*International Journal of Engineering & Technology*, 7 (4) (2018) 5539-5550

International Journal of Engineering & Technology

*Website: www.sciencepubco.com/index.php/IJET*
*doi: 10.14419/ijet.v7i4.13337*
***Research paper***

# Agricultural extension policy, agricultural growth and poverty reduction in Indonesia

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**Abstract**

This paper presents an overview of agricultural growth, the extension policy and poverty reduction in Indonesia according to the most recent secondary data, as well as the data obtained from this study. It explains the growth in the agricultural sector in general, and the dynamics of agricultural extension at the national and regional levels in relation to poverty alleviation in rural development. In this paper, also the discussion focuses agricultural policy-based extension to enhance the performance of the agricultural sector in Indonesia and the link o Agricultural Extension with rural development by poverty reduction. The performance of the agricultural sector expressed as a growth rate has been relatively stagnant and unstable or volatile. The indicators of growth rate include produc-tion, growth, productivity rate and harvested area. The fluctuations of indicators tend to decline in terms of GDP growth and GDP share per total GDP. The per-formance of the agriculture sector during the period was unstable, depending on the circumstances at the time.

***Keywords***: *Agricultural Growth; Extension Policy; Poverty Reduction.*

## 1. Introduction

In recent years, the contribution of the agricultural sector to eco-nomic development in Indonesia has shown a downward trend. However, agriculture remains the principal source of income for many people. More than 50% of the population (more than 100 million people) depend on agriculture for their livelihood [1]. Sustaining agricultural productivity and growth in the country is critical for achieving food security, poverty reduction, and broad-based economic growth. The pattern of agricultural policy in In-donesia is based on the productivity of the agricultural sector. Agricultural intensification and extension are, therefore, important for agricultural growth.

The drive to meet the food needs of a growing population is a milestone in many countries in trying to increase food production. For this reason, better agricultural technology continues to be produced and presented to farmers so that they can employ these technologies to increase their food output. Activities for providing farmers with training and appropriate agricultural technology, known as the Agricultural Extension Policy, are on-going. Agri-cultural extension may be delineated as a scheme of instruction outside of school (non-formal) for farmers and their families in order for them to know and be willing, able, and self-sufficient in overcoming the food security problem effectively, as well as to be able to utilise public assistance.

The role of agriculture in the national economy is very important and strategic. This is mainly due to the fact that the agricultural sector still provides jobs for the majority of the population in rural areas and provides food for the population. Another role of the agricultural sector is to provide the raw materials for industry and generate foreign exchange through non-oil exports. The agricul-tural sector can become a safety valve of the national economy in the face of economic crisis.

## 2. Material and method

This study uses quantitative data collection techniques/methods at the national level by reviewing existing literature related to sup-porting research and also in combination with a descriptive quali-tative, graph analysis and cross tabulation method in which data collection techniques include [2]. 1. Desk study, This involved a literature review and analysis of data from various sources such as national journals, international journals, bulletins, proceedings, monographs, international reports, newspapers, internet and aca-demic publications. 2. Observation, This method involved record-ing of observed data using field notes, narrative report, checklists, pictures, charts, graphs and tables with respect to the relationships, phenomena, comparisons, and generalisation of ideas on agricul-ture development in Indonesia in relation to poverty reduction. 3. Secondary data or document review. This method utilised reports and returns of government agencies: Central Bureau of Statistics (BPS) (census book Indonesia statistical yearbook), the National Food Logistic Agency (BULOG), the Food Security Agency (BKP) of the Ministry of Agriculture, agricultural NGOs and data from international institutions such as the FAO, World Bank, UNDP, ADB, etc. 4.Questionnaire (Survey).Data related to the

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extension service were collected using unstructured and semi-structured questionnaire. The survey was conducted in two Regencies involved each 100 samples by purposive sampling.

## 3. Result and discussion

### 3.1. Agricultural sector growth performance

Developing countries such as Indonesia need to apply the concept of growth paradigm with a marked increase in the growth of national income or gross national product (GNP/GDP). It should be supported with investment policy and trade and technology transfer into the era of industrialization. The strategy of economic development needs to focus on capital formation. Implementation of development strategies in developing countries with economic growth, i.e., an increase in the GNP, does not guarantee redress of the uneven distribution of national income. Moreover, expectations of a 'trickle-down effect' have not shown contribution to low-income communities. Normally, a country strategy of economic development focuses on capital formation efforts. To achieve economic growth, it needs a policy that raises the welfare of the lower classes, in particular rural communities. In so doing, it can reduce the gap between the haves and have-nots in rural and urban areas.

The agricultural sector is inseparable from that of the countryside and has an important role in development, especially in poverty reduction. Rural development is an integral part of national development that emphasises economic and human resources development. Efforts to increase living standards in the rural economy through increased revenue need to be intensified by way of developing the agricultural industry.

The data presented below show the quantitative performance of the agricultural sector for food crop production in the period 1993-2013.

#### 3.1.1. Production

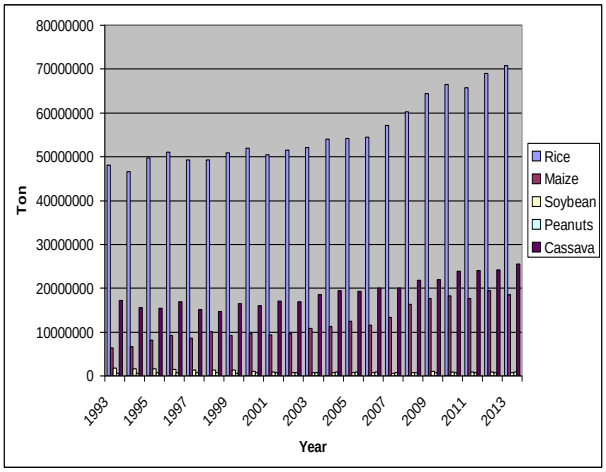



**Fig. 1:** Production of Five Main Food Commodities 1993 – 2013.Source: [3].

Food production is the main foundation of the agricultural sector in Indonesia, and is dominated by the five staple foods, as shown in Figure 1. These staples have strategic value in Indonesian agriculture. Fluctuations in domestic production may result in rising prices of basic commodities. The Indonesian government has an important agenda to make the country self-sufficient in food production, especially in rice, which is the staple food for many Indonesians.

Production of food crops shows a minor fluctuation between 1993 and 2013. The data in Figure 1 show increases and decreases of food production that are not significant in any subsequent year. Indonesia is the third-largest rice producing country in the world after China and India (Table 1). However, the country's domestic production has not been able to meet the needs of the national per capita consumption for the Indonesians for a long time. Efforts to increase production need to be made by implementing policies in favour of productivity and providing additional land for rice, especially outside Java. This requires appropriate programmes and planning to implement such policies. They should also be pursued by diversification of the staple food, rice, which has a per capita consumption of 140 kg/capita/year, to consideration of other food products as substitutes.

**Table 1:** Milled Rice Production by Country in 1000 MT (2013)

| Rank | Country | Production (in 1000s MT) |
|---|---|---|
| 1 | China | 143,000 |
| 2 | India | 98,000 |
| 3 | Indonesia | 36,900 |
| 4 | Bangladesh | 34,100 |
| 5 | Vietnam | 26,875 |
| 6 | Thailand | 21,050 |
| 7 | Philippines | 11,000 |
| 8 | Myanmar | 10,750 |
| 9 | Brazil | 7,820 |
| 10 | Japan | 7,358 |
| 11 | Pakistan | 6,700 |
| 12 | United States | 6,256 |
| 13 | Cambodia | 4,500 |
| 14 | Egypt | 4,500 |
| 15 | Korea, Republic Of | 4,300 |

Sources: http://www.indexmundi.com/agriculture/?commodity=milled-rice&graph= production (accessed 23 September 2013)

#### 3.1.2. Production growth

The growth of agricultural production is very important in relation to the stimulation of overall economic growth, which contributes to the agricultural share in the GDP of a country. Figure 26 shows that the agricultural growth in the five basic foodstuffs is relatively volatile. It shows a decline in food production each year, which reaches negative point for soybeans compared to other commodities.

