

BRIA PROJECT – A PUBLIC PRIVATE PARTNERSHIP TO IMPROVE FARMERS’ LIVELIHOOD

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Abstract

Better Rice Initiative Asia (BRIA) Indonesia is a partnership program between public and private sector, known as the Public Private Partnership (PPP), funded by the public sector - namely the Ministry of Economic Cooperation and Development of Germany (BMZ) and BASF of the private sector, implemented by German International Cooperation (GIZ) and BASF to improve the economic welfare through increased production and better market access. Within the implementation period (2015-2017), BRIA Indonesia is targetted to reach 6,700 farmers from five chosen districts of two provinces; Langkat, Deli Serdang, Serdang Bedagai, and Simalungun (North Sumatra Province), and Jember (East Java Province). The project has reached the total 3,540 farmers in 183 FFS at the selected locations. BRIA promotes the adoption of Good Agriculture Practices (GAP) of rice for sustainable increase in rice productivity, and increasing the involvement of young people in the agricultural sector. It is done through the establishment of Farmer Field School (FFS) at village level as rice farming learning center applying Good Agriculture Practice (GAP). The FFS is a training system approach that aims to transfer technical and practical know-how and skills to rice farmers through technical training, physical demonstration in the field and learning by doing exercises. The project has identified four main technologies to improve farmers’ incomes and agricultural productivity, including seed technology, row-spacing “*legowo*” planting method, balanced fertilization by using soil test kit (PUTS), and integrated pest management (IPM). BRIA Indonesia has also initiated to develop the seed grower business model to improve seed quality. The goal was to encourage farmers to become seed growers, and considering this as a business opportunity. In total around 150 farmers were trained by BRIA on how to produce high quality seeds. These 150 farmers can support 17,000 hectares or 1,200 farmers, resulting in an increase in yield for these farmers. Aligned with those activities, a farmer database has been created and used internally for managing and monitoring the process including farmer identity and farm profiles, production, technology and farming practices adopted, geotagging and others. Furthermore, instead of its purpose as project monitoring and evaluation, the database system will be improved to support government policy on rice crop insurance and financing facility for agriculture sector.

INTRODUCTION

Employment in the rice sector is one of the major source of income in rural areas of Indonesia. Rice is the most important crop in the country and it has estimated the demand will increase by 38% in the next 25 years. This gap has to be filled by increasing yields, assuming that the planting area, which often amounts to only 0.3 to 0.5 ha per farming household, remains the same.

The agricultural sector has become the main area of food supply for 245 million people in Indonesia, providing 87% of raw materials for small and medium industries, and contributing 15% of GDP by foreign exchange value of approximately US \$ 43 billion. In

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addition, agricultural sector absorbs about 33% of the labors and become a major source of income for about 70% of rural households. Along with the Indonesia's population growth rate of 1.49% per year, efforts to increase the rice production to meet the demand of about 275 million people by 2025 are necessary. Lack of access to information and technology of best farming practices, qualified agro-inputs, markets and agri-financing is part of the challenges to develop the food crops sector.

Better Rice Initiative Asia (BRIA) is a project commissioned by ASEAN Sustainable Agrifood System (SAS) which has been implemented in four different countries in Southeast Asia, namely: Indonesia, Philippines, Thailand, and Viet Nam. BRIA in Indonesia is a partnership program of public and private sector, known as the Public Private Partnership (PPP), funded by the public sector, namely the Ministry of Economic Cooperation and Development of Germany (BMZ) and BASF of the private sector, implemented by German International Cooperation (GIZ) and BASF. BRIA is aiming to improve the livelihood of smallholder rice farmers through promoting sustainable rice production and strengthening of the rice value chain.

BRIA promotes the adoption of Good Agriculture Practices (GAP) of rice for sustainable increase in rice productivity, increasing the involvement of young people in the agricultural sector, and adaptation to climate change. Implementing Farmer Field School (FFS) at selected village level is core activity as part of knowledge management and dissemination by involving private and public extension services.



