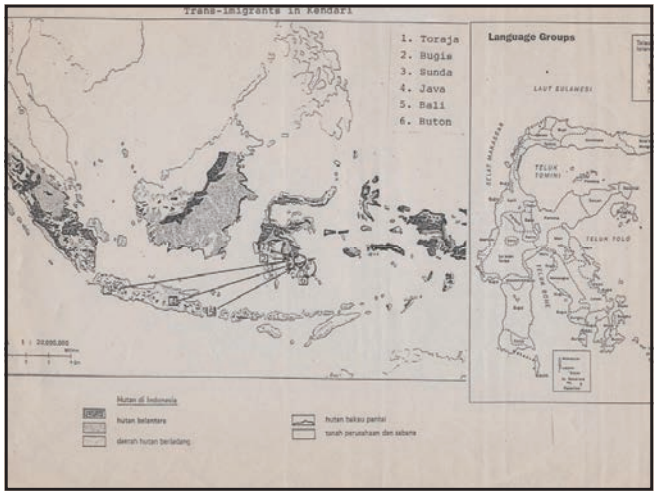




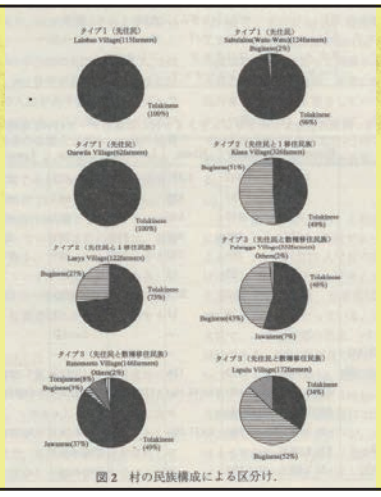
Project sites

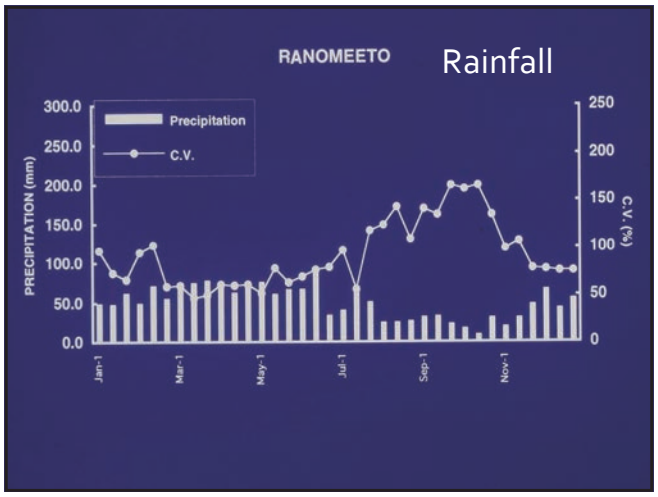
Integrated agricultural and rural development project in Southeast Sulawesi, Indonesia

(1991-1997)



Village People




RANOMEETO
Rainfall
Precipitation
C.V.
PRECIPITATION (mm)
C.V. (%)
300.0
250.0
200.0
150.0
100.0
50.0
0.0
250
200
150
100
50
0
Jan-1
Mar-1
May-1
Jul-1
Sep-1
Nov-1


Project site
view


Sago
Palm

Project Activities

1) Main agricultural infrastructure for the land development

- i) Model development of unused arable land in the village,
- ii) construction, repair and improvement of canals, intake weirs, etc.,
- iii) construction of ponds, wells, etc.,
- iv) model development of paddy fields and upland for field crops and estate crops

2) Other agricultural infrastructure development works

- i) Construction of farm roads,
- ii) construction of village meeting halls and extension office,
- iii) construction of rice mills, drying yard and seed storage facilities,
- iv) construction of stock raising (animal husbandry) facilities

3) Implementation of construction programs on agricultural infrastructure designed for farmer participation

- i) Contracting or direct implementation by project authority,
- ii) construction and management of branch irrigation canals by farmers,
- iii) farmer-led selection of construction sites

4) Improvement of farming techniques for increased production

- i) Establishment of farming model through demonstration of farming practices (paddy growing, upland crop growing, estate crop growing and live stocks),
- ii) trial and extension of improved techniques,
- iii) introduction of farm tools and small agricultural machines such as hand-tractors and power threshers