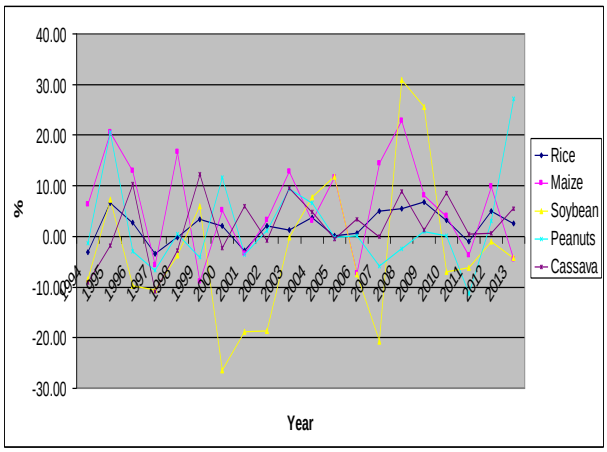



**Fig. 2:** Production Growth for Five Principal Food Commodities 1994 – 2013. Source: [3].

The data from 1994 to 2013 of the five major food commodities in Indonesia provides evidence that the agricultural sector remains very unstable for achieving food security at the community level. This is chiefly caused by poor government policy. Every year the government needs a policy approach that focuses primarily on increasing agricultural growth and stimulation. The present policy should, firstly, provide incentives for producers or farmers through the determination of basic grain prices and provision of incentives such as fertilizers. Secondly, it should provide public facilities for the production of rice and create a supportive environment for private investment in areas such as development of irrigation schemes in rice production centres. Thirdly, it should create effective institutional capacity and efficient government: for instance, an increase in agricultural extension efforts at the village level. Finally, it should implement sustainable use of natural resources:

for example, the use of organic fertilizers in increasing productivity.

### 3.1.3. Harvested growth area

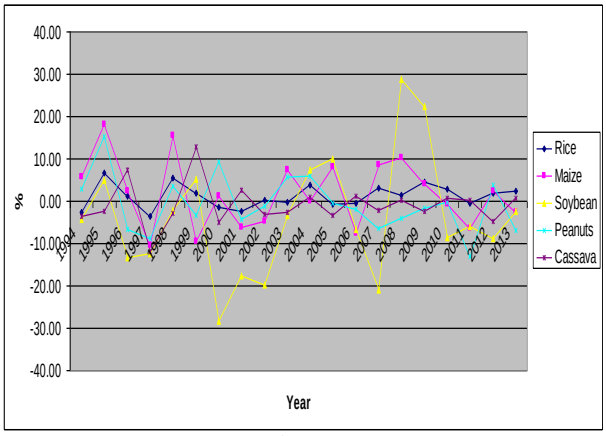



**Fig. 3:** Harvested Growth Area of Five Main Food Commodities 1994 – 2013.

Source: [3].

The harvested area affects the productivity of food crops. Instability of the harvested area of important food commodities can be seen in Figure 3. High fluctuations are seen every year in soybeans, an economically important crop. Soybeans have a strategic role, because most of the population in Java consume tofu and soybean cake (tempe) as a side dish with rice, especially poor people in the countryside. The government needs to give special attention to the soybean case for expansion programmes in various areas of potential with sufficient incentives for soybean farmers to achieve high selling prices. Every year Indonesia imports soybeans from other countries, partly because the domestic production is insufficient to meet the demand for domestic consumption.

Harvested land area in Indonesia has decreased every year because of land conversion. In 2009, there were 41 laws for sustainable or lifetime agricultural land food protection, which illustrates how the central government protects agricultural land in Indonesia. However, in practice, it is very difficult to control this, because of special autonomy given to every regency or city. Leaders are less concerned with agriculture, contributing to a situation that allows agricultural land to be used by other sectors such as housing and road construction. Concerted efforts are needed from the central and local government to show a strong commitment to using land effectively for agricultural productivity. This strategy should prevent any party from changing its use and to retain it for agricultural purposes only.

### 3.1.4. Productivity rate

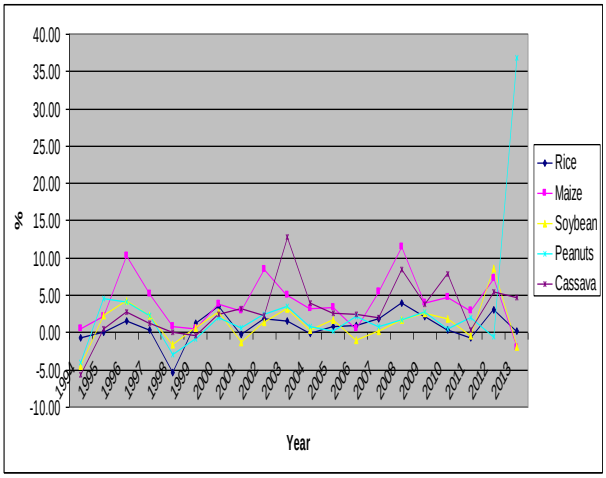



**Fig. 4:** Productivity Rate of Five Main Food Commodities 1994 – 2013. Source: [3].

Indonesia produces a wide range of strategic agricultural commodities. Food crops are especially rice, and secondary food crops like cassava, soybeans and maize have significant roles. The current 2013 productivity rates of commodities in Indonesia are relatively volatile compared to the previous year, 2012. Primary commodities like rice productivity have indeed increased sharply from 1994 (4,348 tons/ha) to 2013 (5,146 ton/ha), but the percentage rate of growth in each year has fluctuated, as shown in Figure 4. The growth rate is closely related to the productivity of a commodity each year. It tends to fluctuate depending according to the input and the climate. The government should focus on increasing input availability for productivity improvement, with appropriate technology as policy objectives. Farmers should receive increased incentives and subsidies for seeds, fertilizers and other production facilities that could yield more production. Moreover, efforts should be made to provide specific sustainable farming technologies based on the specific context of the areas to be assisted through extension services.

[4] Made an assessment of the overall growth of the Indonesian agricultural sector over three different periods. The first period, between 1961 and 1967, was a time of economic and political instability in Indonesia. Non-food crops (rubber, wood, palm oil, etc.) production fell sharply following the nationalisation of foreign-owned estates. Indonesian agriculture was operating inefficiently during this period, i.e., below production potential;. During the second period, between 1968 and 1992, Indonesia sustained rapid growth in both crops and animal production, with average annual output growth of around 4%. “Green revolution” technologies brought large increases in rice yields, and the area under non-food crops grew rapidly outside of Java. However, growth began to slow down during the end of this period, and by the 1990s growth appeared to have stagnated. In the third period, between 1993 and 2000, output growth averaged only 0.9% per year. Indonesia suffered from weather-induced and macroeconomic shocks during the latter part of the 1990s that exacerbated the slowdown in growth output, but this trend appeared to precede these shocks.

### 3.1.5. GDP growth at current and constant market price

GDP growth at current price measures economic growth of a country’s economic performance over time compared with other countries or compared with the previous period (real GDP). In contrast, GDP growth at constant market price is the market value of goods and services produced within the country for one year (nominal GDP).

GDP Growth Value at Current and Constant Market Price in Indonesia in 2001-2013 can be seen in Figures 29 and 30, which show various percentages in the agricultural sector compared with other sectors. In real GDP (GDP Growth at Current price) the agricultural sector plays an important role and is likely to exceed the growth of other sectors, such as the agricultural sector in 2008, which showed growth of 32.24%, while the industrial sector grew at 28.80%, and the services sector at 21.01%. Overall, the agricultural sector has made a major contribution to GDP growth in Indonesia, while for nominal GDP (GDP at Constant Market Price), the agricultural sector contributes to a smaller proportion compared to the value added by the industrial and service sectors. However, the agricultural sector also contributes the largest to inflation, because of the high fluctuation of agriculture product prices over time.