Currently, BRIA has trained 3,540 farmers directly via FFS, covering 39 sub-district, 183 villages, and 859 farmer groups from five districts across North Sumatra and East Java Province. BRIA has helped farmers raise yields and lower production cost. Finally, the project will reach 6,700 farmers by end of the project.

Sectoral Collaboration

BRIA has signed a MoU with Ministry of Agriculture of Indonesia, Directorate General of Food Crops, to implement BRIA Project in Indonesia. BRIA has also signed cooperation agreement with Ministry of Agriculture and Indonesian Agency for Agricultural Research and Development (IAARD) to obtain technical supports related to technical assistance and dissemination of technology and knowledge in term of best farming practices in the rice sectors, both for farmers and extension officers.

As part of collaboration, BRIA in cooperation with Indonesian Centre for Rice Research (ICRR/*BB Padi*) has conducted Training of Trainer (ToT) for BRIA field facilitators to enhance technical competence of best farming practices and facilitation skills. Another ToT related to seed production also conducted for selected farmers in order to establish local seed grower in North Sumatra. The Field School curriculum as well as GAP modules for field facilitators and

farmers were developed under support and supervision of ICRR/*BB Padi* by involving Assessment Institute for Agricultural Technology (*BPTP*) and university.

BRIA cooperates with the government of national, provincial and district to ensure synergy between the activities of BRIA Project with government policies relating to food crops especially rice sector. Implementation of BRIA Project activities including technology transfer system to increase rice production requires the cooperation with extension agency and agriculture department in order to reach uniformity of field activities and to avoid overlapping. The cooperation also aims to enhance capacities of public and private extension in addressing best farming practices, facilitating the need of farmers in increasing production and better market access.

Series of policy dialogues and technology transfer have been initiated and facilitated through national seminar, workshop, fair and expo, field day through involvement of various stakeholders such as related public institutions, research agency, university, financial institutions, private sectors and farmers.

Project Approach

BRIA follow a holistic approach to improve rice sector through capacity development of multi-stakeholders along the rice value-chain.



The integrated capacity development covers several activities such as:

1. Improve knowledge and skills of farmers in best farming practices;
2. Improve capacity of extension services to strengthen technology transfer to farmers;
3. Strengthen rice farmers' organizations and business-oriented farmer group development by improving the interest of young farmers in rice farming;
4. Improve the awareness of the importance nutritious food of farmers' household;
5. Better market access through collective marketing and contract farming.

The above activities provide opportunities for all actors in the rice value chain in achieving better income generation, with a particular focus on smallholder farmers, and increasing employment opportunities in the rice sectors.

Capacity building of farmers

Farmer Field School (FFS) is an adult learning approach used to transfer technical know-how and practical skills to farmers through technical training, physical demonstration in the field and learning-by-doing exercises. The learning process at the FFS focuses on how to achieve participation of farmers in brainstorming, sharing experiences among themselves, demo plot observation, small-group discussions and presentation.

The BRIA FFS is conducted simultaneously from the pre-cropping stage until the post-harvesting stage. One curriculum is run for one crop-cycle, consists of 11 meetings with different topic for each meeting. Apart from the rice cultivation knowledge, the project also gives more knowledge in sharpen the skills of strengthening farmers groups, introduces market linkages opportunity, improves awareness of nutritious consumption for the farmers' households, which are the focus interventions of BRIA Indonesia program.

The FFS takes place on a demonstration plot where best rice farming practices can be observed together. The demo plot serves as learning site to contextualize lessons in the ToT and FFS with field-based examples. This has allowed farmers to test and validate what they have learned from trainings in real field conditions. With this experience, it is easier to

convince farmers to test rice-based technologies on their own farms. The project identified four main technologies to improve farmers' incomes and rice productivity:

1. Seed technology: to utilize superior varieties and qualified seed, seed selection and seed treatment;
2. Legowo planting method: use of young seedling < 21 days after sowing, planting 1 – 3 seedlings per hill and setting the optimum plant population by implementing jarak legowo (inter-row) planting method 4:1 and 2:1;
3. Balanced fertilization: to apply the right fertilizer composition and doses based on crop needs and soil nutrient status by conducting soil testing with the soil analysis kit (PUTS);
4. Integrated Pest Management (IPM) and stewardship.