5) Establishment of systems aimed at invigorating activities and encouraging sustained project activities

- i) Fostering of organizations (union farmers' group, water users' association and rural cooperative association),
- ii) pooling of funds through farmers' groups (stock fund system),
- iii) operation and management of agricultural machinery, supplies and facilities by farmers' groups (rice mills, hand tractors, etc)

6) Activities with impact on rural development as a whole

- i) Farmer training,
- ii) Rural women training,
- iii) Assistance for group activities

7) Establishment of small-scale development models

- i) Development plan taking full advantage of characteristic features of each village,
- ii) Expansion and invigorating of model development schemes based on watershed existing farmers' group

Wet Paddy Rice Introduction by the project

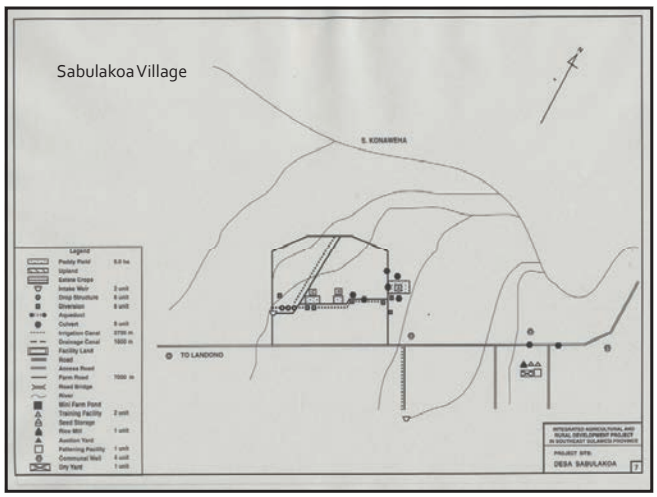
Participatory Method Use
in Construction Works


GKP


MANDIRI
DESA LAPULU

Views of the project sites 10 years late after project termination

No paddy rice cultivation in the villages



Ethnic groups in project villages

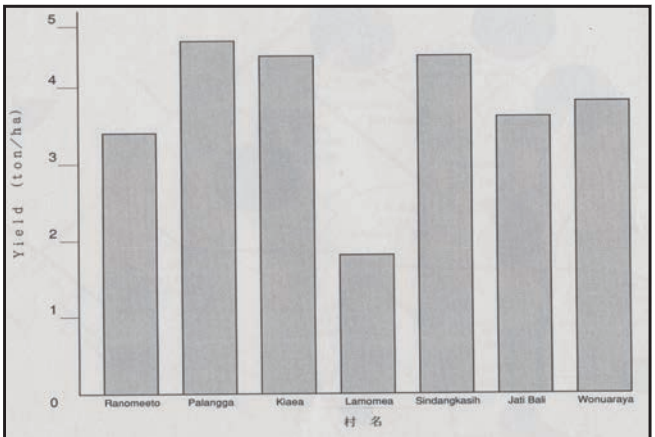
Village／Tribes	No. of households	Tolaki	Bugis	Traja	Java	Bali	Others
Ranomeeto	146	49	3	8	37	0	2
Planga	332	48	43	0	7	0	2
Kiawea	326	73	27	0	0	0	0
Lapulu	172	34	52	0	0	14	0
Lalobao	115	100	0	0	0	0	0
Sabulakoa	124	98	2	0	0	0	0
Onewila	62	100	0	0	0	0	0
Laeya	122	73	27	0	0	0	0

Note) Survey in 1992

Results of paddy rice cultivation after project termination

Village / year	1991[1]	1998.2[2]	2000.7[3]	2002.2	by project[4]	Remarks : Paddy field condition in 2006.2[5]
Ranomeeto	35	178	200	183	22	△ Partly fallow land
Planngga	60	126	127	127	15	○ All fields are good management
Kiawea	30	180	186	183	0	○ All fields are good management
Lapulu	139	296	376	363	5	○ Some irrigation facility was broken
Labbao	0	15	0	15	12	◎ Increasing paddy field
Sabulakoa	0	25	5	5	5	× Facility and field are not used
Onewila	7	70	80	82	1	× Stopped rice cultivation 2years ago
Laeya	0	0	60	21	0	○ Expanding paddy field by farmers