Figure 5 shows how the Indonesian government continues to improve both real and nominal GDP, especially in the agricultural sector. Effective implementation of pro-poor policies in the agricultural sector contributes to the desired outcomes.

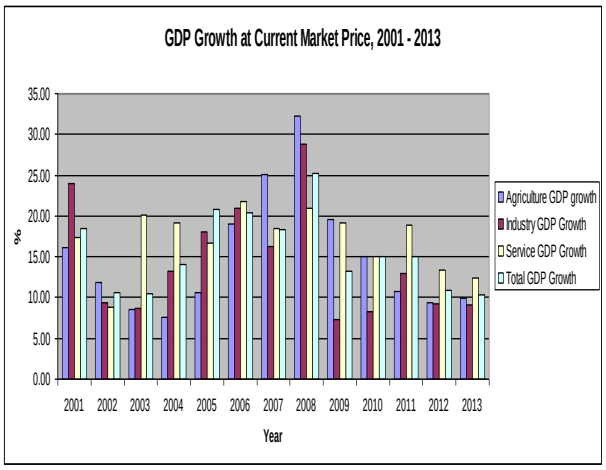



**Fig. 5:** GDP Growth at Current Market Price, 2001 – 2013.

Source: [3].

### 3.1.6. GDP share per sector to total GDP

Figure 6 shows that the share of the agricultural sector tends to decrease over time. However, the actual value of agricultural GDP is still rising. Growth remains very low compared to the two other sectors: industry and services. This is reasonable, because Indonesia is undergoing a transition from an agricultural to an industrial and service-based economy. The agricultural sector, however, remains the cornerstone and foundation of the other sectors. The government has to develop the agricultural sector to meet the needs of local people, as well as to contribute to the GDP growth of the country.

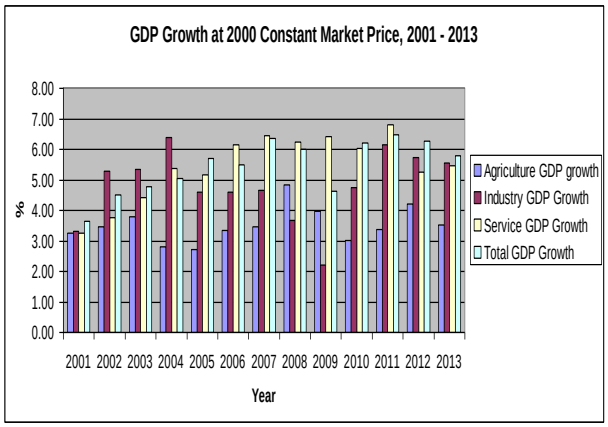



**Fig. 6:** GDP Growth at 2000 Constant Market Price, 2001 – 2013.

Source: [3].

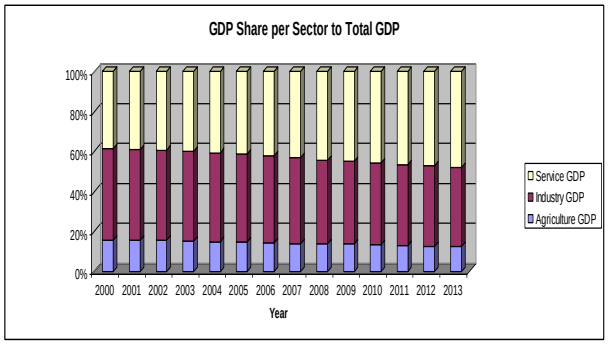



**Fig. 7:** GDP Share Per Sector to Total GDP 2000 – 2013.

Source: [3].

## 3.2. Institutional extension arrangements and agricultural infrastructure

Agricultural extension institutions have a strategic and crucial role in supporting successful agricultural development. There is a long history of those institutions upon which the success of agricultural extension was realised. During the period of President Suharto, he proclaimed that, in the era of the bimbingan masyarakat (Bimas), agricultural extension has successfully changed Indonesia from the largest rice importer into a self-sufficient rice producer. In 1984, the President received an award from the FAO.

However, since the implementation of Law no. 22 of 1999 on Local Government, the responsibility for maintaining extension was transferred to regency and city governments. The role played by extension officers decreased drastically. This was due to the conversion of extension officers, the non-functioning of extension institutions and lack of implementation extension, the lack of supporting facilities and infrastructure and the lack of education funding, both from central and local government. As a result, agricultural production stagnated.

The first step taken by the government to revive agricultural extension was the implementation of Act No. 16 of 2006 on Agricultural, Fisheries, and Forestry Extension System. Under this law, the arrangement of government institutions, human resources, organisation, facilities and infrastructure, as well as the financing of extension programmes, were well-articulated. This was mainly to support the realisation of the main targets of agricultural development that conform to the institutional mandate of extension in accordance with Law No. 16 of 2006. Presently, only 18 out of 34 provinces have formed Extension Coordination Agencies; seven of 34 provinces make up the institutional transition in the form of the Extension Coordination and Food Security Agency; and the remaining eight provinces (24%) have not yet established an extension agency.

Data from the Ministry of Agriculture show that, at the regency level, 151 of 415 regencies have established an Executive Agency of Agricultural, Fisheries, and Forestry Extension (BP3K); 182 regencies have set up extension transition in the form of an Extension and Food Security Agency; and the remaining 164 of 415 regencies have not yet established institutional outreach. At the district level, 4,880 Extension Centres for Agriculture, Fisheries and Forestry have been established, covering 74% of the 6,621 districts [5].

**Table 2:** The comparison of Availability and Needs of Extension Officers at the Different-Level Institutions

| No | Level of Institutional extension | Ideal requirement | Number of agents available | Number needed |
|---|---|---|---|---|
| 1 | National Level | 304 | 224 | 80 |
| | BBSDMP | 32 | 28 | 4 |
| | BP2TP/BPTP | 272 | 196 | 76 |
| 2 | Province Level | 528 | 402 | 126 |
| 3 | Regency level | 97,294 | 27,335 | 69,959 |
| | Regency | 5,964 | - | |
| | District | 19,851 | - | |
| | Village | 71,479 | - | |
| | Total | 98,126 | 27,961 | 70,165 |

Source: Regulation No.72, Ministry of Agriculture, 2011.

Agricultural institutions for extension encompass a number of agricultural extension officers from the national to the village level. The successful implementation of agricultural policy requires, among other requirements, the presence of adequate extension officers at village level. One can pose a question: do we have the extension officers needed to meet the demand of farmers? Some 70,167 extension officers are needed in addition to the current number of civil servants. The government has set a target that, in every village, there must be one extension officer. During this study, the researcher noted from observation and interviews that, in the four researched villages, one extension officer was working in more than one village.

Extension officers are mandated to support the realisation of the main targets of agricultural development. According to Regulation No 72 (2011), the Ministry of Agriculture is responsible for meeting the ideal requirements of an extension officer for the commu-

nity. However, this figure remains inadequate and numbers are decreasing; this phenomenon is seen in Table 20 below. The decrease in number of extension officers is due to the following: firstly, the the allocation new extension officers is few annually;, secondly, many extension officers have retired; thirdly, many extension officer positions have been converted to other positions or become positions with local government; and, fourthly, incentives and rewards for extension officers are very low, so that extension service becomes less attractive.

### 3.3. Education and training of extension officers and farmers

Agricultural extension is provided outside the school education system to help farmers develop their capabilities and gain new knowledge, attitudes and skills for farming practice. Farmers are later expected to work independently in the management of their own farms with better and profitable skills that will enable them to achieve a more viable and prosperous lifestyle.