Besides, other best farming practices under Integrated Crop Management as recommended by MoA also promoted to farmers.

The result from these plots showed that the technology interventions introduced by BRIA Field School could boost rice production by 15% and improve farmers' incomes by up to 35%. To achieve higher income, cost-efficient technologies and sustainable crop management must be implemented. In this case, farmers are able to save the use of seed through legowo method and fertilizer by using PUTS recommendation. Promoting cost-efficient technologies and sustainable practices align with the governments' effort to help farmers boost farm yield and income.

Table 1: Farm Benefit Analysis of BRIA ID Demonstration Plot (Area: 1ha / crop cycle), Langkat District					
No.	Component	Pre-training Behaviour		Demonstration Plot - BRIA Farmer School	
A	Variable Costs (Rp./ha/season)	Calculation	Value	Calculation	Value
1	Labour / Operational Cost				
	-Land Preparation (wholesale)	25 chain* @Rp. 42,200	Rp. 1,055,000.00	25 chain* @Rp. 42,200	Rp. 1,055,000.00
	-Planting (wholesale)	25 chain @Rp. 35,000	Rp. 875,000.00	25 chain @Rp. 40,000	Rp. 1,000,000.00
	-Weeding (wholesale)	25 chain @Rp. 50,000	Rp. 1,250,000.00	25 chain @Rp. 20,000	Rp. 750,000.00
	-Fertilization	4 persons @Rp. 40,000	Rp. 160,000.00	4 persons @Rp. 40,000	Rp. 160,000.00
	-Spraying	12 persons @Rp. 40,000	Rp. 480,000.00	12 persons @Rp. 40,000	Rp. 480,000.00
	-Harvesting (wholesale)	15.6% or 1/6 of production	Rp. 4,747,600.00	15.6% or 1/6 of production	Rp. 5,478,000.00
	Total Labour Cost		Rp. 8,567,600.00		Rp. 8,823,000.00
2	Input Cost				
	-Seeds	75 kg @Rp. 10,000	Rp. 750,000.00	25 kg @Rp. 13,000	Rp. 325,000.00
	-Nitrogen Fertilizer	300 kg (6 sacks @Rp. 110,000)	Rp. 660,000.00	250 kg (5 sacks @Rp. 110,000)	Rp. 550,000.00
	-SP26 Fertilizer	150 kg (7 sacks @Rp. 120,000)	Rp. 360,000.00	50 kg (1 sack @Rp. 120,000)	Rp. 120,000.00
	-ZA Fertilizer	200 kg (4 sacks @Rp. 90,000)	Rp. 360,000.00	0	Rp. -
	-Phonska Fertilizer (N, P, K)	400 kg (8 sacks @Rp. 130,000)	Rp. 1,040,000.00	0	Rp. -
	-KCl Fertilizer	0	Rp. -	50 kg (1 sack @Rp. 375,000)	Rp. 375,000.00
	-Pesticide		Rp. 1,030,000.00		Rp. 938,000.00
	Total Input Cost		Rp. 4,200,000.00		Rp. 2,308,000.00
3	Total Variable Costs		Rp. 12,767,600.00		Rp. 11,221,000.00
B	Gross Farm Benefit (Rp./ha/season)	Yield = 6.5 Ton (Price = Rp. 4,400/kg)	Rp. 28,600,000.00	Yield = 7.5 Ton (Price = Rp. 4,400/kg)	Rp. 33,000,000.00
C	Net Farm Benefit		Rp. 15,832,400.00		Rp. 21,779,000.00

Rice farming analysis, case study from a BRIA FFS in Langkat District



Rice farming analysis, case study from 38 BRIA FFS covering four districts and two provinces

Seed Production

The Indonesian government via the Ministry of Agriculture is responsible for raising rice production to ensure the availability of rice supply. One of the effort to increase production is through improved cultivation technologies such as increased use of superior and certified seed.