Notes) 1) Year of the project start
2) Year of the termination of the project
3) Year of finished aftercare
4) Paddy field opened by the project
5) Condition of the paddy cultivation (◎ very good, ○ good, × no-paddy field, △ not so good)



A yield of paddy rice in villages of Kendari
図１　クンダリ県の村における水稲平均収量（１９９３年）

Table: Yield of paddy rice in ingenious people's villages

	Onewila(n=32)			Rabibia(n=12)		
	No. farmers	Paddy (ha)	Yield(t/ha)	No. Farmers	Paddy(ha)	Yield(t/ha)
2006	31	19.03	2.77	9	4.48	3.36
2007	29	19.00	1.37	8	4.98	3.19
2008	9	8.25	0.59	9	5.73	3.05
2009	0	0	0	9	5.23	2.48

1) External people (a domestic migrant, a Japanese soldier, a development project officer, etc.) had great influence on the process of introducing wet paddy rice cultivation into the traditional farm village which did not have experience of wet paddy rice cultivation. Moreover, the conditions for accepting wet paddy rice cultivation continuously are largely based on a farmer's "interest" and "needs."

2) "interest" is the expectation from new agriculture, and the interest to modernize agriculture (conversion in management cultivation agriculture from primitive agriculture). And "needs" is conversion to the high value crops in the economic aspect.

3) From the results of an investigation carried out in 2009, migrants who had paddy technology were found in villages where the wet rice cultivation was successful and continuous. The wet paddy rice cultivation in the village of native composition was divided into two cases.

i) The village which could maintain the paddy fields : in the Lalobao village, Bugis people purchased a part of paddy field, and were performing wet paddy rice cultivation. Indigenous-people Tolaki also performed wet paddy rice cultivation together, and the paddy field area of a village was increasing.

ii) The village which was not able to maintain a paddy field: the wet paddy rice cultivation could only continue for ten years or more years and stopped after the project ended e.g Onewila village. Several years after the project end; wet paddy rice cultivation was stopped by the Sabulakoa village.

4) Since technology and an initial investment were required for wet paddy rice cultivation, it needed to fulfill these conditions for extension. In the weak extension system country, it is important elements that the system which learns from other tribes and neighbors is required for technology transfer.

5) The following conditions are required in order for indigenous people to take in wet paddy rice cultivation continuously.
i) Is wet rice culture attractive for indigenous people compared with the existing agriculture?
a. Would it become advantageous economically?
b. Attractiveness as modern technology.
ii) Are there any needs for paddy rice?
a. Needs as the staple food.
b. Needs as a cash crop.

iii) Can the technology be acquired?
iv) Is assistance of initial investment obtainable (A plough machine, Fertilizer, agricultural chemicals) .
v) Are there land consolidation and an irrigation facility?

The reasons why wet paddy rice cultivation could not be maintained were analyzed.
1) The expected yield could not be achieved
i) The cost of the part of initial investment was not obtained.
ii) Since there is no hand-operated tractor, the ploughs could not work on paddy field
iii) There were no fertilizer and agricultural chemicals.
iv) There was too much damage by rats
v) Water was not enough.

2) A paddy field does not have the same attributes or characteristics as the present agriculture, and it requires more time and more labor

i) Sufficient other land (exp. upland) has.

ii) Perennial crop is easy to cultivate for years.

3) Reservation of a cultivation field cannot be performed.

i) Farmland was sold (donated land).

Strongest sustainability

Impediment to production	< yes > no	Interest/Needs for production
Rat damage Deficient of water Broken down No-fertilizer No plough, et ct. Interest to other crops		Yielding Economical benefit Modern sprit Available water Guidance from other people

Conclusion

Agricultural sustainability means people can carry out the production systems in the long term. However, if economic and social conditions change, there is also a need to adjust to the new situation which may require a higher level of farming. This farming level has to be adopted and sustained by the farmers. It is, therefore, necessary to find out new strategy that takes into consideration the natural, socio-economic and technological conditions. Another important factor to be considered is the needs of the farmers and the environmental conditions in the village.