Intensified outreach activities are of paramount importance. The government should implement various programmes for revitalisation, diversification and expansion to support the need for reliable extension educators and professionals in assisting farmers. Therefore, education extension officers become a priority in order to access reliable and quality education, which is essential, in an extension process. Without education, extension service becomes impossible; this lack of appropriate education provided by extension officers may lead to stagnation of the agricultural sector.

Human resources (HR) capability is created by people themselves; it takes a process of continuous education in line with the job and the advances of information technology and technological packages that prove practical and profitable for farmers. Education can be obtained through schooling, college or training, experience and by acceptable informal ways of acquiring education.

**Table 3:** Number of Agricultural Extension Workers (Goverment Employees, Contracted Workers and Self-Help) by Province, 2012

| No. | Province | 2010 | 2011 | 2012 |
|---|---|---|---|---|
| 1 | Aceh | 3528 | 3010 | 2976 |
| 2 | Sumatera Utara | 3400 | 3283 | 3240 |
| 3 | Sumatera Barat | 1745 | 1701 | 1710 |
| 4 | Riau | 1200 | 1214 | 1347 |
| 5 | Jambi | 1293 | 1362 | 1389 |
| 6 | Sumatera Selatan | 2279 | 2214 | 2063 |
| 7 | Bengkulu | 1192 | 1283 | 1171 |
| 8 | Lampung | 1818 | 1949 | 1933 |
| 9 | Bangka Belitung | 273 | 293 | 300 |
| 10 | Kepulauan Riau | 81 | 114 | 113 |
| 11 | DKI Jakarta | 121 | 97 | 112 |
| 12 | Jawa Barat | 5276 | 5521 | 5002 |
| 13 | Jawa Tengah | 6918 | 7223 | 7259 |
| 14 | D.I. Yogyakarta | 770 | 664 | 657 |
| 15 | Jawa Timur | 6275 | 7479 | 7348 |
| 16 | Banten | 953 | 784 | 751 |
| 17 | Bali | 898 | 986 | 959 |
| 18 | Nusa Tenggara Barat | 1569 | 1437 | 1531 |
| 19 | Nusa Tenggara Timur | 2487 | 2616 | 2504 |
| 20 | Kalimantan Barat | 1315 | 1425 | 1389 |
| 21 | Kalimantan Tengah | 1350 | 1172 | 1096 |
| 22 | Kalimantan Selatan | 1762 | 1701 | 1667 |
| 23 | Kalimantan Timur | 1254 | 1277 | 1094 |
| 24 | Sulawesi Utara | 1315 | 1092 | 1059 |
| 25 | Sulawesi Tengah | 1335 | 1230 | 1134 |
| 26 | Sulawesi Selatan | 3369 | 3120 | 3043 |
| 27 | Sulawesi Tenggara | 2348 | 1343 | 1338 |
| 28 | Gorontalo | 549 | 487 | 421 |
| 29 | Sulawesi Barat | 659 | 679 | 614 |
| 30 | Maluku | 634 | 606 | 597 |
| 31 | Maluku Utara | 604 | 629 | 564 |
| 32 | Papua Barat | 574 | 81 | 552 |
| 33 | Papua | 1358 | 503 | 1158 |
| | Total | 60502 | 58575 | 58123 |

Source: [5].

Agricultural institutions have to develop quality human resources. Moreover, the availability of qualified human resources is the main capital for the region in becoming the engine of development in the area. Therefore, to develop agriculture, the government must develop its human resources. HR needs to be built into the agriculture community (farmers, fishermen, agricultural employers and agricultural traders), so that extension becomes more focused to achieve its development goals. Extension officers must have competence in extension and master developments in the field of agricultural information and technology. Thus, the development of human resources to manage farming communities and businesses is vital.

Implementation of quality agricultural extension is to empower communities either through formal or non-formal education. This motivates farmers to improve business productivity, income and welfare. Much effort has been taken by agricultural extension to achieve sustainable agricultural development, through the pattern of Laku/Conduct (Training and Visit) visits to farms, demonstration plots, farm demonstrations, demonstration areas and other awareness-raising initiatives. These allow potential problems in the working area to be identified and solved. Other measures to achieve sustainable agricultural development include the identification of business activity farmer groups, establishing operation farmer groupsin corresponding potential areas, assisting in the teaching and learning process in farmer groups, facilitating farmer groups in managing agribusiness operations, guiding and helping solve the problems faced by farmer groups and facilitating routine operations, and facilitating group union/farmer groups in accessing technology, market information, business opportunities, capital and means of production.

### 3.4. Formal education of extension officers

**Table 4:** Characteristics of Extension Based on Formal Education

| Formal Education (%) | Kebumen Regency Before Implementation of the Programmed (2006 data) | After Implementation of the Programmed (2012 data) | Magelang Regency Before Implementation of the Programmed (2006 data) | After Implementation of the Programmed (2012 data) |
|---|---|---|---|---|
| Senior High School | 68.21 | 55.14 | 65.29 | 56.12 |
| Diploma 1 (D1) | 1.36 | 2.67 | 1.34 | 1.34 |
| Diploma 3 (DIII) | 2.45 | 4.25 | 2.84 | 5.64 |
| Diploma 4 (DIV) | 6.74 | 13.32 | 4.26 | 8.45 |
| Bachelor's degree | 21.24 | 24.62 | 26.27 | 28.45 |
| Total | 100 | 100 | 100 | 100 |

Sources: Kebumen and Magelang Agriculture agency and survey (2013).

Formal education refers to the last formal education level attained by extension officers at the time the research was carried out. The categorisation of formal education in this study was 1) High school, 2) Diploma I (DI), 3) Diploma II (D II), 4) Diploma IV (D IV), and 5) Bachelor's degree (S1).

From the research on the characteristics of extension based on formal education, it can be seen in Table 21 that the data prior to

2006 before the revitalisation of extension, and in 2012 during the research data collection period, show that there is an increase in the number of officers who have achieved Diploma IV and Bachelor's degrees. This situation is due to the following. Firstly, the contract staff recruited are mostly those having Diploma IV and Bachelor's degrees. Secondly, local government put effort into improving formal education for extension officers by sending them to Colleges of Agricultural Extension (known locally as STPP – Sekolah Tinggi Penyuluh Pertanian). Analysis of the results in Table 21 below shows that there is a positive correlation in the improvement of education for the extension. The percentage of Diploma IV and bachelor's degree holders increased from 2.18% to 6.58%. However, most of the extension officers still hold only Senior High School diplomas.

### 3.5. Expertise of extension officers

**Table 5:** Extension Officer Characteristics by Expertise

| Field expertise | Kebumen Regency | | Magelang Regency | |
|---|---|---|---|---|
| | Before Implementation of the Programme (2006 data) | After Implementation of the Programme (2012 data) | Before Implementation of the Programme (2006 data) | After Implementation of the Programme (2012 data) |
| Agriculture | 51.56 | 54.08 | 42.56 | 43.44 |
| Plantation | 17.84 | 16.18 | 18.6 | 19.64 |
| Animal husbandry/Livestock | 6.84 | 8.9 | 13.64 | 12.42 |
| Forestry | 23.76 | 19.24 | 20.48 | 21.04 |
| Fishery | 0 | 1.6 | 4.72 | 3.46 |
| Total | 100 | 100 | 100 | 100 |

Sources: Kebumen and Magelang Agriculture agency and survey (2013).

Expertise or field of extension is needed to provide support in the development of an agricultural area. It is important to determine the percentage of extension expertise in order to ascertain the general knowledge of extension officers. Table 5 below shows that there was a slight increase in expertise in agriculture in the two districts where research has been conducted to help farmers. In Kebumen, field crop expertise declined in from 17.84% in 2006 to 16.18% in 2012. In Magelang district, however, it increased by 1.04%. Overall, there was no significant change in field expertise of extension, because the agricultural sector remains dominant in extension services. This is attributed to the field expertise extension officer or people interested in the farmers fields' schools organised in the communities.