The use of certified seed is one of the factor that affect rice productivity. The percentage of farmers that use certified seed is around 50% while the others use the seed derived from the crop itself. Certified seed is high in genetic purity, high in germination and vigor, and of good quality which produced by following the certain requirements in accordance with the quality standards of seed (the field and laboratory) supervised by BPSB through certified label.

One of the obstacles on promoting rice production in Indonesia is the limited supply to high quality and certified seed. The production and distribution system of qualified and certified seed is not developed enough to meet the needs of the entire areas in Indonesia. It was estimated that only 48% of the total demand was satisfied in 2015. Consequently, establishing local seed growers is required to address the challenge in term of qualified and certified seed supply.

In line with the Ministry of Agriculture program to establish 1,000 self-sufficient seed villages, BRIA supports to establish and strengthen number of seed grower in North Sumatra. In 2015, BRIA in cooperation with ICRR has started seed grower program by conducting 1st phase intensive ToT for six key farmers to become good seed grower groups and to produce high quality seed, equipped them with technical competence and skill in term of rice seed management, concept and system of community-based seed production and distribution and learning practice on how to produce qualified and certified seed.

The successful of 1st phase six seed growers in developing its seed business, as its continuation, BRIA in collaboration with the Rice Seed Association of North Sumatra establish and strengthen 30 additional seed growers groups by end of 2017. Project supported technical assistances and business start-up during seed production in the field to ensure the quality of produced seed and in accordance with quality standards of BPSB requirements.

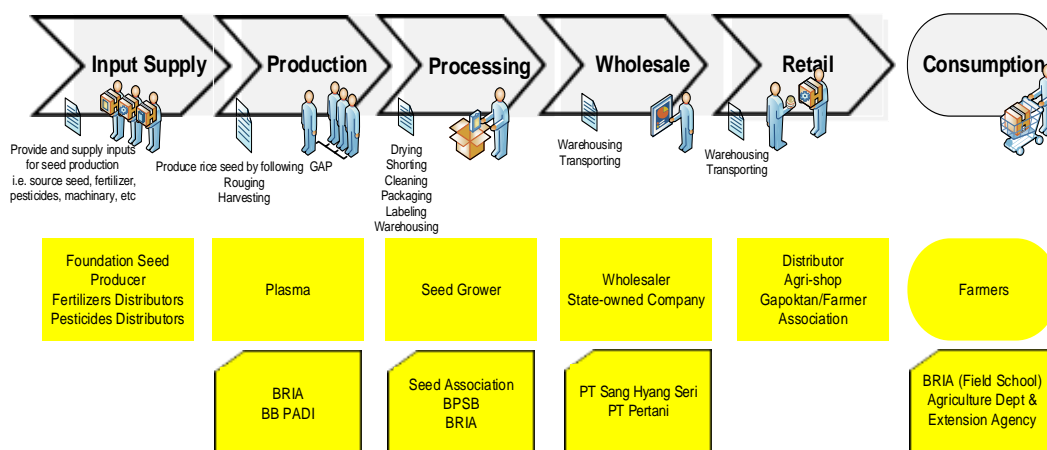
In total, 36 seed growers are established and strengthened with involving 150 farmers to produce qualified and certified seed. It is estimated that the groups produce 425 ton of seed which able to support 17,000 hectares or 1,200 farmers, resulting in an increase in yield for these farmers.



Seed Grower Establishment 2015 – 2017 in North Sumatra Province

To ensure sustainable seed development in North Sumatra, project establish Rice Seed Learning Centre which serves as (1) a hub for farmers to exchange knowledge and improve best farming practice of rice; (2) location for farmers, research institute, university, and other rice stakeholders seeking a place to obtain knowledge of business and technical aspect of rice seed; (3) location to develop networks among farmers and stakeholders.