### 3.6. Non-formal education of extension officers

Non-formal education refers to technical training taken by extension officers, divided into four periods, calculated in hours. The research results in Table 23 show that very few villages had officers with no technical training and most officers had at least 400 hours' training. In determining the category of training in relation to the number of hours' training to get credit points, the results show that extension officers in the two regencies studied were generally categorised as having low non-formal education. The pattern of extension training at the district level is still dependent on the presence of central budget funds to conduct technical training for officers. The extension services policy at the district level is more aimed at training farmers or farmers' groups. Most extension training events were held at the national and provincial level, giving extension officers at the district level few opportunities to attend training. Furthermore, they must compete amongst many extension officers to be chosen for training, i.e., they are tens of thousands of them at the regency level.

**Table 6:** Characteristics of Non-Formal Education by Extension Officers

| Non-Formal Education (Hour) | Kebumen Regency | Magelang Regency |
|---|---|---|
| Very Low (< 80) | 76.84 | 65.62 |
| Low (81 – 160) | 9.14 | 16.46 |
| Moderate/middle (161 – 400) | 13.14 | 15.28 |
| High (401-608) | 0.88 | 2.64 |
| Total | 100 | 100 |

Source: Survey (2013).

### 3.7. Extension experience of extension officers

Extension experience refers to the working duration of extension officer from the beginning of employment until the research was conducted in 2013. Extension experience is expressed in years. Extension experience consists of three categories: Low, Moderate/middle, and High. Research results are shown in Table 7.

The extension officers were generally equipped with a relatively low level of experience: 42.26% (0-12 years) for Kebumen Regency and 40.62% (0-12 years) for Magelang Regency. Extension programmes at the village level require time to change the mindset of farmers. This requires extension officers with enough experience to be qualified to do the job of advising and supporting farmers. Their experience is instrumental in solving complex problems at village level. A well-experienced senior extension officer should be able to solve extension problems faced by the regency and is, therefore, a leading officer at the local level.

**Table 7:** Experience of Extension Officers (%)

| Experience (in Years) | Kebumen Regency | Magelang Regency |
|---|---|---|
| Low (0-12 years) | 42.26 | 40.62 |
| Moderate/middle (13 – 24 Years) | 41.28 | 39.52 |
| High (> 25 years) | 16.46 | 19.86 |
| Total | 100 | 100 |

Source: Survey (2013).

### 3.8. Utilization of media in extension activities

The methods and tools used in extension are among the decisive factors in determining its success. The selection method of extension and extension materials is one of the considered factors in making dissemination of knowledge effective. The material for extension is emphasized in tools in extension activites to deliver knowledge to farmers. The method used is mostly participatory, in order to generate the participation of members. The material on delivery of new knowledge or innovation, methods used are lectures and dissemination of information through the media or casual conversation.

Media usage for extension is expressed in the term of frequency of obtaining information from media communications resources, i.e., both electronic and print media. The categorisation of the use of media consists of: 1) never, 2) sometimes, 3) often, and 4) very often. The research results of the characteristics of extension relating to the use of the media are shown in Table 25. Mostly the use of printed media by extension officer showed "sometimes" in Kebumen Regency level and "often" in Magelang Regency. In general the two regencies have an average tendency to high use of printed media in extension service activities.

**Table 8:** Characteristics by Use of Print Media Extension

| Level of Frequency of use of Printed Media | Kebumen Regency (%) | Magelang Regency (%) |
|---|---|---|
| Never | 1.62 | 0.82 |
| Sometimes | 48.48 | 42.26 |
| Often | 42.28 | 46.36 |
| Very often | 7.62 | 10.56 |
| Total | 100 | 100 |

Source: Survey (2013).

### 3.9. Information services and extension facilities

The use of media in extension service is a tool for the extension officers to convey information to farmers. It involves the use of extension materials that are more easily accepted and understood by farmers. This study used these categories of media usage in extension: a) low (0-2 kinds), b) moderate (3-4 kinds), c) high (> 4 kinds).

The results of research on the characteristics of the use of media in extension service can be seen in Table 26. In general, the result show a low level of use of media for extension activities. This means that the extension officer should be more creative to develop kinds of media for extension service.

**Table 9:** Characteristics of Media Use in Extension (%)

| Level of Use of Media for Extension | Kebumen Regency | Magelang Regency |
|---|---|---|
| Low (0-2 kinds) | 86.5 | 78.8 |
| Moderate/middle (3 –4 kinds) | 11.64 | 18.56 |
| High (> 4 kinds) | 1.86 | 2.64 |
| Total | 100 | 100 |

Source: Survey (2013)

### 3.10. Food security knowledge of agricultural extension officers

Knowledge about food security was assessed through interviews with extension officers. The scoring made by the survey was with stuctured questions. The knowledge (question) was categorised into the food security subsystems, availability, distribution, consumption and food safety. The answers from extension officers were marked with the following categories: Low (60 - 71), Moderate (72 - 83) and High (84 - 95). The data in Table 12 show the levels of food security knowledge among the extension officers.

**Table 10:** Characteristics of Food Security Knowledge among Extension Officers Level

| Food Security Knowledge | Kebumen Regency After programmed (%) | Magelang Regency After programme (%) |
|---|---|---|
| Low (60 - 71) | 3.24 | 6.48 |
| Moderate (72 - 83) | 58.9 | 59.64 |
| High (84 - 95) | 37.86 | 33.88 |
| Total | 100 | 100 |

Source: Survey (2013).

Based on the data that has been presented, the results show that the level of knowledge is not very high among extension officers. The recommended policies are to facilitate access to agricultural extension information on food security and new technologies and to provide vehicles or containers as places for agricultural extension counselling. The Extension Coordination Agencies in the local governments also need to provide libraries that contain science books, internet access and tapes or compact discs that deliver knowledge of agricultural technologies necessary for agricultural extension officers and farmers. In order to provide better information services in carrying out extension works/services, local governments need to provide the tools to deliver information in the form of supports and to review technology applicability.

Agricultural extension officers who are capable of performing their work effectively are very limited in number. Local governments are expected not to divert agricultural extension officers easily from functional to structural positions. This will positively affect the implementation of the education programme in improving knowledge, attitudes and skills of farmers. This may ultimately affect the implementation of agricultural development in the community, including the development of food security. There is a direct benefit from understanding food security knowledge for extension officers in terms of duties and functions of agricultural extension. This has a positive and significant effect on the characteristics of agricultural extension, education and knowledge obtained for promoting more sustainable and effective outcomes.

The need for ongoing training programmes facilitated by the Agricultural Extension Coordination Agency is paramount. This should involve departments and agencies in the provision of resources to implement training programmes on food security. Agricultural extension officers should have the opportunity to attend training programmes organised by other training providers to learn new farming practices and skills. The agricultural extension officers who have high levels of education: for example, diploma or bachelor's degree holders majoring in food security should be given the opportunity to continue higher education with government funding

### 3.11. Agriculture extension policy for poverty reduction

Extension programmes were in the beginning conceived of as a service to "extend" research-based information and knowledge of the countryside regions in order to improve the life of farmers. Extension includes components of knowledge transfer, broader rural growth goals, management skills, and non-formal education. The conventional view of extension in developing countries was very much a matter of paying attention to escalating production, improving yields, training farmers, and transferring expertise. Currently, the perception of extension goes further than technology transfer to facilitation, further than training to learn, and includes serving farmers to form groups, deal with market issues, and cooperate with each other in an expansive range of service providers and other agencies. Agricultural extension can be defined as the complete set of organisations that maintain people who are engaged in agricultural production and assist their efforts to resolve problems, connection to markets and third parties in the agricultural value chain, and achieve information, skills, and technologies to develop their livelihoods [6].

The importance of extension strategy was acknowledged by the FAO's Global Consultation on Agricultural Extension, which suggested that "all national governments should develop and periodically review their agricultural extension policy. This policy should include the goals of agricultural extension, the responsible agencies and personnel, the clientele to be served, the broad programmatic areas to be addressed, and other relevant guidelines", and " The FAO, in cooperation with the donor community, should engage in policy dialogue with national governments to stress the importance of agricultural extension in national agricultural development and the need to have an explicit, formally enacted, agricultural extension policy" [7]

According to [8] extension services were, in their formative period, moderately small and limited in the range of their work and contact with farmers, and their organisation was often rather haphazard, even though based on legislation. They were organised principally either by central or local governments, or by agricultural colleges, usually in close connection with research stations, or by farmers' organisations (agricultural societies, cooperatives, farmers' unions, or chambers of agriculture), or combinations of these parent bodies. As the century progressed, organisations matured. Changes have often occurred to their close affiliations, government financial support has become quite more important, their objectives have become broader, especially in "the North", and the extension workers have become better trained and more professional. In addition, several other kinds of organisations have developed similar work: agriculture-associated profitable companies; agricultural commodity marketing boards, concerned to assure the supply and quality of their products; agricultural development projects, many of considerable territorial scale; and a diversity of

non-governmental organisations concerned with agricultural and rural development.

In many countries, the problems of ascertaining or maintaining an effective agricultural extension service can be traced back to the lack of a practical policy or an unbalanced policy framework for charting the mission of the extension system. Lack of agreement on the functions of extension, the stakeholders to be served, how extension will be financed, frequent changes in organisational structure and programme priorities, rapid turnover of the extension staff, and the proliferation and lack of coordination between different organisations that assume extension effort are some of the common problems that emphasise the issues around extension policy. In addition, the extension must be responsive to changes in the agricultural sector, the drive toward market reforms, and shrinking government budgets. Farmers correctly view extension as a form of assistance to help improve their knowledge, efficiency, productivity, profitability, and contribution to the good of their family, community, and society. At the same time, politicians, planners, and policy makers in many developing countries view extension as a policy instrument to increase agricultural production, to achieve national food security, and, at the same time, help alleviate rural poverty. Some economists view extension as a policy instrument that will contribute to human capital development and economic growth; therefore, resources allocated to extension are viewed as an economic investment that must produce competitive economic returns. To the practitioner, agricultural extension enhances and accelerates the widening of useful knowledge and technologies to rural people. These activities are expected to lead to increased and sustained productivity, increased income and welfare of farmer, and to the endorsement of national food security and economic growth. These objectives are to be achieved through non-formal learning and training programmes and two-way technology transfer and response systems where extension has made a significant contribution to agricultural and rural development [9].

The policy implication of agricultural extension is that it requires government to deal with vulnerability as well as productivity and to propose innovative options from which underprivileged families will be able to choose according to their conditions. The blueprint of extension strategies has to take in differing degrees of market integration, which determine the degree to which the poor can take advantage of marketplace opportunities. Extension strategies need to differentiate between highly- and weakly-integrated areas and recognise the need to make difficult decisions between supporting production strategies, on the one hand, and broader-based livelihood extension, on the other. The extension should offer a wider range of services, some focused on support to production and others focused on wider livelihood support, targeted according to an investigation of a particular area's market integration, level of vulnerability, and production forecast [10].

### 3.12. Agricultural extension policy contribution to rural poverty reduction

The agricultural sector in most countries is largely built and sourced from farmers in rural areas. Thus, farmers' welfare should be a major concern of the policy, because agriculture is a sector that supports national food security. Absolute poverty in a country that has a large population, such as Indonesia, is found mostly in rural areas (68.7%), with the main activity (60%) in the agricultural sector. The poverty reduction strategy is based on the argument that, the higher the economic growth, the lower the level of poverty prevailing in a country, but the mechanisms of the effect of trickling down to redress poverty (the trickle-down effect) are not well-structured. This programme has not achieved expected results. Many factors are affecting the livelihood of villagers, contributing to a high rate of poverty, especially for farmers. Culture and structural factors are often seen as important elements that determine the level of prosperity and wellbeing of society [11]. These factors could be bridged with education and accurate information by increasing farmers' education through agricultural extension.

[12] propose that there are three areas in which wider policies for rural development and extension policies may be incorporated in order to achieve effective and efficient, broad-based rural poverty reduction. First, the multi-dimensional character of poverty and increasing global economy require implementation of sector-wide approaches and mainstreaming poverty reduction. Second, because labour is a central component of poor people's livelihoods, policy needs to be responsive to likely impacts on employment. Third, policy requirements must take a precise and practical view of why particular groups and areas remain marginalised and critical issues surrounding them.

Agricultural extensions have to not only convey applicable information and realistic solutions to farmers, but also ensure that farmers' problems are brought to researchers' attention, so that the latter can work towards feasible and economical solutions. Agricultural extension is appropriate for pluralistic situations, with different actors simultaneously using diverse approaches and extension methods. This pluralistic approach could ultimately lead to a generation of custom-made, environmentally friendly and cost-effectively sustainable solutions, based on farmers' participation in agricultural improvement systems.

[13] argues that a well-organised extension system is required to achieve effective and efficient extension delivery in all aspects of sustainable agriculture for rural growth. This in turn might guide the direction of the achievement of food security, rural empowerment, environment management and poverty reduction.

[14] find that (using longitudinal household data) open investments that led to improvements in road features and improved rights to use of agricultural extension services led to quicker utilisation growth and lower rates of poverty. The magnitudes of these effects are significant, although the understanding of the findings concerning extension should be understood to mean that at least one extension visit reduces headcount poverty by 9.8% and increases consumption growth by 7.1%. Access to all-weather roads reduces poverty by 6.9% and increases consumption growth by 16.3%. These results are obtained using an estimator that accounts for all fixed household description, as well as the impact of transitory shocks. The results for consumption growth and poverty are compelling for changes in model measurement and assessment methods.

There was a case study in Bangladesh in 2007 by Rice, where video and radio programmes were used for farmers in the extension and research policy throughout multiple partners. The videos rapidly reached large parts of rural communities. In the analysis of the video's helpfulness, the project surveyed 1,252 resource-poor women across Bangladesh. New technologies such as physical starting point sorting and seed flotation were adopted by 24% and 31%, respectively. More than 70% improved seed drying. The use of botanicals such as neem, to deter storage space insects, improved from 9% to 67% [15} Most fascinatingly, the videos had triggered farmers to apply innovative ideas to their own perspective. Their trialling led to an extensive range of solutions[16] claims that the Agricultural Advisory Society (AAS), a small national NGO in Bangladesh, has strategic alliances with a large number of local NGOs and community-based associations. This NGO disseminated videos to village tea-stall owners, who organised 8,600 shows on their premises at no cost, encouraged by improved business. There were 157,000 farmers who watched the videos between one and six times. Bangladeshi national television continues to freely broadcast the videos, to reach over 40 million rural people.

[17], using the rural source of revenue approach to focus information communication and technology (ICT) interventions for extension, argues that the rural livelihoods approach facilitates the effectiveness and efficiency of the agricultural sector and contributes to poverty reduction. ICT development investments should be directed towards achieving the subsequent assessable development outcomes. These outcomes develop the livelihoods of the community whose labour, skills, knowledge and resources compose the

agricultural sector, with useful results: improved farm family revenue (spent on agricultural income improvement, shelter, investment in small businesses, and improvements in access to vital rural infrastructure, such as electricity, potable water, telecommunications and waste); increased farm family savings, which can be invested in livelihood strategies that directly or indirectly improve the effectiveness and efficiency of agricultural productivity; enhanced health indicators (related to improvements in income and food security attained with related understanding); increased household investment in education and training; reduced vulnerability, as evidenced by indicators such as higher employment of young girls in school, reduced rural out-migration, and sustainable use of natural resources, as evidenced by indicators such as reduced soil erosion and better risk management decision-making at farm level, and evidenced by indicators linked with the outcomes beyond these.