BRIA initiate market linkage of local seed growers with state-owned seed company through contract farming. This initiation has been starting with series of discussion, field visit and project expose by involving seed growers and company. On other hand, value chain model has been promoting with considering better benefits for each involved actors e.g. supply assurance and quality of seed, good price for seed producer.



ICT application to improve efficiency of farmers' data

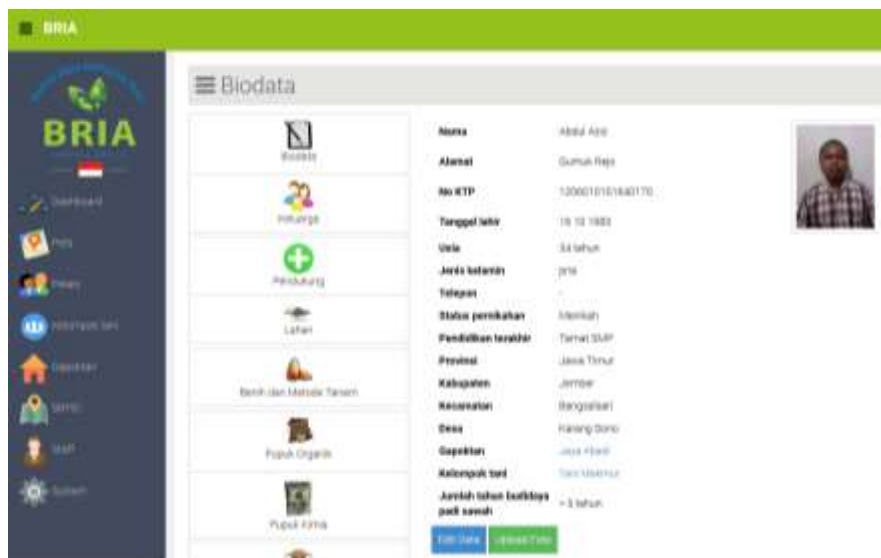
Agriculture development work need data collection and monitoring and evaluation (M&E) to measure project impact and what approaches prove effective. Manual data collection by using paper have been used for monitoring and evaluation of projects in rural areas. However, data collection using paper sheets has become outdated and casted off and susceptible to human error that may affect productivity and accuracy. Currently Information and Communication Technologies (ICT) such as mobile phone, tablet, application and software are being used to collect data in the field for information or database management system.

Since 2015, a farmer web-based database system has developed by BRIA and used for managing and monitoring the activities of rice farmers. The database system has basic information related to farmer profile, farm data such land size, production, agri-input used (seed, fertilizer, pesticide), Good Agriculture Practice (GAP) adopted, market access and financing, GPS location of farm to be displayed in map form. Beside for project monitoring and evaluation, the database system will be improved to support government policy on rice crop insurance and financing facility for agriculture sector.

The android application platform was developed to be used for data collection of farmers and it allows real time data upload and offline data collection in the field. Internet connection only requires for uploading data from mobile devices to cloud server once all farmers' data are collected and saved into the application. Every single ID of farmers automatically created by system to avoid overlapping data due to similar name of farmer.

Data collection through mobile apps is fast, update and the results are impressive. The database system will help managing project information based on Key Performance Indicator (KPI) that are used to achieved the expected goal. By providing periodic and real time data collection, function not only of baseline data but also to measure impact achieved after

project intervention. This tool provide decentralized monitoring, real-time information and the ability for user to customize data and verify input.



A screen shoot of farmer's personal data

Rice field location, accurately identified by using GPS coordinate points

Investing in technology such as mobile application and web-based database system should be followed by technical capacity building of users. It is necessary to invest in a team that can be effectively perform monitoring and evaluation tasks. Technology is created to facilitate and simplify the work that has to be done by humans. In every steps of its use, a never-ending process of improvement is needed to make the purpose of the technology itself is fulfilled. Therefore, in the meantime BRIA is committed to continue improving the database system by integrating with national agriculture policies such as rice crop insurance and financing facility for farmer.