[18] argue that objective extension services to poorer households are likely to reduce poverty more rapidly, provided that these households can implement the technical recommendations. Nevertheless, at the current stage of development the poor may lack the necessary means to implement extension advice. This is because they do not have the contacts to obtain credit or resources that are easy to change to cash. One of the priorities of the local government should be to create a required benefit portfolio for the poor. This is supported by the reality that the impact of the delivery of extension services was distinctly greater among widows who headed households. This is suitable to be applied in households where cattle rearing is a very large component of farmers' livelihoods. Rather than targeting wealthier farmers, the government should work on enabling factors to improve the contribution of extension services to poverty reduction.

### 3.13. Contribution of extension policy in agriculture development

Agricultural extension programmes are relatively varied from an international perspective. The majority are managed as public sector agencies, generally situated in the ministry of agriculture, but some are located in other ministries, such as education or rural development. Many are managed by NGOs and private firms. Even within the most typical organisational structure, where extension is part of the government's ministry of agriculture, there is great dissimilarity in the level of decentralisation of management of extension services. In several countries, extension is decentralised, as in India and Indonesia, where it is a state matter. In most developing countries, however, governmental services are highly centralised, with changeable forms of regional and sub-regional units designed to serve local areas [19].

[20] asserts that the function of agricultural extension is providing need- and demand-based knowledge in cultivation technology and skills to rural communities in a systematic, participatory manner, income, with the aim of improving their production, and (by implication) quality of life. Providing appropriate education is necessary in extension services, because it brings about positive behavioural changes among farmers. The extension is an important support both for rural society development and as component of a policy of agricultural research and development. Agricultural research fails as an educational endeavour unless it is informed by factual problems on the ground and efforts are made to deliver solutions to farmers by appropriate forms of extension. Research institutions focus on the technological aspects of generating practical technologies, whereas extension focuses on the acceptance and adoption of those technologies by users. Both research and extension, should be functionally connected. Agricultural extension services can potentially be provided by three major resources: the private non-profit sector, the private for-profit sector and the public sector. The public sector includes ministries and departments of agriculture and agricultural research centres. The private non-profit sector includes local and international non-governmental organizations (NGOs), foundations, community boards and associations, bilateral and multilateral aid projects, and other non-commercial associations. The private for-profit sector consists of profitable production and marketing firms (such as input manufacturers and distributors), commercial farmers or farmer group-operated enterprises where farmers are users and providers of agricultural information, agro-marketing and processing firms, trade associations, and private consulting and media companies.

Several factors contribute towards the development of agriculture, including extension as an institutional input. Agricultural techniques and technologies are always changing and farmers must be made aware of and know how to use agricultural innovations for the utilization of inherent yield potential. The globalisation of the public sector plays a central role in the provision of agricultural extension and services.

### 3.14. Agricultural extension policy development in Indonesia

Agricultural extension in Indonesia has had a long history that began in the early 20th century. Agricultural extension stems from the need to improve agricultural products, both for the benefit of occupiers and to meet the needs of the natives. The need for increased agricultural production is expected to be met in the presence of advanced agricultural technology experts. Farmers, being the primary producers, have their needs and targets to achieve. With encouraging results, these efforts continue to be developed and an institutionalised system of agricultural extension in Indonesia was then set up, with the establishment of the Extension Service (Landbouw Voorlichting Dients or LVD) in 1908 under the Ministry of Agriculture. After achieving independence, agricultural extension efforts continue to be developed by the government. Various agricultural infrastructures are provided, plus the extension number and enhanced capabilities, and all the facilities for farmers, including subsidies, and so on. However, in line with the Indonesian government's political journey, the agricultural extension paradigm is inseparable from the [21].

Historically, Indonesia agriculture extension policy was centralised (top-down) after independence 1945 with a tight coordination among related institutions from national level to the regions. The Ministry of Agriculture in 1967 began to recruit agriculture extension workers at the village level and then used training and visiting as the main extension approach. This centralised development promoted Indonesia achieving self-sufficiency in rice by 1984. In 1999, Indonesia entered a new period in state policy with the concept change from centralised to decentralised approaches, and a production focus on agribusiness. Agricultural extension was assigned to the district level, whereas the central government only planed policies, standards, models and norms of participatory extension. Nevertheless, this strategy caused differences in approaches and programmes to extension. As an illustration, some districts did not have a sufficient budget for extension, most of them in the eastern part of Indonesia. Indonesia established revitalisation in the Agriculture, Fishery and Forestry Extension System in 2006. The function of this revitalisation was to give directions for farmers for empowerment and capacity building of non-formal education to develop agribusinesses and increase the prosperity of rural farm households. The regulation guided operation of agricultural extension services carried out by the national and local governments. Association of agricultural extension was arranged jointly between the extension and farmers. Institutional relations of agricultural extension services from the central to the district level were open. Budgeting of extension services was a shared responsibility between the central and local governments, farmers and private funding. Presently, the majority of provinces and districts have established extension institutions and have a budget for extension activities, which covers the operational costs for all field extension personnel [22].

In line with [23], the Indonesian case demands reforms in accordance with the points mentioned below. The need for extension reforms in Asian countries is broadly acknowledged. Driving this is the need to meet the variety of objectives appropriate to con-

temporary agriculture and rural development. Public extension services in Asia without reform will become ever more inappropriate and will lose the political support needed to finance them. The new visualisation of extension has to pay much more attention to ways of addressing the wellbeing needs of farmers in quickly shifting rural scenarios. This may be related to accessing credit and other production inputs. It may also be about strengthening the voice of the farmer, particularly the poor. On the other hand, the principal change is helping farmers to maintain and build profitability in increasingly competitive markets. Another feature, which now seems to be fairly universally acknowledged, is that extension needs to involve greater participation of a wider set of stakeholders, including the private sector. A new vision of extension as a locally defined set of approaches that develops and settles in to meet changing conditions, and proposes that having a national policy is not enough. The capacities of the state and district officials to innovate new and appropriate institutional engagements need to be improved.

[21] lends support to the argument by arguing that this revitalisation has three types of extension officers: government employee extension officers (Penyuluh Pegawai Negeri Sipil), private extension officers (penyuluh swasta), and farmer-self-suporting-extension officers (penyuluh swadaya). Indonesia provides an opportunity for private sector and non-government organisations to provide agricultural development. The private sector and NGOs are also allowed to establish their own agricultural extension institutions. In addition to 28,000 government extension workers, Indonesia has also private extension workers. The country has many experienced farmers and acknowledges them as extension workers. They serve their farmer friends. Many NGOs also place their facilitators at village level and work as agricultural extension workers. After having neglected this for many years, the Government of the Republic of Indonesia launched a programme called the Revitalisation of Agriculture, Fisheries, and Forestry. This programme is one of the distinguished programmes of President Susilo Bambang Yudoyono, with the motto of pro-growth, pro-job and pro-poor. It recognised that the agricultural sector is especially important in the Indonesian economy. It absorbs 46.3% of Indonesian workers, contributes 15% to Indonesian Gross Domestic Product (GDP) and 6.9% of Indonesian exports (excluding oil and gas).

### 3.15. Rural development and poverty reduction data

Rural poverty is a classic problem which is a major concern of governments in developing countries such as Indonesia. It is a key agenda and strategic component to be addressed in poverty reduction programmes. Developing countries have to monitor the progress of rural development in order to reduce poverty in villages. Every country has its own character in the determination of performance standards measurement in rural poverty data within a certain time. Determination of appropriate policies can be carried out from effective data collection and through routine monitoring to achieve the desired outcomes. The indicators in rural cross-sector policy also determine or influence direct or non-direct rural poverty. The achievement of rural development policy depends greatly on efforts in terms of agricultural sector that should receive first priority.

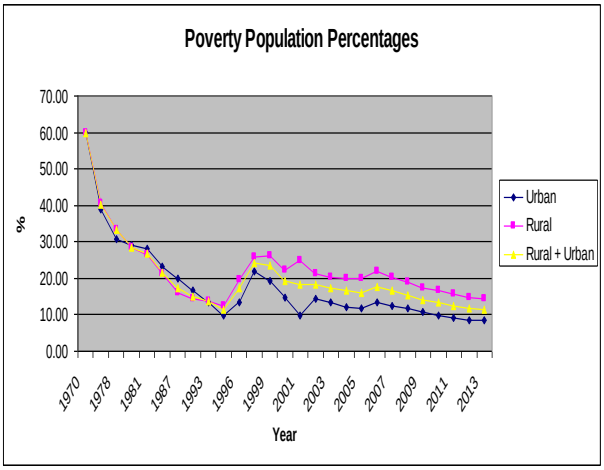



**Fig. 8:** Poverty Population Percentages. Source: [3].

It can be seen from Figure 8 that from 1970 to 2013 the trend in poverty significantly progressed towards reduction. The 1970s to the mid-1990s showed the best growth in poverty reduction. In the next period of the 1990s until the present, poverty steadily declined but the 1998 financial crisis hit Indonesia hard, resulting in a significant increase in poverty.

Various policies and programmes to improve food security, agricultural development, investment in education, health care and infrastructure development efforts have reduced poverty significantly. As shown in Figure 53, the poor population has decreased from 54.20 million (60%) in 1970 to 28.07 million people (11.37%) in 2013 in Indonesia. Economic growth is the main contributing factor in poverty reduction, but efforts to reduce poverty in the community should be multidimensional. The agricultural sector should be developed to enable farmers to increase productivity. Both off-farm and on-farm intensive labour are essential for agricultural sector development. One rural development strategy which can work as a pathway out of poverty in rural areas is supporting the efforts of non-agricultural growth.

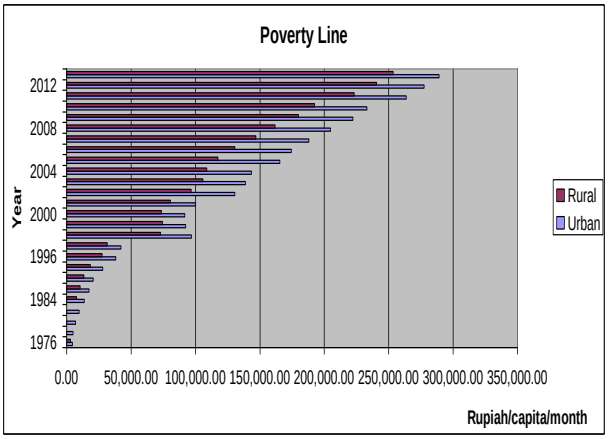



**Fig. 9:** Indonesia Poverty Line, Rural and Urban. Source: [3].

Over the last two decades, rural and urban poverty in Indonesia has decreased very significantly. However, the Indonesian government's approach to defining its terms and conditions differs from other countries, which have produced more positive values. In 2013, the poverty line was defined in monthly per capita income of IDR 253,273.31 in rural areas and IDR 289,041.91 in urban areas. This is equivalent to the US$21 and US$24, respectively. This situation indicates a low level of standard of living even by Indonesian standards. When one compares the World Bank standards of the poverty line for the poor of US$1.25 a day (Relative Poverty), and a month of approximately US$37.5, in Indonesia this is not poor in terms of the poverty rate. Thus according to standards applied by the World Bank, the number of poor people will be higher than the data derived from the CBS.

The CBS uses their standard for measurement of the poverty line with respect to the World Bank standard.
The increasing value of the poverty line every year shows that the standard of living for the poor is increasing in the city, which has relatively higher living costs than in the village. However, the number of poor people in the village is higher than in the city, because in the village most communities have a low income compared to urban dweller incomes. The value of the rupiah was also influenced by inflation every year in the village and in a different city, and the value of currency in the village is higher than in the city. This is because the price of goods in the village is lower than in the city. Therefore, it is essential to implement policies to reduce inflation, especially in the cities; most people are affected by the availability of goods from the agricultural sector. One measure to increase the availability of basic foodstuffs is to increase productivity in the agricultural sector by focusing on rural areas as buffer areas for the city or around the city.

# 4. Conclusion and recommendations

## 4.1. Conclusion

In summary, agricultural extension has a strategic role in development, especially in rural areas. The agricultural sector in almost all countries needs to be effectively developed and provided with the necessary supports to extension officers to enable them carrying out their work efficiently. Moreover, agricultural development requires proper management of extension services and system or infrastructure. Agricultural extension policy is a benchmark in the progress and success of a country in the delivery and provision of advanced technology to farmers. Agricultural technologies generated by the agency or institution or company require a good delivery system with counseling, so that farmers can acquire the latest knowledge in agricultural approaches in their villages. The problems in agricultural extension services should be addressed by the government to realise the policy objectives and achieve the goal of agricultural development in Indonesia. Extension policy plays a crucial role in poverty reduction, because if it is well-developed it will reduce the number of people living in abject poverty. Achieving this end requires the effective implementation of decentralization policy where patterns, forms and sorts of extension services should reach people at the grassroots level. [24]
Agricultural policy concerning extension institutions showed unsatisfactory performance after the revitalisation of extension programme in 2006 by the central government. The critical point of this section is that only 55% of provinces have established an Agricultural Extension Agency. At the regency level, 151 of 415 regencies have established institutional extension agencies. Institutions play a central and strategic role in development efforts in rural areas as policy and information delivery agents at grassroots level. Another indicator is the presence of a significant shortage of agricultural extension officers. The government's target to provide one extension officer per village but this still short by more than 20,000 or 28.5% of the total extension officers. In addition, the number of extension officers from year to year has decreased and hence there is a need for additional reinforcement and extension institutions to maintain extension officers as an important element of rural development.
Agricultural extension officers who are capable of performing their work effectively are very limited in terms of numbers. Local governments are expected not to transfer agricultural extension officers easily from functional to structural positions. This will greatly affect the implementation of the education programme and increase in knowledge, attitudes and skills of farmers, which may ultimately affect the implementation of agricultural development in the community, including the development of food security.
The performance of the agricultural sector in Indonesia has been improving recently, but not significantly. What has been found in the villages is that the ownership of paddy land is economically not profitable in terms of the size of paddy land ownership. An area under 0.25ha will only cater for the farmer's own subsistence. More effort should be made by the government to increase the productivity and diversification of crop production. For example, instead of merely engaging in rice cultivation, other crops that are more profitable should be cultivated, such as peanuts, soybeans and mung beans.
Data on poverty in Indonesia from 1970 to 2013 have shown significant progress in terms of reducing poverty. From the 1970s to the 1990s is the best period in terms of economic growth and poverty reduction. In the next period of the 1990s until the present time poverty is declining. However, the 1998 financial crisis hit Indonesia hard, such that the increase in poverty was significant.

## 4.2. Recommendations

The agricultural sector need focusing in term of plays a significant role in the context of improving the Indonesian economy. Although the transformation of the economic structure has occurred, in particular, the growth of the industry and service sectors, initiatives have not met the target in reducing poverty at the family level. In addition, to meet the needs of national food providers, the agricultural sector should be a leading sector to take the role of providing food security and absorb the majority of poor people in Indonesia into the labour force to benefit from the agricultural sector. The effort.

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